REGULAR CITY COUNCIL MEETING

6:30 PM – COUNCIL CHAMBERS – CITY HALL

JANUARY 21, 2025

AGENDA

ALL CITIZENS DESIRING TO ADDRESS THE PORT ORANGE CITY COUNCIL DURING PUBLIC PARTICIPATION SHOULD COMPLETE THE SPEAKER CARD WHICH IS LOCATED ON THE STANDS OUTSIDE COUNCIL CHAMBERS. AFTER COMPLETING THE SPEAKER CARD, PRESENT IT TO THE CLERK.

A. OPENING

1. Silent Invocation
2. Pledge of Allegiance
3. Roll Call

B. CONSENT AGENDA

4. Public Comments on Consent Agenda Items Only
5. Agenda Approval
6. Approval of Minutes
    a. December 10, 2024 - Regular City Council Meeting
7. Public Utilities Field Operations Facility
    a. Approval of Amendment No. 1 to the AIA Agreement with Wharton-Smith for Public Utilities Field Operations Facility Construction Project amending Exhibit A - Guaranteed Maximum Price Amendment, establishing the Guaranteed Maximum Price (GMP) for the construction phase of the project.
    b. Approval of Task Authorization No. 6 with Schenkel & Shultz, Inc. under the Master Contract for Architectural Services as it relates to the Construction Administration Phase for the Public Utilities Field Operations Facility
    c. Resolution No. 25-02 - Reimbursement Resolution for Public Utilities Field Operations Facility
8. Resolution No. 25-03 - Approval of First Quarter Budget Amendments for Fiscal Year 2024-2025

C. PUBLIC PARTICIPATION (Non-Agenda – 20 minutes)

D. COUNCIL COMMENTS

9. Comments/Concerns from Council Members

E. BOARD APPOINTMENTS, INTERVIEWS, AND REPORTS

10. Citizen Advisory Committee for TPO
11. Parks and Recreation Advisory Board Report

F. PUBLIC HEARING

12. Second Reading - Ordinance No. 2024-25 - Comprehensive Plan Amendment/Annual Capital Improvements Element Update (Case No. CPAM-24-0004)
13. First Reading - Ordinance No. 2025-01 - LDC Amendment/Chapter 15 - Signs (Case No. DCAM-24-0002)

G. REGULAR AGENDA

14. First Reading - Ordinance No. 2025-02 - Revising Defined Contribution Retirement Plan
15. Adoption of Port Orange City Council Local Rules of Procedure (Local Rules) for 2025

H. ADDITIONAL ITEMS

16. City Attorney
17. City Manager

I. COUNCIL COMMITTEE REPORTS

18. City Council Committee Reports
    a. First Step Shelter - Councilman Shawn Goepfert
    b. Port Orange/South Daytona Chamber of Commerce - Councilman Shawn Goepfert

J. ADJOURNMENT

NOTICES – PURSUANT TO SECTION 286.0105 OF THE FLORIDA STATUTES, IF ANY PERSON DECIDES TO APPEAL ANY DECISION MADE BY THE CITY COUNCIL WITH RESPECT TO ANY MATTER CONSIDERED AT THIS PUBLIC MEETING OR HEARING, SUCH PERSON WILL NEED A RECORD OF THE PROCEEDINGS, AND THAT, FOR SUCH PURPOSE, SUCH PERSON MAY NEED TO ENSURE THAT A VERBATIM RECORD OF THE PROCEEDINGS IS MADE, WHICH RECORD INCLUDES THE TESTIMONY AND EVIDENCE UPON WHICH THE APPEAL IS TO BE BASED. THE CITY DOES NOT PREPARE OR PROVIDE SUCH A RECORD.

FOR SPECIAL ACCOMMODATIONS, PLEASE NOTIFY THE CITY CLERK'S OFFICE (PHONE: 386-506-5563) AS FAR IN ADVANCE AS POSSIBLE, BUT



HELP FOR THE HEARING IMPAIRED IS AVAILABLE THROUGH THE ASSISTIVE LISTENING SYSTEM RECEIVERS CAN BE OBTAINED FROM THE CITY

PREFERABLY WITHIN 2 WORKING DAYS OF YOUR RECEIPT OF THIS NOTICE OR 5 DAYS PRIOR TO THE MEETING OR HEARING DATE.

CLERKS' OFFICE.

IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA), IF YOU ARE A PERSON WITH A DISABILITY WHO NEEDS AN ACCOMMODATION IN ORDER TO PARTICIPATE IN THIS PROCEEDING, YOU ARE ENTITLED, AT NO COST TO YOU, THE PROVISION OF CERTAIN ASSISTANCE. PLEASE CONTACT THE CITY CLERK FOR THE CITY OF PORT ORANGE, 1000 CITY CENTER CIRCLE, PORT ORANGE, FLORIDA 32129, TELEPHONE NUMBER 386-506-5563, CITYCLERK@PORT-ORANGE.ORG, AS FAR IN ADVANCE AS POSSIBLE, BUT PREFERABLY WITHIN 2 WORKING DAYS OF YOUR RECEIPT OF THIS NOTICE OR 5 DAYS PRIOR TO THE MEETING OR HEARING DATE. IF YOU ARE HEARING OR VOICE IMPAIRED, CONTACT THE RELAY OPERATOR AT 7-1-1 or 1-800-955-8771.

UPON REQUEST BY A QUALIFIED INDIVIDUAL WITH A DISABILITY, THIS DOCUMENT WILL BE MADE AVAILABLE IN AN ALTERNATE FORMAT. IF YOU NEED TO REQUEST THIS DOCUMENT IN AN ALTERNATE FORMAT, PLEASE CONTACT THE CITY CLERK WHOSE CONTACT INFORMATION IS PROVIDED ABOVE.

ANY INVOCATION THAT IS OFFERED BEFORE THE OFFICIAL START OF THE CITY COUNCIL MEETING SHALL BE THE VOLUNTARY OFFERING OF A PRIVATE PERSON, TO AND FOR THE BENEFIT OF THE CITY COUNCIL. THE VIEWS OR BELIEFS EXPRESSED BY THE INVOCATION SPEAKER HAVE NOT BEEN PREVIOUSLY REVIEWED OR APPROVED BY THE CITY COUNCIL OR THE CITY STAFF, AND THE CITY IS NOT ALLOWED BY LAW TO ENDORSE THE RELIGIOUS BELIEFS OR VIEWS OF THIS, OR ANY OTHER SPEAKER. PERSONS IN ATTENDANCE AT THE CITY COUNCIL MEETING ARE INVITED TO STAND DURING THE OPENING INVOCATION AND PLEDGE OF ALLEGIANCE. HOWEVER, SUCH INVITATION SHALL NOT BE CONSTRUED AS A DEMAND, ORDER, OR ANY OTHER TYPE OF COMMAND. NO PERSON IN ATTENDANCE AT THE MEETING SHALL BE REQUIRED TO PARTICIPATE IN ANY OPENING INVOCATION THAT IS OFFERED. A PERSON MAY EXIT THE CITY COUNCIL CHAMBERS AND RETURN UPON COMPLETION OF THE OPENING INVOCATION IF A PERSON DOES NOT WISH TO PARTICIPATE IN OR WITNESS THE OPENING INVOCATION.

REGULAR CITY COUNCIL MEETING MINUTES
COUNCIL CHAMBERS – CITY HALL
1000 CITY CENTER CIRCLE
PORT ORANGE, FLORIDA
DECEMBER 10, 2024

THE REGULAR CITY COUNCIL MEETING of the City of Port Orange was called to order by Mayor Scott Stiltner at 6:30 p.m.

Invocation by Pastor John Mazza of The Family Worship Center

Pledge of Allegiance

Roll Call	Present:	Councilman Shawn Goepfert Councilman Lance Green Vice Mayor Tracy Grubbs Mayor Scott Stiltner
	Absent:	Councilman Jonathan Foley
	Also Present:	City Manager Wayne Clark City Attorney Matthew Jones Deputy City Clerk Amanda Bonin

CONSENT AGENDA

4. Public Comments on Consent Agenda Items Only

There were none.

5. Agenda Approval

> Motion to approve the agenda as presented was made by Councilman Shawn Goepfert and Seconded by Vice Mayor Tracy Grubbs. Motion carried unanimously by voice vote.

6. Approval of Minutes
   a. December 3, 2024 - Regular City Council Meeting
7. Bid Awards and Contract Items
   a. Approval of Lease Amendment for Office Space at City Hall for U.S. Representative Cory Mills
8. Resolution No. 24-53 - Waiver of Building Permit Fees for Structures in the FEMA Grant Programs or Volusia County Transform 386 Program
9. Resolution No. 24-54 - Accepting $74,479 for 2024-2025 Victims of Crime Act (VOCA) Grant

10. Resolution No. 24-55 - Approval of the Loan Application Package for Design of the Water Reclamation Facility Upgrades with the Florida Department of Environmental Protection
11. Acceptance of the 2024 Annual Concurrency Management Report
12. Approval of the 2025 Public Hearing and Development Review Calendar
13. Authorizing City Attorney's Office to Initiate Legal Proceedings Related to Code Enforcement

Motion to approve the consent agenda as presented was made by Councilman Shawn Goepfert and Seconded by Vice Mayor Tracy Grubbs. Motion carried unanimously by roll call vote.

PUBLIC PARTICIPATION (Non-Agenda – 20 minutes)

Matthew Vondrus, resident, expressed his apology to Council Members and staff for his previous reactions and comments on social media. Mr. Vondrus mentioned he had good conversations with Council Members and staff since Hurricane Milton about the City's efforts, and projects moving forward. He understands there are many moving parts, but he also brought up the Citizen’s perception, and requested bi-monthly social media posts on the City’s progress on stormwater projects.

Harold Jim White, resident, expressed his concerns regarding his broken water meter and his utility bill.

COUNCIL COMMENTS

14. Comments/Concerns from Council Members

Councilman Lance Green touched on the sale of the Reed Canal property. He would like the City to purchase another property to assist with the City’s drainage. He also asked about the order of the City Council Agenda.

Mayor Scott Stiltner mentioned this will be an item on the agenda in January.

Councilman Lance Green also discussed Code Enforcement and the need to maintain what we have. He stated there are commercial properties that need some attention, suggested night and weekend shifts, and would like to know what the goal and mission is for Code Enforcement.

Councilman Shawn Goepfert discussed the condition of properties throughout the City and mentioned property owners need to be held accountable. Councilman Shawn Goepfert stated communication is important and he would like for the City to work on having an open line of communication. He would also like an update on the issues concerning master meters in mobile home parks. Councilman Shawn Goepfert also spoke on the order of the Council agenda and asked if there is an opportunity for

Council members to have a rebuttal while the citizens are present to speak about their concerns..

Vice Mayor Tracy Grubbs spoke on communication, the platform for communication, and thanked Mr. Vondrus for his comments at tonight's meeting. He touched on FEMA projects and how we cannot defer those projects to others. Vice Mayor Tracy Grubbs explained what the Aqua Hawk program is and suggested everyone sign up. He thanked staff for everything they did for this past weekend's holiday events. Vice Mayor Tracy Grubbs mentioned the Code Enforcement item on this evening's agenda regarding nuisance houses and mentioned that we now have the legal proceedings to move forward. He suggested citizens come forward and talk to Council about properties where there are similar code issues.

Mayor Scott Stiltner talked about social media and how misinformation comes across it. He talked about the master stormwater project and stated he would like an element on the city's website that indicates what the stormwater projects are and would like a link to past City Council meetings where these items were discussed. This would be in an effort to make it easy to find for citizens and bring transparency. Mayor Scott Stiltner would like to have agenda adjustments. Should someone on council mis-speak, he would like the City Manager or City Attorney to clarify when it's their time to speak. Mayor Scott Stiltner applauded City staff on the events over the weekend. Additionally, he commented on Code Enforcement and would like a discussion specifically on Code but also spoke on legal issues, State mandates and mentioned there needs to be persistence. Lastly, as we come to the end of debris pick up, Mayor Scott Stiltner would like to see the City employees as a whole, bring forward any street lighting and signage that is down, out, broken, etc. to the proper department's attention.

PUBLIC HEARING

15. First Reading - Ordinance No. 2024-25 - Comprehensive Plan Amendment/Annual Capital Improvements Element Update (Case No. CPAM-24-0004)

Matt Jones, City Attorney, read Ordinance No. 2024-25.

ORDINANCE NO. 2024-25

AN ORDINANCE OF THE CITY OF PORT ORANGE, VOLUSIA COUNTY, FLORIDA, AMENDING THE COMPREHENSIVE PLAN CAPITAL IMPROVEMENT ELEMENT; PROVIDING FOR THE FY2025-2030 FIVEYEAR SCHEDULE OF CAPITAL IMPROVEMENTS AND SUPPORTING DATA; PROVIDING FOR REPEAL OF CONFLICTING ORDINANCES AND RESOLUTIONS; PROVIDING FOR SEVERABILITY; AND PROVIDING AN EFFECTIVE DATE.

Penelope Cruz, Planning Manager, provided an update and explained concurrency.

Motion to adopt Ordinance No. 2024-25 was made by Vice Mayor Tracy Grubbs and Seconded by Councilman Lance Green. Motion carried unanimously by roll call vote.

ADDITIONAL ITEMS

16. City Attorney

There was nothing further.

17. City Manager

Mr. Clark indicated the City has a weekly Newsletter and everyone who has their email address tied to their utility account receives it. Construction projects can move slowly and there may not be weekly updates on the progress. Mr. Clark expressed his appreciation to the citizens who have come forward with their concerns and touched on the previous reorganization of City departments to implement changes to better the City.

Mayor Scott Stiltner spoke about Capital Improvement Projects (CIP) and mentioned how a certain percentage can be approved this year, some next year, and so on. He also touched on Councilman Green's comment about purchasing land and how not all of the land options are suited for what the City needs.

Mr. Clark also discussed funding from FEMA and the sales of properties. The City's intent is to put the money received in some type of stormwater fund. He also mentioned there are a couple properties that could be beneficial for the stormwater plan.

ADJOURNMENT - 7:17 p.m.

_____
Mayor Scott Stiltner

Attest:

_____
Robin Fenwick, MMC
City Clerk

CITY COUNCIL AGENDA ITEM

COUNCIL MEETING DATE 1/21/2025

SUBJECT: (B7a) Approval of Amendment No. 1 to the AIA Agreement with Wharton-Smith for Public Utilities Field Operations Facility Construction Project amending Exhibit A - Guaranteed Maximum Price Amendment, establishing the Guaranteed Maximum Price (GMP) for the construction phase of the project.

DEPARTMENT: Engineering

GOAL: 2 - Infrastructure

RECOMMENDED MOTION: Move to approve Amendment No. 1 to the AIA Agreement with Wharton-Smith for the Public Utilities Field Operations Facility Construction Project establishing the Guaranteed Maximum Price (GMP) for the construction phase of the project in an amount not to exceed $21,887,151, subject to approval of Resolution No. 25-02, and authorize the Mayor and City Clerk to execute all contract required documents.

SUMMARY: The Engineering Department is requesting approval of Amendment No. 1 to the AIA Agreement with Wharton-Smith for the Public Utilities Field Operations Facility Construction Project amending Exhibit A - Guaranteed Maximum Price Amendment to establish the Guaranteed Maximum Price (GMP) in an amount not to exceed $21,887,151.00 for the construction of the Public Utilities Field Operations Facility.

On August 21, 2024, Council approved the award to Wharton-Smith, Inc. for Construction Manager at Risk (CMAR) services for the Public Utilities Operations Facility and for the pre-construction phase – CMAR Preconstruction Services. During the pre-construction phase, Wharton-Smith worked with City Engineering staff and Schenkel Schultz Architects to develop preliminary cost estimates, complete a constructability review, conduct bidding and procurement of the different work packages, and have provided a Guaranteed Maximum Price (GMP) Submittal for the project. The full GMP Submittal is attached to this item for further review.

The current Public Utilities Field Operations facility, built in the 1970s and expanded in the early 1990s, is located on Oak Street, just north of the Public Works yard, but it faces significant space constraints. As a result, some Field Operations staff are based at the wastewater treatment plant, while the heavy equipment needed for their work is stored at other locations across the city. Field Operations plays a vital role in the City's emergency response team. During potential emergencies, crews must be relocated to the water treatment plant to avoid flooded roads that surround the current facility. The construction of the new Public Utilities facility will bring all of Public Utilities Field

Operations and Administrative staff to one centralized location, provide covered storage for equipment which will extend the equipment life, and allow a more efficient operation to better serve the residents of Port Orange.

There are sufficient funds available in the current Fiscal Year CIP Budget to cover expenses prior to the issuance of debt to pay for construction of the facility. Once the debt is secured, Resolution No. 25-02 (which is also on this agenda) allows the City to reimburse itself for incurred project expenditures prior to the issuance of the debt with proceeds from bonds, notes or other obligations to be issued in the future.

If approved, Wharton-Smith plans on breaking ground on the facility in early March 2025 and construction is scheduled for completion in July 2026.

Rendering of Main Building



Site Location Map



PRESENTER: Junos Reed

ATTACHMENTS:

1.	Wharton-Smith, Inc. A133 Exhibit A	Wharton-Smith, Inc. A133 Exhibit A

	Amendment No 1 - Final with Additions and Deletion Report	Amendment No 1 - Final with Additions and Deletion Report.pdf
2.	City of Port Orange Field Operations Facility GMP Final	City of Port Orange Field Operations Facility GMP Final.pdf
3.	Executed AIA Agreement Wharton-Smith Inc CA8464	AIADOC~1.pdf
4.	Additions and Deletions Report for AIA Document A133-2019 dated 11-6-2024	Additions and Deletions Report for AIA Document A133-2019 dated 11-6-2024.pdf
5.	Wharton Smith COI exp 4.1.2025	Wharton Smith COI exp 4.1.2025.pdf
6.	Wharton-Smith -Affidavit for Human Trafficking 11.12.2024	Wharton-Smith -Affidavit for Human Trafficking 11.12.2024.pdf
7.	PO-PUBLIC UTILITIES FIELD OPERATIONS FACILITY-BID DWGS	PO-PUBLIC UTILITIES FIELD OPERATIONS FACILITY-BID DWGS.pdf
8.	PORT ORANGE UTILITIES FIELD OPS - PERMIT-BID SPECS - VOL-1	PORT ORANGE UTILITIES FIELD OPS - PERMIT-BID SPECS - VOL-1.pdf
9.	PORT ORANGE UTILITIES FIELD OPS - PERMIT-BID SPECS - VOL-2	PORT ORANGE UTILITIES FIELD OPS - PERMIT-BID SPECS - VOL-2.pdf

Julia Wiggins	Created/Initiated - 12/20/2024
Richard Colby	Approved - 12/20/2024
Junos Reed	Approved - 12/31/2024
John McKinney	Approved - 1/2/2025
Linda Truitt	Approved - 1/2/2025
Matthew Jones	Approved - 1/15/2025
Wayne Clark	Final Approval - 1/16/2025

AIA® Document A133® – 2019 Exhibit A

Guaranteed Maximum Price Amendment

This Amendment dated the _____ day of _____ in the year 2025, is incorporated into the accompanying AIA Document A133™–2019, Standard Form of Agreement Between Owner and Construction Manager as Constructor where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price dated the 6th day of November in the year 2024 (the "Agreement")
(In words, indicate day, month, and year.)

for the following **PROJECT:**
(Name and address or location)

Public Utilities Field Operations Facility
City of Port Orange

THE OWNER:
(Name, legal status, and address)

City of Port Orange
1000 City Center Circle
Port Orange, Florida 32129

THE CONSTRUCTION MANAGER:
(Name, legal status, and address)

Wharton-Smith, Inc.
750 Monroe Road
Sanford, Florida 32771

TABLE OF ARTICLES

A.1 GUARANTEED MAXIMUM PRICE

A.2 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

A.3 INFORMATION UPON WHICH AMENDMENT IS BASED

A.4 CONSTRUCTION MANAGER'S CONSULTANTS, CONTRACTORS, DESIGN PROFESSIONALS, AND SUPPLIERS

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

AIA Document A201™–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

ARTICLE A.1 GUARANTEED MAXIMUM PRICE

§ A.1.1 Guaranteed Maximum Price

Pursuant to Section 3.2.6 of the Agreement, the Owner and Construction Manager hereby amend the Agreement to establish a Guaranteed Maximum Price. As agreed by the Owner and Construction Manager, the Guaranteed Maximum Price is an amount that the Contract Sum shall not exceed. The Contract Sum consists of the Construction Manager's Fee plus the Cost of the Work, as that term is defined in Article 6 of the Agreement.

§ A.1.1.1 The Contract Sum is guaranteed by the Construction Manager not to exceed Twenty-One Million Eight Hundred Eighty-Seven Thousand One Hundred Fifty-One and 00/100 Dollars ($ 21,887,151.00), subject to additions and deductions by Change Order as provided in the Contract Documents.

§ A.1.1.2 Itemized Statement of the Guaranteed Maximum Price. Provided below is an itemized statement of the Guaranteed Maximum Price organized by trade categories,

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User Notes: (1249474401)

including allowances; the Construction Manager's contingency; alternates; the Construction Manager's Fee; and other items that comprise the Guaranteed Maximum Price as defined in Section 3.2.1 of the Agreement.

See attachment "City of Port Orange Public Utilities Field Operations Facility Guaranteed Maximum Price (GMP Submittal) dated December 06, 2024 consisting of 985 pages, on file with City Engineer.

§ A.1.1.3 The Construction Manager's Fee is set forth in Section 6.1.2 of the Agreement.

§ A.1.1.4 The method of adjustment of the Construction Manager's Fee for changes in the Work is set forth in Section 6.1.3 of the Agreement.

§ A.1.1.5 Alternates

§ A.1.1.5.1 Alternates, if any, included in the Guaranteed Maximum Price:

Item	Price
*	*

*As provided for, if any, in attachment "City of Port Orange Public Utilities Field Operations Facility Guaranteed Maximum Price (GMP Submittal) dated December 06, 2024 consisting of 985 pages, on file with City Engineer.

§ A.1.1.5.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Exhibit A. Upon acceptance, the Owner shall issue a Modification to the Agreement.

(Paragraph deleted)

Item	Price	Conditions for Acceptance
*	*	*

*As provided for, if any, in attachment "City of Port Orange Public Utilities Field Operations Facility Guaranteed Maximum Price (GMP Submittal) dated December 06, 2024 consisting of 985 pages, on file with City Engineer.

§ A.1.1.6 Unit prices, if any:

(Paragraph deleted)

Item	Units and Limitations	Price per Unit ($0.00)
*	*	*

*As provided for, if any, in attachment "City of Port Orange Public Utilities Field Operations Facility Guaranteed Maximum Price (GMP Submittal) dated December 06, 2024 consisting of 985 pages, on file with City Engineer.

ARTICLE A.2 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ A.2.1 The date of commencement of the Work shall be:

[ ] The date of execution of this Amendment.

[X] Established as follows:

Notice to Proceed will be issued February 24, 2025.

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of execution of this Amendment.

§ A.2.2 Unless otherwise provided, the Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work. The Contract Time shall be measured from the date of commencement of the Work.

§ A.2.3 Substantial Completion

§ A.2.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Construction Manager shall achieve Substantial Completion of the entire Work:

(Paragraph deleted)

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[ ] Not later than ( ) calendar days from the date of commencement of the Work.

[X] By the following date: No later than August 31, 2026.

§ A.2.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Construction Manager shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date
N/A	N/A

§ A.2.3.3 If the Construction Manager fails to achieve Substantial Completion as provided in this Section A.2.3, liquidated damages, if any, shall be assessed as set forth in Section 6.1.6 of the Agreement.

ARTICLE A.3 INFORMATION UPON WHICH AMENDMENT IS BASED

§ A.3.1 The Guaranteed Maximum Price and Contract Time set forth in this Amendment are based on the Contract Documents and the following:

§ A.3.1.1 The following Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
*	*	*	*

*As provided in attachment "City of Port Orange Public Utilities Field Operations Facility Guaranteed Maximum Price (GMP Submittal) dated December 06, 2024 consisting of 985 pages, on file with City Engineer.

§ A.3.1.2 The following Specifications:

PORT ORANGE UTILITIES FIELD OPS – PERMIT BID SPECS – VOLUME 1 & 2, on file with City Engineer.

Section	Title	Date	Pages
N/A	N/A	N/A	N/A

§ A.3.1.3 The following Drawings:

PORT ORANGE UTILITIES FIELD OPERATIONS FACILITY-BID DWGS, on file with City Engineer.

Number	Title	Date
N/A	N/A	N/A

§ A.3.1.4 The Sustainability Plan, if any:
(Paragraph deleted)

Title	Date	Pages
N/A	N/A	N/A

Other identifying information: N/A

§ A.3.1.5 Allowances, if any, included in the Guaranteed Maximum Price:
(Paragraph deleted)

Item	Price
*	*

*As provided for, if any, in attachment "City of Port Orange Public Utilities Field Operations Facility Guaranteed Maximum Price (GMP Submittal) dated December 06, 2024 consisting of 985 pages, on file with City Engineer.

§ A.3.1.6 Assumptions and clarifications, if any, upon which the Guaranteed Maximum Price is based:

No additional assumptions or clarifications.

§ A.3.1.7 The Guaranteed Maximum Price is based upon the following other documents and information:

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As provided in attachment "City of Port Orange Public Utilities Field Operations Facility Guaranteed Maximum Price (GMP Submittal) dated December 06, 2024 consisting of 985 pages, on file with City Engineer.

ARTICLE A.4 CONSTRUCTION MANAGER'S CONSULTANTS, CONTRACTORS, DESIGN PROFESSIONALS, AND SUPPLIERS

§ A.4.1 The Construction Manager shall retain the consultants, contractors, design professionals, and suppliers, identified below:

As provided in attachment "City of Port Orange Public Utilities Field Operations Facility Guaranteed Maximum Price (GMP Submittal) dated December 06, 2024 consisting of 985 pages, on file with City Engineer.

This Amendment to the Agreement entered into as of the day and year first written above.

OWNER *(Signature)*	**CONSTRUCTION MANAGER** *(Signature)*
Scott Stiltner, Mayor	Darin A. Crafton, Chief Operating Officer - Commercial
(Printed name and title)	*(Printed name and title)*
Date	Date

ATTEST:

_____

_____

(*Printed Name and Title)*

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User Notes: (1249474401)

Additions and Deletions Report for

AIA® Document A133® – 2019 Exhibit A

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 16:14:34 ET on 01/15/2025.

PAGE 1

This Amendment dated the _____ day of _____ in the year ~~,~~ 2025, is incorporated into the accompanying AIA Document A133™–2019, Standard Form of Agreement Between Owner and Construction Manager as Constructor where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price dated the 6th day of November in the year 2024 (the "Agreement")

...

Public Utilities Field Operations Facility
City of Port Orange

...

City of Port Orange
1000 City Center Circle
Port Orange, Florida 32129

...

Wharton-Smith, Inc.
750 Monroe Road
Sanford, Florida 32771

...

§ A.1.1.1 The Contract Sum is guaranteed by the Construction Manager not to exceed ~~($),~~ Twenty-One Million Eight Hundred Eighty-Seven Thousand One Hundred Fifty-One and 00/100 Dollars ($ 21,887,151.00), subject to additions and deductions by Change Order as provided in the Contract Documents.

PAGE 2

~~(Provide itemized statement below or reference an attachment.)~~
See attachment "City of Port Orange Public Utilities Field Operations Facility Guaranteed Maximum Price (GMP Submittal) dated December 06, 2024 consisting of 985 pages, on file with City Engineer.

...

*As provided for, if any, in attachment "City of Port Orange Public Utilities Field Operations Facility Guaranteed Maximum Price (GMP Submittal) dated December 06, 2024 consisting of 985 pages, on file with City Engineer.

...

~~*(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)*~~

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User Notes: (1249474401)

...

* * *

*As provided for, if any, in attachment "City of Port Orange Public Utilities Field Operations Facility Guaranteed Maximum Price (GMP Submittal) dated December 06, 2024 consisting of 985 pages, on file with City Engineer.

...

~~*(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)*~~

...

* * *

*As provided for, if any, in attachment "City of Port Orange Public Utilities Field Operations Facility Guaranteed Maximum Price (GMP Submittal) dated December 06, 2024 consisting of 985 pages, on file with City Engineer.

...

~~(Check one of the following boxes.)~~

...

[**X**] Established as follows:
~~*(Insert a date or a means to determine the date of commencement of the Work.)*~~

Notice to Proceed will be issued February 24, 2025.

...

~~*(Check one of the following boxes and complete the necessary information.)*~~

PAGE 3

[**X**] By the following date: No later than August 31, 2026.

...

N/A N/A

...

* * * *
*As provided in attachment "City of Port Orange Public Utilities Field Operations Facility Guaranteed Maximum Price (GMP Submittal) dated December 06, 2024 consisting of 985 pages, on file with City Engineer.

...

~~(Either list the Specifications here, or refer to an exhibit attached to this Amendment.)~~
PORT ORANGE UTILITIES FIELD OPS – PERMIT BID SPECS – VOLUME 1 & 2, on file with City Engineer.

...

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User Notes: (1249474401)

N/A N/A N/A N/A

...

~~(Either list the Drawings here, or refer to an exhibit attached to this Amendment.)~~
PORT ORANGE UTILITIES FIELD OPERATIONS FACILITY-BID DWGS, on file with City Engineer.

...

N/A N/A N/A

...

~~*(If the Owner identified a Sustainable Objective in the Owner's Criteria, identify the document or documents that comprise the Sustainability Plan by title, date and number of pages, and include other identifying information. The Sustainability Plan identifies and describes the Sustainable Objective; the targeted Sustainable Measures; implementation strategies selected to achieve the Sustainable Measures; the Owner's and Construction Manager's roles and responsibilities associated with achieving the Sustainable Measures; the specific details about design reviews, testing or metrics to verify achievement of each Sustainable Measure; and the Sustainability Documentation required for the Project, as those terms are defined in Exhibit C to the Agreement.)*~~

...

N/A N/A N/A

Other identifying information: N/A

...

~~*(Identify each allowance.)*~~

...

* *
*As provided for, if any, in attachment "City of Port Orange Public Utilities Field Operations Facility Guaranteed Maximum Price (GMP Submittal) dated December 06, 2024 consisting of 985 pages, on file with City Engineer.

...

~~(Identify each assumption and clarification.)~~
No additional assumptions or clarifications.
PAGE 4

~~(List any other documents or information here, or refer to an exhibit attached to this Amendment.)~~
As provided in attachment "City of Port Orange Public Utilities Field Operations Facility Guaranteed Maximum Price (GMP Submittal) dated December 06, 2024 consisting of 985 pages, on file with City Engineer.

...

~~(List name, discipline, address, and other information.)~~
As provided in attachment "City of Port Orange Public Utilities Field Operations Facility Guaranteed Maximum Price (GMP Submittal) dated December 06, 2024 consisting of 985 pages, on file with City Engineer.

...

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Scott Stiltner, Mayor | Darin A. Crafton, Chief Operating Officer - Commercial

...

_____

_____

Date | Date

ATTEST:

_____

_____

(*Printed Name and Title)*

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User Notes: (1249474401)

Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, , hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 16:14:34 ET on 01/15/2025 under Order No. 2114457573 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A133™ – 2019 Exhibit A, Guaranteed Maximum Price Amendment, other than those additions and deletions shown in the associated Additions and Deletions Report.

_____

(Signed)

_____

(Title)

_____

(Dated)

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User Notes: (1249474401)

City of Port Orange

Public Utilities Field Operations Facility

Guaranteed Maximum Price (GMP) Submittal

Presented by Wharton-Smith (CMAR)

December 06, 2024

Wharton-Smith Contact:
James De La Rosa – Project Executive
jdelarosa@whartonsmith.com

Architect: Schenkel Shultz

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SECTION 1 – EXECUTIVE SUMMARY

SECTION 2 – COST SUMMARY

SECTION 3 – CONSTRUCTION SCHEDULE (100% DESIGN PHASE)

SECTION 4 – SUBCONTRACTOR BIDS

SECTION 5 – BID CLARIFICATIONS, EXCEPTIONS, EXCLUSIONS

SECTION 1 – EXECUTIVE SUMMARY

December 6, 2024

Mr. Junos Reed, P.E.
City Engineer
City of Port Orange
1395 Dunlawton Avenue
Port Orange, FL 32129

Re: Public Utilities Field Operations Facility
Guaranteed Maximum Price

Dear Mr. Reed:

Wharton-Smith is pleased to submit the Guaranteed Maximum Price Submittal for the Public Utilities Field Operations Facility project. Our current construction schedule along with a comprehensive breakdown of material, equipment, subcontractor, and labor is provided in the supporting documentation following this letter. Our guaranteed maximum price is **$21,887,151**.

Please note the following clarifications regarding this proposal:

1. We have included all work in accordance with the Schenkel-Shultz 100% Design documents dated September 2024.
2. Please refer to Section 2 for the estimate Cost Summary and pricing breakdowns.

    a. The GMP includes an Owner Contingency. The contingency included is to fund any Owner obligations to the project or to fund Owner elected scope changes to the work.

    b. A Risk Register has been developed jointly with the City and Schenkel-Shultz to establish CMAR allowances and contingencies. Please reference this document with detail on each allowance and contingency.

    c. The GMP, as presented, represents the anticipated construction costs based on the design documents which incorporate the constructability comments that have been addressed with the team during the final design process.
3. Subcontract and Supplier bids used in preparation of this GMP are located in Section 4.
4. The duration of construction is 18 months from Notice to Proceed to Final Completion. We have included project management staff that are appropriate for this project. Please reference Section 3 for the current construction schedule.
5. We have the following clarifications for the team's review and consideration:
    a. Storm water pollution prevention (SWPPP) is included.
    b. We have included a performance and payment bond, and insurances.
    c. ERP, FDEP, FDOT, & ROW permit costs are by others.
    d. We have not included on-site facilities for a full-time inspector.
    e. We have not included any additional Lead or Asbestos Survey for demolition of existing structures, nor cost for any required abatement.

f. Pricing includes no knowledge of buried or concealed conditions beyond what is indicated or shown on documents received to date. Cost has been included to perform GPR of the site ahead of construction.
g. We have not included any cost for Subsurface Foundation Improvements such as Auger Cast Piles or Tension Piles for any of the structures.
h. Davis-Bacon prevailing wage requirements and American Iron and Steel (AIS) are not incorporated in the pricing.
i. All Pricing (Labor, Material, Equipment, Subcontract) is based on current market value.
j. Duration of Material lead times are current market conditions.
k. No off-site material storage is included.
l. We have provided a comprehensive list of allowances. A description of the allowance can be found in Section 2. These allowances have been developed to provide complete transparency on bid items that could not be fully known at the time of bid but are anticipated to be spent. Wharton-Smith will provide backup for all allowance expenditures and unspent funds will be returned to the City.
m. On several of the bid packages Wharton-Smith is carrying a number for a bidder that is not the lowest bid. This is either due to an incomplete bid by the lowest bidder, or bids that require additional scrutiny. In these situations, should the lowest bidder be deemed responsive Wharton-Smith will return the savings to the City's Contingency.
n. The Construction Manager's general conditions and requirements for (16) months are included. Should construction be delayed due to no fault of the Construction Manager, the general conditions and CM Services shall be added to the contract value at actual cost, plus markup, as defined in the Agreement.
o. General Conditions/General Requirements and Contractor's Fee are considered lump sum and will be billed monthly in equal installments through the duration of the project.
p. Threshold Inspectors are not included as they are not required by the project requirements.
q. Materials testing is included per the specifications.
r. Building Commissioning is not included and is assumed to be by others.
s. In the case of major weather events, such as flooding, tornadoes, hurricanes, etc., additional working construction days will be added to the schedule based on an assessment of damage to the site and impacts on construction personnel.
t. The cost associated with temporary water, sewer and electric utilities will be paid by the Construction Manger through the date of Substantial Completion at which time these utilities shall be transferred into the Owner's name and become the responsibility of the Owner.
u. Permit fees, including but not limited to Building, Environmental, etc. have been included. Transportation and Impact fees have not been included.
v. Section 5 contains bidders' exceptions and clarifications, some of which have a cost impact to the project that have been accounted for in this GMP. This GMP assumes all of these will be incorporated into the final construction of this project.

I am available to discuss at your earliest convenience.

Very respectfully,

James De La Rosa
Project Executive
Wharton-Smith, Inc.

SECTION 2 – COST SUMMARY

CITY OF PORT ORANGE - PUBLIC UTILITIES FIELD OPERATIONS FACILITY
GMP
12/6/2024

COST SUMMARY

		LABOR	EQUIPMENT	MATERIALS	SUBS	TOTALS
Total Direct Costs		$ 121,792	$ 47,200	$ 248,145	$ 15,833,671	$ 16,250,809
Sales Tax on Purchase Orders					$ 17,370	$ 17,370
Total GC's		$ 2,048,103	$ -	$ -	$ 106,518	$ 2,154,621
Builders Risk	**1.00%**				$ 232,556	$ 232,556
Bond	**0.57%**				$ 132,556	$ 132,556
GL Insurance	**1.05%**				$ 244,183	$ 244,183
Contractor's Contingency	**3.0%**				$ 570,963	$ 570,963
Owner's Contingency	**3.0%**				$ 570,963	$ 570,963
Fee	**8.50%**				$ 1,765,227	$ 1,765,227
TOTAL WITH CONTINGENCY		**$2,169,895**	**$47,200**	**$248,145**	**$19,474,007**	**$21,939,248**

DESCRIPTION	QTY	UOM	COST OF WORK				
			LABOR	EQUIPMENT	MATERIALS	SUBS	$ TOTALS
			$ AMOUNT	$ AMOUNT	$ AMOUNT	$ AMOUNT	
GENERAL REQUIREMENTS DIVISION 0							$ 751,314
GENERAL REQUIREMENTS SUMMARY	1	LS	$ 121,792	$ 47,200	$ 248,145	$ 334,176	$ 751,314
PURCHASE ORDERS							$ -
SUBCONTRACTS							$ 13,589,184
Cleaning Services	1	LS	$ -	$ -	$ -	$ 15,300	$ 15,300
Cast-in-Place Concrete	1	LS	$ -	$ -	$ -	$ 1,066,635	$ 1,066,635
Masonry	1	LS	$ -	$ -	$ -	$ 419,786	$ 419,786
Structural Steel	1	LS	$ -	$ -	$ -	$ 277,720	$ 277,720
Finish Carpentry	1	LS	$ -	$ -	$ -	$ 109,307	$ 109,307
Air and Water Barriers	1	LS	$ -	$ -	$ -	$ 107,096	$ 107,096
Insulation (Foam)	1	LS	$ -	$ -	$ -	$ 58,280	$ 58,280
Metal Panels	1	LS	$ -	$ -	$ -	$ 137,008	$ 137,008
Standing Seem Metal Roofing	1	LS	$ -	$ -	$ -	$ 552,840	$ 552,840
Doors, Frames & Hardware	1	LS	$ -	$ -	$ -	$ 250,428	$ 250,428
Specialty Doors	1	LS	$ -	$ -	$ -	$ 121,217	$ 121,217
Windows	1	LS	$ -	$ -	$ -	$ 220,110	$ 220,110
Drywall	1	LS	$ -	$ -	$ -	$ 642,775	$ 642,775
Stucco	1	LS	$ -	$ -	$ -	$ 65,843	$ 65,843
Acoustical Ceilings	1	LS	$ -	$ -	$ -	$ 45,411	$ 45,411
Flooring	1	LS	$ -	$ -	$ -	$ 238,505	$ 238,505
Painting	1	LS	$ -	$ -	$ -	$ 178,673	$ 178,673
Signage	1	LS	$ -	$ -	$ -	$ 8,640	$ 8,640
Operable Partitions	1	LS	$ -	$ -	$ -	$ 32,000	$ 32,000
Specialties	1	LS	$ -	$ -	$ -	$ 35,250	$ 35,250
Lockers	1	LS	$ -	$ -	$ -	$ 14,164	$ 14,164
Equipment, Appliances, Racks & Shelving	1	LS	$ -	$ -	$ -	$ 238,415	$ 238,415
Window Treatments	1	LS	$ -	$ -	$ -	$ 7,729	$ 7,729
Pre-Engineered Metal Building	1	LS	$ -	$ -	$ -	$ 1,268,857	$ 1,268,857
Fire Sprinklers	1	LS	$ -	$ -	$ -	$ 94,551	$ 94,551
Plumbing	1	LS	$ -	$ -	$ -	$ 425,917	$ 425,917
HVAC	1	LS	$ -	$ -	$ -	$ 653,056	$ 653,056

DESCRIPTION	QTY	UOM	COST OF WORK				
			LABOR	EQUIPMENT	MATERIALS	SUBS	$ TOTALS
			$ AMOUNT	$ AMOUNT	$ AMOUNT	$ AMOUNT	
Electrical & Technology Systems	1	LS	$ -	$ -	$ -	$ 1,836,934	$ 1,836,934
Site earthwork, Utilities & Paving	1	LS	$ -	$ -	$ -	$ 3,826,890	$ 3,826,890
Fencing	1	LS	$ -	$ -	$ -	$ 346,592	$ 346,592
Landscaping & Irrigation	1	LS	$ -	$ -	$ -	$ 293,257	$ 293,257
	1	LS	$ -	$ -	$ -	$ -	$ -
ALLOWANCES							$ 1,910,311
PERMITTING	1	LS	$ -	$ -	$ -	$ 235,613	$ 235,613
INDEPENDENT TESTING	1	LS	$ -	$ -	$ -	$ 47,593	$ 47,593
POWER COMPANY	1	LS	$ -	$ -	$ -	$ 22,500	$ 22,500
FIRESTOPPING	1	LS	$ -	$ -	$ -	$ 55,000	$ 55,000
FURNITURE	1	LS	$ -	$ -	$ -	$ 650,000	$ 650,000
CONCRETE	1	LS	$ -	$ -	$ -	$ 100,000	$ 100,000
STRUCTURAL STEEL	1	LS	$ -	$ -	$ -	$ 100,000	$ 100,000
FINISH CARPENTRY	1	LS	$ -	$ -	$ -	$ 39,550	$ 39,550
WINDOWS	1	LS	$ -	$ -	$ -	$ 15,000	$ 15,000
DRYWALL	1	LS	$ -	$ -	$ -	$ 25,000	$ 25,000
FLOORING	1	LS	$ -	$ -	$ -	$ 35,000	$ 35,000
PAINTING	1	LS	$ -	$ -	$ -	$ 17,000	$ 17,000
OPERABLE PARTITIONS	1	LS	$ -	$ -	$ -	$ 10,000	$ 10,000
EQUIPMENT/APPLIANCES	1	LS	$ -	$ -	$ -	$ 36,950	$ 36,950
HVAC	1	LS	$ -	$ -	$ -	$ 59,605	$ 59,605
ELECTRICAL - DAS	1	LS	$ -	$ -	$ -	$ 77,000	$ 77,000
ELECTRICAL - TEMP POWER	1	LS	$ -	$ -	$ -	$ 100,000	$ 100,000
ELECTRICAL - FP&L Primary	1	LS	$ -	$ -	$ -	$ 250,000	$ 250,000
FIRE SPRINKLERS - Breezeway	1	LS	$ -	$ -	$ -	$ 34,500	$ 34,500
TOTAL DIRECT COST			**$ 121,792**	**$ 47,200**	**$ 248,145**	**$ 15,833,671**	**$ 16,250,809**

24.083

Wharton-Smith, Inc. CONSTRUCTION GROUP

RO-24-014.2

Public Utilities Field Operations Facility — 25-Nov-24
City of Port Orange
DIRECT COST WORKSHEET

LINE	Specification	DESCRIPTION	QTY	UNIT	Unit Price	TOTALS	COMMENTS	Amount carried in GMP Subcontractor 1	Subcontractor 2	Subcontractor 3	Subcontractor 4	Subcontractor 5	
		0											
1	010000	Independent Testing/Inspection											
2													
3								KSM Engr'g.	Detrick Engr'g.	UES	Submittal	Submittal	
4								23,560					
8		Bond	32,500	$	0.00	0	WSI Estimate	-	-	-	-	-	
9		Adjustment from WSI estimate to subcontractor	1	LS	-8,940.00	(8,940)	32,500	23,560	-	-	-	-	
10								0	0	0	0	0	
11								KSM Engr'g.	Detrick Engr'g.	UES	Submittal	Submittal	
12													
13		Subtotal - Independent Testing/Inspection				23,560							
14	015000	Cleaning Services											
15								Cleaning	Cleaning				
16								Daisy Fresh	Spartan	Subname	Subname	Subname	
17								15,300	19,150				
21		Bond	20,000	$	0.00	0	WSI Estimate	-	-	-	-	-	
22		Adjustment from WSI estimate to subcontractor	1	LS	-4,700.00	(4,700)	20,000	15,300	19,150	-	-	-	
23								0	0	0	0	0	
24								Daisy Fresh	Spartan	Subname	Subname	Subname	
25													
26		Subtotal - Cleaning Services				15,300							
27	030000	Cast-in-Place Concrete											
28												1,405,200.00	
29								BNG	Structural Construct	Frann Construction	VMG	Truant	
30								1,004,020	975,000	1,087,769	1,022,038	1,285,699	
31	031100	Concrete Forming											
32	032000	Concrete Reinforcing											
33	033000	Cast-in-Place Concrete						Subcontractor adds					
72	A12/S201	Dowel baskets at construction/sawed joints in vehicular traffic concrete slabs	1,370	ea	18.00	24,660		29,200	24,660		n		
73	07 26 00	Underslab Vapor Barrier - 15 mil	28,128	sf	1.00	28,128		2,960	y				
86		Install pipe bollards - surface mounted with bolts	20	ea	150.00	3,000		2,000	3,000				
87		**Scope Adjustments**				0							
88		S tons rebar & concrete washout pits, additional bollard/housekeeping pads	1	sum	100,000.00	100,000	Allowance	100,000	100,000				
89			0			0							
90			0			0							
91		Bond	1,032,386	$	0.02	20,648	WSI Estimate	28,455	16,540	21,755	20,441	25,714	-
92		Adjustment from WSI estimate to subcontractor	1	LS	113,600.95	113,601	1,053,034	1,166,635	1,119,200	1,109,524	1,042,479	1,311,413	-
93								0.025	0.015	0.02	0.02	0.02	0.02
94								BNG	Structural Construct	Frann Construction	VMG	Truant	0
95													
96		Subtotal - Cast-in-Place Concrete				1,166,635	BNG is a reputable firm with extensive Wharton Smith experience. They were the low responsive full scope bidder						
97	040000	Masonry											Precast ONLY
99								Stonewall	Pyramid	Frann Construction	Structural Constr.	Subname	Subname Cast-In-Stone, Inc.
100								358,588	378,000	411,555	544,000		10,593
138			0			0							
139		Bond	539,359	$	0.02	10,787	WSI Estimate	6,408	5,232	8,231	10,880	-	- 212
140		Adjustment from WSI estimate to subcontractor	1	LS	-130,360.19	(130,360)	550,146	364,996	383,232	419,786	554,880	-	- 10,805
141								0.01787	0.01384	0.02	0.02	0.02	0.02
142								Stonewall	Pyramid	Frann Construction	Structural Constr.	Subname	Subname Cast-In-Stone, Inc.
143													
144		Subtotal - Masonry				**419,786**	Bids came in lower then our budget, utilized mid level pricing while further scoping low bidders						
145	050000	Structural Steel											
146											No WSI experience		
147								Fabco	AWFD	ISI	FEMA	Subname	Subname
148								266,820	257,000	304,950	222,501		
149													
184		3x3x1/4" angle	1	sum	5,000.00	5,000		6,500	y	y			
193		**Scoping Adjustment**	0			0				y			
194		Overhead doors' channel jambs	0			0		y	5,000	y			
195		Overhead doors' slab edge embed angle	0			0		y	y	y			
196	J12, E15 / S201	Bituminous coating of steel columns base encased in concrete	11	ea	60.00	660		660	660	660			
197		Misc. angles, plates, studs & steel support beam for operable partition	1	sum		0	Adjustment	100,000	100,000	100,000			
198			0			0							
199		Bond	370,141	$	0.02	7,403	WSI Estimate	3,740	10,880	12,168	4,450	-	-
200		Adjustment from WSI estimate to subcontractor	1	LS	176.19	176	377,544	377,720	373,540	417,778	226,951	-	-
201								0.01	0.03	0.03	0.02	0.02	0.02
202								Fabco	AWFD	ISI	FEMA	Subname	Subname
203													
204		Subtotal - Structural Steel				377,720							
205	062000	Finish Carpentry											
206									**Late - received 11.15.2024**				
207								Cabinet Makers of Central Florida	D&R Cabinetry	**CBCI**_Cabinets Plus & Design	Subname	Subname	Subname
208								93,988	197,133	210,760			
235	097719	**Decorative Wall Panels - Allowance**	0			0							
236		DP-1 - Interlam Decorative Panel	190	sf	175.00	33,250	Allowance - Not priced by subs	33,250	33,250	33,250			
237		DP-2 - Acrylic Logo	36	sf	175.00	6,300	Allowance - Not priced by subs	6,300	6,300	6,300			
238		AWI Certification Requirements	1	ls	12,400.00	12,400	Not in Specs.	12,400	12,400	12,400			
239													
240													
241		Bond	206,485	$	0.02	4,130	WSI Estimate	2,919	4,982	5,254	-	-	
242		Adjustment from WSI estimate to subcontractor	1	LS	-61,757.94	(61,758)	210,615	148,857	254,065	267,964	-	-	
243								0.02	0.02	0.02	0.02	0.02	0.02
244								Cabinet Makers of Central Florida	D&R Cabinetry	CBCI_Cabinets Plus & Design	Subname	Subname	Subname
245													
246		Subtotal - Finish Carpentry				148,857							
247	072500	Air and Water Barriers											
248													
249								Central FL Waterproofing	Midstate Caulking	Subname	Subname	Subname	Subname
250								103,977	107,700				
257		Bond	46,366	$	0.00	0	WSI Estimate	3,119	3,016	-	-	-	-
258		Adjustment from WSI estimate to subcontractor	1	LS	60,730.63	60,731	46,366	107,096	110,716	-	-	-	-
259								0.03	0.028	0.02	0.02	0.02	0.02
260								Central FL Waterproofing	Midstate Caulking	Subname	Subname	Subname	Subname
261													
262		Subtotal - Air and Water Barriers				107,096							
263	072000	Insulation (Foam)											
264													
265								Tailored Foam of Florida	Southern Foam	Subname	Subname	Subname	Subname
266								39,954	43,430				
271		Core-Fill S01 - Add Alternate for all CMU	0			0			4,677	4,350			
272		Thermal Barrier on R30 at the roof of PEMB - ADD ALT	1		10,500.00	10,500			10,127	10,500			
273		Bond	109,073	$	0.00	0	WSI Estimate	-	-	-	-	-	-
274		Adjustment from WSI estimate to subcontractor	1	LS	-50,792.92	(50,793)	109,073	54,758	58,280	-	-	-	-
275								0	0	0	0	0.02	0.02
276								Tailored Foam of Florida	Southern Foam	Subname	Subname	Subname	Subname
277													
278		Subtotal - Insulation (Foam)				58,280	Thermal Barrier was a late add from Tailored foam. We want to go back to Southern and give them an opportunity to bid this add.						
279	074213	Metal Panels											
280										DECLINED LATE			
281								Quality Metals	N-RG Cladding	Subname	Subname	Subname	Subname
282								134,850					
288			0			0							
289		Bond	383,875	$	0.02	7,678	WSI Estimate	2,158	-	-	-	-	-
290		Adjustment from WSI estimate to subcontractor	1	LS	-254,544.90	(254,545)	391,553	137,008	-	-	-	-	-
291								0.016	0.02	0.02	0.02	0.02	0.02
292								Quality Metals	N-RG Cladding	Subname	Subname	Subname	Subname
293													
294		Subtotal - Metal Panels				137,008							
295	074000	Standing Seem Metal Roofing											
296													
297								P&A Roofing	Architectural Sheetmtl	S&S Roofing	Subname	Subname	Subname
298			0			0		542,000	630,150	867,000			
311			0			0							
312		Bond	625,966	$	0.02	12,519	WSI Estimate	10,840	9,452	17,340	-	-	-
313		Adjustment from WSI estimate to subcontractor	1	LS	-85,645.32	(85,645)	638,485	552,840	639,602	884,340	-	-	-
314								0.02	0.015	0.02	0.02	0.02	0.02
315								P&A Roofing	Architectural Sheetmtl	S&S Roofing	Subname	Subname	Subname
316													
317		Subtotal - Standing Seem Metal Roofing				552,840							
318	078413	Firestopping - ALLOWANCE						Allowance					
319		Fire Stop at Wall Penetrations	1	ls	5,000.00	5,000	G032 Typical Partition Details	5,000					
320	078100	Applied Firestopping	1	sum	50,000.00	50,000	ALLOWANCE	50,000					
321			0			0							
322		Bond	55,000	$	0.00	0	WSI Estimate	-	-	-	-		
323		Adjustment from WSI estimate to subcontractor	1	LS	0.00	0	55,000	55,000	-	-	-		
324								0	0.02	0.02	0.02		
325								Allowance	-	-	-		
326													
327		Subtotal - Firestopping - ALLOWANCE				55,000	Allowance						
328	081000	Doors, Frames & Hardware									*Material ONLY*		
329													
330								Builders FirstSource	DH Pace	Taylor Cotton Ridley	Unified Door UDH		
331								195,125	249,182	324,005	180,225		
353			0			0							
354		Bond	208,350	$	0.02	4,167	WSI Estimate	3,903	1,246	3,240	3,605	-	-
355		Adjustment from WSI estimate to subcontractor	1	LS	37,910.91	37,911	212,517	199,028	250,428	327,245	183,830	-	-
356								0.02	0.005	0.01	0.02	0.02	0.02
357								Builders FirstSource	DH Pace	Taylor Cotton Ridley	Unified Door UDH	0	0
358													
359		Subtotal - Doors, Frames & Hardware				250,428	Several bid above our budget. Carrying mid priced sub until final sub re-scoping is complete.						
360	083000	Specialty Doors											
361													
362								Ovrhd Doors-Daytona	Florida Door Solut.	Ovrhd Doors-Orlando	Subname	Subname	Subname
363								118,840	142,898	201,014			
370		Bond	140,080	$	0.02	2,802	WSI Estimate	2,377	2,858	4,020	-	-	-
371		Adjustment from WSI estimate to subcontractor	1	LS	-21,664.80	(21,665)	142,882	121,217	145,756	205,034	-	-	-
372								0.02	0.02	0.02	0.02	0.02	0.02
373								Ovrhd Doors-Daytona	Florida Door Solut.	Ovrhd Doors-Orlando	Subname	Subname	Subname
374													
375		Subtotal - Specialty Doors				121,217							
376	085000	Windows											
377													
378								Pitts Glass	Alerion	Diamond Arch. Glass	Subname	Subname	Subname
379								215,500	191,100	158,789			
404			0			0							
405		Allowance for Wind and Fire rated glazing & doors at Breezeway	0			0	Allowance	15,000	15,000	15,000			
406			0			0							
407		Bond	210,700	$	0.02	4,214	WSI Estimate	4,610	4,122	3,476	-	-	-
408		Adjustment from WSI estimate to subcontractor	1	LS	20,196.35	20,196	214,914	235,110	210,222	177,265	-	-	-
409								0.02	0.02	0.02	0.02	0.02	0.02
410								Pitts Glass	Alerion	Diamond Arch. Glass	Subname	Subname	Subname
411													
412		Subtotal - Windows				235,110	Several bids were below our budget. Carrying sub price closest to our budget until final sub re-scoping is complete.						
413	092000	Drywall											

		80-24-014.2												
		Public Utilities Field Operations Facility					25-Nov-24							
		City of Port Orange												
		DIRECT COST WORKSHEET												
								Amount carried in GMP						
LINE	Specification	DESCRIPTION	QTY	UNIT	Unit Price	TOTALS	COMMENTS	Subcontractor 1	Subcontractor 2	Subcontractor 3	Subcontractor 4	Subcontractor 5		
		0												
414														
415								Annapurna	A&W	Subname	Subname	Subname	Subname	
416								551,291	631,290					
447			0			0								
448		**Scoping Adjustments**	0			0								
449		In-Wall Blocking (at shelving, toilet accessories, TVs, etc.)	1	ls	10,000.00	10,000	Included by drywall subs	x	x					
450		Fascia framing/blocking AS52 detail)	1	sum	25,000.00	25,000	Allowance	25,000	25,000					
451			0			0								
452		Bond	611,415	$	0.02	12,228	WSI Estimate	11,526	11,485	-	-	-	-	
453		Adjustment from WSI estimate to subcontractor	1	LS	44,131.78	44,132	623,643	587,817	667,775	-	-	-	-	
454								0.02	0.0175	0.02	0.02	0.02	0.02	
455								Annapurna	A&W	Subname	Subname	Subname	Subname	
456														
457		Subtotal - Drywall				667,775	Carried A&W price as combo award with Acoustic Ceilings package. We are also awaiting a stucco price from this reputable subcontractor.							
458	092400	Stucco												
459								PER PLANS AND SPECS	PER PLANS AND SPECS	INCOMPLETE SCPOPE	NOT PER PLANS & SPECS			
460								Bradleigh Applications	Midstate Caulking	Reyes Stucco, Inc.	CAMM Plasters			
461								64,552	76,850	39,500	63,500			
466			0			0								
467		Bond	63,810	$	0.00	0	WSI Estimate	1,291	1,921	790	1,270	-	-	
468		Adjustment from WSI estimate to subcontractor	1	LS	2,033.04	2,033	63,810	65,843	78,771	40,290	64,770	-	-	
469								0.02	0.025	0.02	0.02	0.02	0.02	
470								Bradleigh Applications	Midstate Caulking	Reyes Stucco, Inc.	CAMM Plasters	0	0	
471														
472		Subtotal - Stucco				65,843	Carrying the low responsive, complete scope bidder							
473	095113	Acoustical Ceilings												
474														
475								A&W Construction	Acousti Engineering	Southern Acoustics	Annapurna	ACIS	Subname	
476						0		44,630	43,620	48,600	55,252	62,577		
480			0			0								
481		Bond	53,768	$	0.00	0	WSI Estimate	781	872	972	1,105	-	-	
482		Adjustment from WSI estimate to subcontractor	1	LS	-8,356.97	(8,357)	53,768	45,411	44,492	49,572	56,357	62,577	-	
483								0.0175	0.02	0.02	0.02		0.02	
484								A&W Construction	Acousti Engineering	Southern Acoustics	Annapurna	ACIS	Subname	
485														
486		Subtotal - Acoustical Ceilings				45,411	Carried A&W price as combo award with drywall package. We are also awaiting a stucco price from this reputable subcontractor.							
487	096000	Flooring												
488									Incomplete Scope	Inclomplete Scope	**Epoxy & Polished Conc. ONLY**	will bid		
489								AJ Flooring	Certified Finishes	PK Flooring	Percopo	Spectra		
490								152,549	77,498	67,573	88,026			
501		WD-1 - Wood Base 6" H	140	lf	5.50	770		x	770	770				
505	033543	**Concrete Floor Finishes**												
506		SC-1 - Integral Colored Polished Concrete	15,250	sf	5.00	76,250		76,250	76,250	76,250	x			
507		SC-2 - Seal Concrete	750	sf	3.70	2,775		2,775	2,775	2,775	x			
508														
509	096723	**Epoxy Floor**												
510		EPX-1 - Sikafloor Pour Epoxy Decodur-Quartz FX	420	sf	17.00	7,140		x	7,140	7,140	x			
511		EPX-1 - Sikafloor Pour Epoxy Decodur-Quartz FX Base Paint	93	lf	7.10	660		x	660	660	x			
512														
518		Moisture Mitigation Allowance	1	sum	35,000.00	35,000		35,000	35,000	35,000				
519														
520														
521														
522		Bond	178,181	$	0.02	3,564	WSI Estimate	6,931	4,002	3,803	1,761	-		
523		Adjustment from WSI estimate to subcontractor	1	LS	91,760.28	91,760	181,745	273,505	204,095	193,972	89,787	-		
524								0.026	0.02	0.02	0.02	0.02		
525								AJ Flooring	Certified Finishes	PK Flooring	Percopo	Spectra		
526											Epoxy & Polished Conc. ONLY			
527		Subtotal - Flooring				273,505	Only complete scope of all bidders, very reputable firm							
528	099000	Painting												
529											Will Bid	Will Bid		
530								Weston Coatings	Percopo	Dunkman Paint	Coastal Painting	Steve Harper	Subname	
531								173,900	117,208	155,564				
550		Incidental damage touch-up adjustments	0			0			17,000	17,000				
551			0			0								
552		Bond	176,696	$	0.02	3,534	WSI Estimate	4,773	2,684	3,643	-	-	-	
553		Adjustment from WSI estimate to subcontractor	1	LS	15,442.58	15,443	180,230	195,673	136,892	185,807	-	-	-	
554								0.025	0.02	0.02	0.02	0.02	0.02	
555								Weston Coatings	Percopo	Dunkman Paint	Coastal Painting	Steve Harper	Subname	
556														
557		Subtotal - Painting				195,673	Both Dunkman Painting & Percopo have been having some issues on recent projects. Weston Coastings is a highly reputable firm who we also do a lot of work with.							
558	101423	Signage												
559														
560								Vital Signs of Orlando	Env Graphics	Clear Vision Signs	Subname	Subname	Subname	
561								8,640	9,262	13,764				
571			0			0								
572		Bond	13,475	$	0.00	0	WSI Estimate	-	-	275	-	-	-	
573		Adjustment from WSI estimate to subcontractor	1	LS	-4,835.00	(4,835)	13,475	8,640	9,262	14,039	-	-	-	
574										0.02	0.02	0.02	0.02	
575								Vital Signs of Orlando	Env Graphics	Clear Vision Signs	Subname	Subname	Subname	
576														
577		Subtotal - Signage				8,640	Low responsive bid							
578	102239	Operable Partitions												
579														
580								Bell Architectural	Complete Partitions	SSE & Assoc.	Interior Specialties		Subname	
581								32,000						
584		Steel I-Beam support by Steel Sub	0			0			10,000					
585			0			0								
586		Bond	43,175	$	0.00	0	WSI Estimate	-	-	-	-	-	-	
587		Adjustment from WSI estimate to subcontractor	1	LS	-1,175.00	(1,175)	43,175	42,000	-	-	-	-	-	
588									0.02	0.02	0.02	0.02	0.02	
589								Bell Architectural	Complete Partitions	SSE & Assoc.	Interior Specialties	0	Subname	
590														
591		Subtotal - Operable Partitions				42,000	Low responsive bid							
592	102800	Specialties												
593											Declined	No response		
594								Architectural Bldg. Specialties	Mardale SDI	Streamline Comm.	Interior Specialties	C&S Supply		
595								31,750	49,090	50,433				
598	102600	Stainless Steel Wall Protection at Mop Sink	12	sf	50.00	600		600	600	600				
599			0			0								
626	107500	**Flagpoles**	0			0		x	x	x				
627		40'-0" Flag Pole	1	ea	9,500.00	9,500		x	x	x				
628		sleeve, concrete	1		1,000.00	1,000		1,000	1,000	1,000				
629			0			0								
630	100000	**Tackboards & Markerboards**	0			0			x	not incl				
631		E10: Glass Marker Boards 4' x 4'	10	ea	1,085.60	10,856		18,950	x	10,856				
632			0			0								
633	120000	**Exterior Furnishings**	0			0			x	not incl				
634		Bike Racks	1	ea	2,952.00	2,952		1,900	x	2,952				
635			0			0								
636			0			0								
637		Deduct for E10 glass marker boards	0			0		(18,950)	(10,856)	(10,856)				
638			0			0								
639			0			0								
640		Bond	59,808	$	0.00	0	WSI Estimate	-	-	-	-	-		
641		Adjustment from WSI estimate to subcontractor	1	LS	-24,558.00	(24,558)	59,808	35,250	42,309	56,685	-	-		
642											0.02	0.02		
643								Architectural Bldg. Specialties	Mardale SDI	Streamline Comm.	Interior Specialties	C&S Supply		
644														
645		Subtotal - Specialties				35,250	Low responsive bid							
646	105129	Lockers												
647										No Bid	No Bid	No response		
648								Patterson Pope	Mardale SDI	Southern Storage	Streamline Comm.	Bells Arch Specialties		
649								14,164	10,822					
652			0			0								
653			0			0								
654		Bond	7,600	$	0.00	0	WSI Estimate	-	-	-	-	-		
655		Adjustment from WSI estimate to subcontractor	1	LS	6,564.00	6,564	7,600	14,164	10,822	-	-	-		
656										0.02	0.02	0.02		
657								Patterson Pope	Mardale SDI	Southern Storage	Streamline Comm.	Bells Arch Specialties		
658														
659		Subtotal - Lockers				14,164	Carrying Patterson Popoe as combo award with Div 11 Equipment							
660	110000	Equipment, Appliances, Racks & Shelving								appliances only				
661								**Combo**			No response			
662								**Patterson Pope/Milcarsky**	Streamline	Milcarsky	Appliances of Orlando			
663								229,695	486,031	33,392				
664	119413	**Equipment/ Appliances/ Racks & Shelving**	0			0								
665		E1 - Washer - Speed Queen TC5003WN	2	ea	2,200.00	4,400		Milcarsky	x	x				
666		E2 - Dryer - Speed Queen DC5003WE	2	ea	2,200.00	4,400		Milcarsky	x	x				
667		E3.1 - 98" Monitor/TV & TV Bracket (Owner Provided per Spec. 274100 2.2-C)	2	ea	3,100.00	6,200	101 conf room - Allowance	6,200	6,200	6,200				
668		E3.2 - 65" Monitor/TV & TV Bracket	1	ea	2,500.00	2,500	Break Room 154 - Allowance	2,500	2,500	2,500				
669		E4 - Refrigerator - GE GNE25JSKSS	4	ea	2,100.00	8,400		Milcarsky	x	x				
670		E5.1 - Slide-In Electric Range - GE JS645SLSS	1	ea	1,200.00	1,200		Milcarsky		1,200	x			
671		E5.2 - Range Hood - Greenheck GSS w/ integral fire suppression	1	ea	3,000.00	0	Included in Div. 23 HVAC	Included in HVAC	Included in HVAC	Included in HVAC				
672		E6 - Microwave Oven - GE PES7227SLSS	3	ea	800.00	2,400		Milcarsky	x	x				
673		E7 - Copier / Printer - OFCI	1	ea	150.00	150	OFCI - Installation Only	150	150	150				
674		E8 - Countertop Printer - OFCI	2	ea	150.00	300	OFCI - Installation Only	300	300	300				
675		E10 - 4' x4' Glass Dry Erase Whiteboard - Claridge MGMI-44-NG	10	ea	2,100.00	21,000	moved to div 10 specifities	Patterson	x	21,000				
676		E11 - Ice Machine - Manitowoc Indigo ID-0452A	3	ea	8,000.00	24,000	Allowance	24,000	x	24,000				
677		E12 - Pallet Rack Shelving - Lyon Products SW0D06042096	73	ea	2,700.00	197,100		Patterson	x	197,100				
678		E13 - Workbench - Durham HWBF-TH-3696-95	5	ea	2,000.00	10,000		Patterson	x	10,000				
679		E14 - Hose Reel (Air Compressor)	4	ea		0	Included in Div. 22 Plumbing	Included in Plumbing	Included in Plumbing	Included in Plumbing		-		
680		E15 - Water Mater Bench Test Station - OFCI	1	ea	250.00	250	OFCI - Installation Only	250	250	250				
681		E16 - Flammable Liquid Safety Storage Cabinet - Eagle 4510	1	ea	5,000.00	5,000		Patterson	x	5,000				
682		E17 - Storage Cabinet - Equipto 1710	6	ea	1,000.00	6,000		Patterson	x	6,000				
683		E18 - Storage Shelving - Equipto 763-75	9	ea	1,500.00	13,500		Patterson	x	13,500				
684		E19 - Drill Press - Jet Tools JDP-20MF	1	ea	2,000.00	2,000	Allowance	2,000	2,000	2,000				
685		E20 - Bin and Drawer Shelving - Equipto 90SS	1	ea	3,000.00	3,000		Patterson	x	3,000				
686		E21 - 5" Visa - Reed Manufacturering SH100	3	ea	750.00	2,250	Allowance	2,250	2,250	2,250				
687		E22 - Hose Reel (Water)	3	ea		0	Included in Div. 22 Plumbing	Included in Plumbing	Included in Plumbing	Included in Plumbing		-		
688		E23 - Pipe Arm Rack - Jarke SC-10J	31	ea	3,700.00	114,700		Patterson	x	114,700				
689			0			0								
690			0			0								
691			0			0								
692			0			0								
693		Bond	428,750	$	0.02	8,575	WSI Estimate	8,020	15,026	8,827	-	-		
694		Adjustment from WSI estimate to subcontractor	1	LS	(161,959.57)	(161,960)	437,325	275,365	515,907	450,169	-	-		
695								0.03	0.03	0.02	0.02	0.02		
696								Patterson Pope/Milcarsky	Streamline	Milcarsky	Appliances of Orlando	0		
697														
698		Subtotal - Equipment, Appliances, Racks & Shelving				275,365	Combined award value with Patterson Pope, Milcarsky and potential direct WSI purchased items included as allowances.							
699	124000	Furniture ALLOWANCE					Client request - Not Specified							
700														
701								Subname	Subname	Subname	Subname			
702														

		80-24-014.2													
		Public Utilities Field Operations Facility					25-Nov-24								
		City of Port Orange													
		DIRECT COST WORKSHEET													
								Amount carried in GMP							
LINE	Specification	DESCRIPTION	QTY	UNIT	Unit Price	TOTALS	COMMENTS	Subcontractor 1	Subcontractor 2	Subcontractor 3	Subcontractor 4	Subcontractor 5			
		0													
703	124100	Furniture	1	sum	650,000.00	650,000	Not on Plans & Specs								
704			0	sum		0									
705			0			0									
706			0			0									
707		Bond	650,000	$	0.00	0	WSI Estimate	-	-	-	-				
708		Adjustment from WSI estimate to subcontractor	0	LS	-650,000.00	0	650,000	-	-	-	-				
709								0.02	0.02	0.02	0.02				
710								Subname	Subname	Subname	Subname				
711															
712		Subtotal - Furniture ALLOWANCE				650,000									
713	122413	Window Treatments													
714															
715								VBM Window Fashions	Sanfrod Verticals	VU (Verticals Unltd)	Streamline Comm				
716								7,729	No response	No Response	No Bid				
720			0			0									
721		Bond	8,272	$	0.00	0	WSI Estimate	-	-	-	-				
722		Adjustment from WSI estimate to subcontractor	1	LS	-543.39	(543)	8,272	7,729	-	-	-				
723								0	0	0	0				
724								VBM Window Fashions	Sanfrod Verticals	VU (Verticals Unltd)	Streamline Comm				
725															
726		Subtotal - Window Treatments				7,729	Low responsive bid								
727	130000	Pre-Engineered Metal Building								not responding	not responding				
728										contacted several times	contacted several times	No Response			
729								Brevard Constructors	Superior Metal Bldgs.	Mark Construction	Trident	Tirmark Bldg. Systems			
730								1,231,900							
736			0			0									
737			0			0									
738		Bond	1,436,195	$	0.02	28,724	WSI Estimate	36,957	-	-	-	-			
739		Adjustment from WSI estimate to subcontractor	1	LS	-196,061.90	(196,062)	1,464,919	1,268,857	-	-	-	-			
740								0.03	0.02	0.02	0.02	0.02			
741								Brevard Constructors	Superior Metal Bldgs.	Mark Construction	Trident	Tirmark Bldg. Systems			
742											not responding	not responding			
743							Although we only received 1 bid it is from a very								
		Subtotal - Pre-Engineered Metal Building				1,268,857	reputable sub, and was fully scoped								
744	210000	Fire Sprinklers													
745															
746								Titan Fire Protection	Summit Fire & Sec.	Cox Fire Protection	Southern Fire				
747								92,925	109,876	147,252					
758			0			0									
759		Bond	143,864	$	0.02	2,877	WSI Estimate	1,626	2,198	3,486	-	-			
760		Adjustment from WSI estimate to subcontractor	1	LS	-52,189.58	(52,190)	146,741	94,551	112,074	150,738	-	-			
761								0.0175	0.02	0	0.02	0.02			
762								Titan Fire Protection	Summit Fire & Sec.	Cox Fire Protection	Southern Fire	0			
763		Voluntary Alternates													
764		Covered Storage Area - Dry System	4,465	SF				17,000	42,192	25,586					
765		Subtotal - Fire Sprinklers				94,551	Low responsive bid								
766	220000	Plumbing													
767															
768								Heichel Plumbing	G&W Plumbing	Energy Air	Cox Plumbing				
769								288,000	292,864	421,700	425,994				
832			0			0									
833		Bond	540,855	$	0.02	10,817	WSI Estimate	5,760	5,857	4,217	8,520	-			
834		Adjustment from WSI estimate to subcontractor	1	LS	-125,754.64	(125,755)	551,672	293,760	298,721	425,917	434,514	-			
835								0.02	0.02	0.01	0.02	0.02			
836								Heichel Plumbing	G&W Plumbing	Energy Air	Cox Plumbing	0			
837															
838							Received 2 extremly low bids and 2 closer to our budget. Carrying the Energy Air price until low bidders are fully vetted. Also Energy Air was the low responsive HVAc bid and could be given a combo award.								
		Subtotal - Plumbing				425,917									
839	230000	HVAC													
840															
841								Energy Air	Ferran Services	GA-Ter Air					
842								646,000	698,984	728,700					
881		Range Hood - Greenheck GRR5 Fire Ready	1	ea	9,605.00	9,605	Allowance	9,605	9,605	9,605					
914		**Scope Adjustments**	0			0									
915		Temp Air, humidifier, extended warranties	0			0		50,000	50,000	50,000					
916			0			0									
917			0			0									
918		Bond	809,275	$	0.02	16,186	WSI Estimate	7,056	15,172	15,766	-	-			
919		Adjustment from WSI estimate to subcontractor	1	LS	-112,799.60	(112,800)	825,461	712,661	773,761	804,071	-	-			
920								0.01	0.02	0.02	0.02	0.02			
921								Energy Air	Ferran Services	GA-Ter Air	0	0			
926		Subtotal - HVAC				712,661	Low responsive bid								
927	260000	Electrical & Technology Systems													
928								Rev 2							
929								Carter Electric	Giles Electric	Tri City Electric	Morton Electric	Boys Electrical			
930								1,809,128	1,978,000	Undedicided	Declined	Declined			
1,086		**Distributed Antenna System (Life Safety)**	24,033	sf	2.00	48,066		Testing Only (see add)	Budget and Survey						
1,087									Full DAS System						
			0			0	Allowance - Will not know actual cost of DAS until test	77,000							
1,091		**Scope Adjustments**	0			0	Allowance	100,000	100,000						
1,092		Temp Power, Lighting & Security	1	sum		0		x	x						
1,093		FP&L tie-ins, conduit, coordination	1	sum		0		x	x						
1,094			0			0									
1,095			0			0									
1,096			0			0									
1,097		Bond	2,087,209	$	0.02	41,744	WSI Estimate	27,806	24,936	-	-				
1,098		Adjustment from WSI estimate to subcontractor	1	LS	-115,019.39	(115,019)	2,128,953	2,013,934	2,102,936	-	-				
1,099								0.014	0.012	0.02	0.02				
1,100								Carter Electric	Giles Electric	Tri City Electric	Morton Electric				
1,101															
1,102		Subtotal - Electrical & Technology Systems				2,013,934	Low responsive bid								
1,103	310000	Site earthwork, Utilities & Paving						Local/reputable/scoped	Not Full Scope-No Bid Form	Cannot take this & Edgwater	No Bid Form				
1,104								R. 1	Poor SWPPP @ WIR2 Pk						
1,105								Hazen Construction	C&L Development	Tomoka Constr.	GPS Civil	Harty Tractor	Drewry Site	Wayne Automatic	
1,106								2,206,739	2,736,323	2,811,229	2,986,431	3,770,335	2,155,861	4,294,000	
1,112		Density Test	1	ls	10,000.00	10,000		10,000	10,000	10,000	10,000	x		x	
1,121		Demo Existing Fence	813	lf	5.00	4,065		4,065	x	x	4,065	x		x	
1,123		Remove Existing Inlet	2	ea	2,500.00	5,000		5,000	x	x	5,000	x		x	
1,124		Remove Existing 36" Pipe	35	lf	50.00	1,750		1,750	1,750	x	1,750	x		x	
1,143		Environmental Curb	200	lf	35.00	7,000		x	7,000	x	x	x		x	
1,144		Valley Gutter	84	lf	25.00	2,100		x	2,100	x	x	x		x	
1,145		**Misc Parking Items**	0			0		x	Excluded ADA Ramps	x	x	x		x	
1,146		ADA Warning Mat (truncated domes)	2	ea	500.00	1,000		x	1,000	x	x	x		x	
1,147		Curb Stops	17	ea	250.00	4,250		4,250	x	x	4,250	x		x	
1,154		**Signage**				0		x	Excluded Signage	x	x	x		x	
1,155		Stop Signs	2	ea	500.00	1,000		x	1,000	x	x	x		x	
1,156		Do Not Enter Signs	2	ea	500.00	1,000		x	1,000	x	x	x		x	
1,161		8" HDPE	11	lf	31.00	326		x	326	x		x		x	
1,177		6" PVC	260	lf	35.00	9,100		9,100	9,100	x	x	x		x	
1,179		Oil Water Separator	1	ea	45,000.00	45,000		x	90,000	90,000	90,000	x		carried 595,220	
1,187		2" Polyethylene Water Main	630	lf	15.00	9,450		9,450	9,450	x	x	x		x	
1,193		2" RPZ & Meter Assembly	1	ea	10,000.00	10,000		x	10,000	x	x	x		x	
1,201		8" DDCV Backflow Preventor w FDC	1	ea	15,000.00	15,000		x	x	x	15,000	x		x	
1,202		8"x6" Reducer	1	ea	200.00	200		x	x	x	200	x		x	
1,205		Temporary Tap for Bac-T Testing	1	ea	1,500.00	1,500		1,500	x	x	1,500	x		x	
1,206		Test/Final Potable Water Main	2,092	lf	10.00	20,917		20,917	x	x	x	x		x	
1,207		Dewatering	1	ls	10,000.00	10,000		10,000	x	x	x	x		x	
1,213		TV Testing - If Required	1	ls	2,500.00	2,500		2,500	2,500	x	x	x		x	
1,214		GPR Locates	1	ls	2,500.00	2,500		2,500	2,500	x	x	x		x	
1,215		Offsite Restoration	1	ls	10,000.00	10,000		10,000	10,000	x	10,000	x		x	
1,216		**Seed & Sod**	0			0				x	No Seeding or Sod bid	x		x	
1,217		PNA - Argentine Bahia Grass (Pond Slopes)	6,111	SY	13.50	82,500		x	82,500	x	82,500	x		x	
1,218			0			0								x	
1,219		**Scoping Adjustments**	0			0				x	x	x		x	
1,220		Allowance: Unsuitable soils removal/backfill/disposal	0			0		150,000	150,000	150,000	150,000		150,000		
1,221			0			0		32,350 CY export		x	x				
1,222		Alt. 1: Exports transported up to 7 miles	0			0		Alt #1 $258,800	Alt. not priced	x	Alt. not priced	Alt #1 $103,683	Alt #1 $270,000	Alt. not priced	
1,223		Alt. 2: Exports loaded at this site to trucks owned by others	0			0		Alt #2 $80,800	Alt. not priced	x	Alt. not priced	Alt #2 $30,923	Alt #2 $ 90,000	Alt. not priced	
1,224			0			0									
1,225			0			0									
1,226		Bond	4,280,677	$	0.02	85,614	WSI Estimate	29,373	118,809	61,225	66,669	56,555	46,117	62,435	
1,227		Adjustment from WSI estimate to subcontractor	1	LS	-539,400.74	(539,401)	4,366,291	2,477,144	3,245,357	3,122,454	3,400,105	3,826,890	2,351,978	4,224,755	
1,228								0.012	0.038	0.02	0.02	0.015	0.02	0.015	
1,229								Hazen Construction	C&L Development	Tomoka Constr.	GPS Civil	Harty Tractor	Drewry Site	Wayne Automatic	
1,230									Not Full Scope-No Bid Form	Cannot take this & Edgwater	No Bid Form	-			
1,231							All bids were below our budget. Need to rescope the low bidders to ensure difference in chg/costs. Carrying the higher reputal sub price until scoping & buy-out is								
		Subtotal - Site earthwork, Utilities & Paving				3,826,890	complete.								
1,232	323113	Fencing													
1,233								BOD	generic vinyl, not spec.	generic vinyl, not spec.	Not Full scope/spec				
1,234								All-Rite Fence Services	AAA Fencing	Sterling Enterprises	Aabott Fence				
1,235								339,796	204,300	179,720	165,743				
1,240		Powered Fence Gate 60' - Lift Master SLS8S Sliding	1	ea	70,000.00	70,000		60' cant.	(2) 30' cant.	(2) 30' cant.	60' Pipe Frame w/PVC picket				
1,241		Powered Fence Gate 35' - Lift Master CSL24UL	1	ea	35,000.00	35,000		x	x	x	30' white PVC				
1,242		Powered Fence Gate 30' - Lift Master CSL24UL	1	ea	27,063.48	27,063		x	x	x	30' white PVC				
1,243		Double Dumpster Gate	1	ea	20,000.00	20,000		x	x	x	20,000				
1,244		Street sweeper ramp handrail	1	ls	6,500.00	6,500		Incl. sweeper ramp handrail	6,500	6,500	6,500				
1,245			0			0									
1,246		Bond	341,243	$	0.02	6,825	WSI Estimate	6,796	4,216	3,724	3,845	-			
1,247		Adjustment from WSI estimate to subcontractor	1	LS	-1,476.43	(1,476)	348,068	346,592	215,016	189,944	196,088	-			
1,248								0.02	0.02	0.02	0.02	0.02			
1,249								All-Rite Fence Services	AAA Fencing	Sterling Enterprises	Aabott Fence	0			
1,250								BOD	generic vinyl, not spec.	generic vinyl, not spec.	Not Full scope/spec				
1,251		Subtotal - Fencing				346,592	Only Full scope low responsive bidder carried.								
1,252	329300	Landscaping & Irrigation						Lk. Monroe-Due for one	Palm Bay	Kissimmee	Daytona-won 2 recent jobs				
1,253															
1,254								GSLA	LSP	Sterling Silver Scape	Yellowstone Landscape				
1,255								236,104	236,273	265,972	205,000				
1,297			0			0									
1,298		Temporary Irrigation and maintenance for plant/sod establishment	1		50,000.00	50,000		50,000	50,000	50,000	50,000				
1,299			0			0									
1,300			0			0									
1,301			0			0									
1,302			0			0									
1,303		Bond	500,857	$	0.02	10,017	WSI Estimate	7,153	7,157	11,059	5,100				
1,304		Adjustment from WSI estimate to subcontractor	1	LS	-217,617.68	(217,618)	510,874	293,257	293,430	327,031	260,100				
1,305								0.025	0.025	0.035	0.02				
1,306								GSLA	LSP	Sterling Silver Scape	Yellowstone Landscape				
1,307															
1,308		Subtotal - Landscaping & Irrigation				293,257	Low responsive bid								
1,309		**TOTAL DIRECT COST**				**14,932,849**									

Allowances carried in this GMP

Div. - Trade	Description	Value
Div 01 - General Requirements	Building Permit Allowance	235,613
Div 01 - General Requirements	Independent Materials Testing Allowance	47,593
Div 01 - General Requirements	Electrical Power Allowance - Cost associated with initial Power Start up Costs	22,500
03 - Concrete	5 tons rebar & concrete washout pits, additional bollard/housekeeping pads	100,000
05 - Structural Steel	Misc. angles, plates, studs & steel support beam for operable partition	100,000
06 - Finish Carpentry	Decorative Wall Panels (DP-1 Interlam, DP-2 Acrylic Logo)	39,550
07 - Firestopping	A typical partition detail on sheet G032 references sprayed fireproofing. Although we do not anticipate sprayed fireproofing on this project we have carried an allowance for this until we receive engineering clarification.	55,000
08 - Windows	Wind and Fire rated glazing & doors at Breezeway. Manufacturer currently can get either wind or fire rated glazing not both. Architectural door type changes may be required	15,000
09 - Drywall	Additional in-wall blocking as required and pressure treated nailers at fascias per fascia details on A552	25,000
09 - Flooring	Typical moisture mitigation re-work	35,000
09 - Painting	Incidental damage and retouch final painting	17,000
10 - Operable Partitions	Steel I-Beam supports and kickers not carried in steel bids	10,000
11 - Equipment/Appliances	Allowance for hard to subcontract equipment items: E3 TV Monitors, E11 Ice Machine, E19 Drill Press, E21 5" bench vise	36,950
12 - Furnishings	Owner requested allowance for all interior administrative furniture	650,000
21 - Fire Suppression	Allowance to cover costs of breezeway and outdoor storage area pre-action sprinkler coverage.	34,500
23 - HVAC	Kitchen Appliance Hood ref. in FFE is best furnished and installed by HVAC subcontractor. No specification or model # - carried a furnish & install allowance	9,605
23 - HVAC	Temporary A/C & Dehumidification to protect finishes before AC delivery and extended equipment warranties	50,000
26 - Electrical	The extent of the Distributed Antenna System will not be know until a test/survey is conducted in the building. An allowance needs to be carried for full system furnish/install scope.	77,000
26 - Electrical	Allowance for temporary power, lighting and security, as well as FPL Tie-ins/conduit/coordination	100,000
26 - Electrical	Permanent Power and FP&L charges for engineering & service entrance power/switchgear.	250,000
	Total Allowances carried in GMP	**1,910,311**

City of Port Orange

Date: 12/02/2024

Project: City of Port Orange Utility Operations Building

Phase: GMP

Risk Identification			Risk Assessment			Risk Control Measures		Risk Allocation				Risk Impact & Control Measure Calculations
ID No.	Risk Issue	Risk Type	Potential Cost Impact	Potential Schedule Impact (WDs)	Probability (0-100%)	Risk Mitigation Strategy	Control Measures in GMP Scope	Weighted Cost Exposure (Prob x PCI)	Cost Offset By Allowance	Cost Offset By Contingency	Unmitigated Cost Exposure	
1	Weather Delays	Adverse Weather	$100,000	15	100%	Provide for reasonable float in schedule, create emergency response plan.	Provide allowance or contingency as necessary	$100,000	$0	$100,000	$0	
2	Building / Subcontractor Permit Review Delays	Permitting	$30,000	15	50%	Presubmittal meeting with the City of Port Orange Building Department.	Provide allowance or contingency as necessary	$15,000	$0	$15,000	$0	
3	Delineated Engineering Review for Building Permit Issuance	Permitting	$20,000	20	75%	Presubmittal meeting with the City of Port Orange Building Department.	Provide allowance or contingency as necessary	$15,000	$0	$15,000	$0	
4	Design Changes	Design	$75,000	20	50%	Constant communication and coordination with SSA.	Provide allowance or contingency as necessary	$37,500	$0	$37,500	$0	
5	Procurement / Delivery Delays	Procurement	$75,000	20	25%	Early procurement on key equipment and materials. Includes submittal approval delays.	Provide allowance or contingency as necessary	$18,750	$0	$18,750	$0	
6	Construction Delays / Subcontractor Performance	Construction Schedule	$50,000	20	25%	Maintain schedule with good management tools and processes, add additional resources if needed.	Provide allowance or contingency as necessary	$12,500	$0	$12,500	$0	
7	Critical Path Delays - CoPO Evaluation and Decision Making	Construction Schedule	$50,000	20	5%	Timely decision making.	Provide allowance or contingency as necessary	$2,500	$0	$2,500	$0	
8	Critical Path Delays - Contract Amendments	Construction Schedule	$25,000	20	5%	Timely decision making.	Provide allowance or contingency as necessary	$1,250	$0	$1,250	$0	
9	Unavoidable Supply Chain Issues	Resource Constraints	$75,000	30	25%	Offset potential supply chain issues with contingency.	Provide allowance or contingency as necessary	$18,750	$0	$18,750	$0	
10	System Performance Issues	Design	$15,000	10	5%	3rd party review of systems and equipment.	Provide allowance or contingency as necessary	$750	$0	$750	$0	
11	Unanticipated Design Requirements After GMP	Design	$15,000	5	5%	Constant communication and coordination with SSA.	Provide allowance or contingency as necessary	$750	$0	$750	$0	
12	Latent Defects (Mis fabrication) of Materials/Equipment	Quality	$10,000	5	25%	Strong terms and conditions in purchase orders and subcontracts. Inspect fabrications in shop (prior to delivery) where possible.	Provide allowance or contingency as necessary	$2,500	$0	$2,500	$0	
13	Unforeseen Utility Conflicts / Issues	Unknown Site Conditions	$20,000	5	10%	Perform Subsurface Utility Exploration (SUE) where possible. GPR	Provide allowance or contingency as necessary	$2,000	$0	$2,000	$0	
14	Integration into Existing Network	Owner Operational Impacts	$50,000	5	10%	Early coordination with City's IT and technology infrastructure vendors and team members.	Provide allowance or contingency as necessary	$5,000	$0	$5,000	$0	
15	Partial Substantial Acceptance and Owner Operation	Construction Schedule	$25,000	5	15%	Early discussion of owner acceptance terms and conditions.	Provide allowance or contingency as necessary	$3,750	$0	$3,750	$0	
16	Unforeseen Startup Restrictions	Owner Operational Impacts	$10,000	5	5%	Early discussion with mechanical equipment suppliers	Provide allowance or contingency as necessary	$500	$0	$500	$0	
17	Coordination of unidentified owner furnished equipment, furniture, and / or fixtures	Other Project Stakeholders	$15,000	10	10%	Early coordination with CoPO IT department, maintenance team, and end users.	Provide allowance or contingency as necessary	$1,500	$0	$1,500	$0	
18	Access issues due to neighboring apartment complex during construction hours	Site Safety	$7,500	10	75%	Discuss with City of Port Orange to discuss impact, drive route patterns and working hours.	Provide allowance or contingency as necessary	$5,625	$0	$5,625	$0	
19	Unsuitable Soils Encountered	Unknown Site Conditions	$50,000	20	25%	Additional boring samples at the building footprint.	Provide allowance or contingency as necessary	$12,500	$0	$12,500	$0	
20	Unseasonable High Water Table	Unknown Site Conditions	$20,000	10	33%	Additional boring samples at the building footprint prior to the start of construction.	Provide allowance or contingency as necessary	$6,600	$0	$6,600	$0	
21	Endangered Animal Findings and Relocation	Environmental Impacts	$5,000	30	50%	Site investigation prior to the start of construction.	Provide allowance or contingency as necessary	$2,500	$0	$2,500	$0	
22	Tree Preservation and / or Relocation	Environmental Impacts	$5,000	30	150%	Arborist consultation of the existing trees.	Provide allowance or contingency as necessary	$7,500	$0	$7,500	$0	
23	Federal Aviation Administration Review of Crane Requirements (Project within 3 mile radius of airport)	Regulatory Requirements	$15,000	30	100%	Submit FAA notification requirement 45 days prior to the start of construction.	Provide allowance or contingency as necessary	$15,000	$0	$15,000	$0	
24	Delayed ODP Purchase Orders Issuance	Procurement	$120,000	20	10%	Timely issuance of purchase orders from the CoPO	Provide allowance or contingency as necessary	$12,000	$0	$12,000	$0	
25	Critical Material Theft	Site Safety	$10,000	30	10%	Upgrade site security options such as 24/7 camera monitoring, public safety patrol, etc.	Provide allowance or contingency as necessary	$1,000	$0	$1,000	$0	

City of Port Orange

Date: 12/02/2024

Project: City of Port Orange Utility Operations Building

Phase: GMP

Risk Identification			Risk Assessment			Risk Control Measures		Risk Allocation				Risk Impact & Control Measure Calculations
ID No.	Risk Issue	Risk Type	Potential Cost Impact	Potential Schedule Impact (WDs)	Probability (0-100%)	Risk Mitigation Strategy	Control Measures in GMP Scope	Weighted Cost Exposure (Prob x PCI)	Cost Offset By Allowance	Cost Offset By Contingency	Unmitigated Cost Exposure	
26	Unforeseen Procument Impacts/Material Tariffs	Procurement	$50,000	15	25%	Identify and monitor issues relating to material impacts and or tariff situations	Provide allowance or contingency as necessary	$12,500	$0	$12,500	$0	
27	Construction schedule acceleration	Construction Schedule	$100,000	0	50%	Identification of expedited material availability and options.	Provide allowance or contingency as necessary	$50,000	$0	$50,000	$0	
28	Natural Gas line for Generator if requested by Owner	Construction Schedule	$40,000	20	50%	Identification of natural gas location/availability and options	Provide allowance or contingency as necessary	$20,000	$0	$20,000	$0	
Div 01 - General Requirements	Building Permit Allowance	Allowance	$235,613	30	100%	Allowance for cost associated with permits for the project including but not limited to Building, Site, Fence, etc.	Provide allowance or contingency as necessary	$235,613	$235,613	$0	$0	
Div 01 - General Requirements	Independent Testing Allowance	Allowance	$47,593	0	100%	Allowance for cost associated with materials testing	Provide allowance or contingency as necessary	$47,593	$47,593	$0	$0	
Div 01 - General Requirements	Electrical Power Allowance	Allowance	$22,500	0	100%	Allowance for cost associated with Temp to Permanent Power and initial start up	Provide allowance or contingency as necessary	$22,500	$22,500	$0	$0	
Div 01 - Div 32 / Undetermined	Allowance for unforeseen issues and items not yet identified	Allowance	$187,738	0	100%	Allowance carried to cover issues and items not yet identified in the project	Provide allowance or contingency as necessary	$187,738	$0	$187,738	$0	
Div 03 - Concrete	Allowanace for additional concrete and reinforcing needs	Allowance	$100,000	0	100%	Allowance carried for additional 5 tons rebar and concrete washout pits, additional bollards/housekeeping pads	Provide allowance or contingency as necessary	$100,000	$100,000	$0	$0	
Div 05 - Structural Steel	Allowance for miscellaneous steel	Allowance	$100,000	0	100%	Allowance carried for miscellaneous angles, plates, studs and steel support beam for operable partition	Provide allowance or contingency as necessary	$100,000	$100,000	$0	$0	
Div 06 - Finish Carpentry	Allowance for Decorative Wall Panels	Allowance	$39,550	0	100%	Allowance carried for Decorative Wall Panels: (DP-1 Interlam, DP-2 Acrylic Logo)	Provide allowance or contingency as necessary	$39,550	$39,550	$0	$0	
Div 07 - Firestopping	Allowance for Firestopping	Allowance	$55,000	0	100%	Allowance carried for Firestopping: A typical partition detail on Sheet G032 references Applied Fireproofing. Although we do not anticipate sprayed fireproofing on this project we have carried and allowance for this until we receive engineering clarification	Provide allowance or contingency as necessary	$55,000	$55,000	$0	$0	
Div 08 - Windows	Allowance for rated glazing at doors and breezeway	Allowance	$15,000	0	100%	Allowance carried for Wind and Fire rated glazing at doors and breezeway. Manufacturer currently can get either wind OR fire rated glazing, but not both. Architectural door type changes may be required.	Provide allowance or contingency as necessary	$15,000	$15,000	$0	$0	
Div 09 - Drywall	Allowance for additional in-wall blocking	Allowance	$25,000	0	100%	Allowance carried for additional in-wall blocking as required and pressure treated nailers at fascias per detail on A552	Provide allowance or contingency as necessary	$25,000	$25,000	$0	$0	
Div 09 - Flooring	Allowance for moisture mitigation for floor installation	Allowance	$35,000	0	100%	Allowance carried for moisture mitigation if required for floor installation	Provide allowance or contingency as necessary	$35,000	$35,000	$0	$0	
Div 09 - Painting	Allowance carried incidental damage and touchup painting as required.	Allowance	$17,000	0	100%	Allowance carried incidental damage and touchup painting as required.	Provide allowance or contingency as necessary	$17,000	$17,000	$0	$0	
Div 10 - Operable Partitions	Allowance for Steel I-Beam supports and kickers	Allowance	$10,000	0	100%	Steel I-Beam supports and kickers not carried in steel costs	Provide allowance or contingency as necessary	$10,000	$10,000	$0	$0	
Div 11 - Equipment/Appliances	Allowance for misc. equipment items	Allowance	$39,950	0	100%	Allowance for hard to subcontract equipment items: E3 TV Monitors, E11 Ice Machine, E19 Drill Press, and E21 5: bench vice	Provide allowance or contingency as necessary	$36,950	$36,950	$0	$0	
Div 12 - Furnishings	Allowance for interior administrative furniture - FFE	Allowance	$650,000	0	100%	Allowance carried Owner requested interior administrative furniture - Currently no details/specifics have been provided in the Contract Documents	Provide allowance or contingency as necessary	$650,000	$650,000	$0	$0	
Div 21 - Fire Suppression	Allowance for Fire Suppression at Breezeway	Allowance	$34,500	0	100%	Allowance carried to cover costs of breezeway and outdoor storage area pre-action sprinkler coverage if required.	Provide allowance or contingency as necessary	$34,500	$34,500	$0	$0	
Div 23 - HVAC	Allowance for Kitchen Appliance Hood	Allowance	$9,605	0	100%	Allowance carried for Kitchen Appliance Hood referenced in FFE. This is best furnished and installed by HVAC subcontractor. No specification or Model # was noted. Carried a furnish and install allowance.	Provide allowance or contingency as necessary	$9,605	$9,605	$0	$0	
Div 23 - HVAC	Allowance for Temp A/C and Dehumidification	Allowance	$50,000	0	100%	Allowance for Temporary A/C and Dehumidification to protect finishes before AC delivery and extend equipment warranties	Provide allowance or contingency as necessary	$50,000	$50,000	$0	$0	
Div 26 - Electrical	Allowance for DAS System	Allowance	$77,000	0	100%	Allowance for DAS System. The extent of the Distributed Antenna System will not be known until a test/survey is conducted in the building. An allowance needs to be carried for a full system furnish/install scope.	Provide allowance or contingency as necessary	$77,000	$77,000	$0	$0	
Div 26 - Electrical	Allowance for temporary power	Allowance	$100,000	0	100%	Allowance for temporary power, lighting and security, as well as FPL Tie-ins/conduit/coordination	Provide allowance or contingency as necessary	$100,000	$100,000	$0	$0	

City of Port Orange

Date: 12/02/2024

Project: City of Port Orange Utility Operations Building

Phase: GMP

Risk Identification			Risk Assessment			Risk Control Measures		Risk Allocation				Risk Impact & Control Measure Calculations
ID No.	Risk Issue	Risk Type	Potential Cost Impact	Potential Schedule Impact (WDs)	Probability (0-100%)	Risk Mitigation Strategy	Control Measures in GMP Scope	Weighted Cost Exposure (Prob x PCI)	Cost Offset By Allowance	Cost Offset By Contingency	Unmitigated Cost Exposure	
Div 26 - Electrical	Allowance for Primary power	Allowance	$250,000	0	100%	Allowance for Primary power and FPL Tie-ins/conduit/coordination	Provide allowance or contingency as necessary	$250,000	$250,000	$0	$0	
			$3,183,549	**475**			**$0**	**$2,481,274**	**$1,910,311**	**$570,963**	**$0**	

ANTICIPATED ODP LISTING - Major Purchases

Div. - Trade	Description
05 - Structural Steel	Bulk Steel Purchase
07-Standing Seem Metal Roof	
12 - Furnishings	Owner Furnishings (Desks, Tables, Chairs, Bookcases, etc.)
13 - Pre-Engineered Metal Building	Complete building , and covered parking structures
22 - Plumbing	Fixture Supplier Bulk Purchase (Sinks, Lavs, Water Heater)
23 - HVAC	HVAC Supplier Equipment (AHUs, Split Systems, VAVs)
23 - HVAC	Insulation, Controls, Ductwork
26 - Electrical	Generator & Associated Transfer Switches
26 - Electrical	Large Panels, Breakers & Switchgear Supplier Purchase
26 - Electrical	Bulk Lighting Package

Wharton–Smith, Inc.
CONSTRUCTION GROUP

JOB NAME: PUBLIC UTILITIES FIELD OPERATIONS FACILITY

ESTIMATE #: 24.126.6

GENERAL CONDITIONS

DESCRIPTION	QTY	UNIT	MH/ UNIT	BASE RATE	LABOR U/P	LABOR TOTAL MH	LABOR $ AMOUNT	LABOR HR/UNIT	EQUIPMENT RATE	EQUIPMENT $ AMOUNT	MATERIAL U/P	MATERIAL $ AMOUNT	MATERIAL $ AMOUNT	SUBCONTRACTS U/P	SUBCONTRACTS $ AMOUNT	$ TOTALS
PROJECT MANAGEMENT TEAM													W/ 7% TAX			
FIELD STAFF																
General Superintendent	69	WK	4	$167.00	$668.00	278	$46,386			$0.00		$0	$0		$0	**$46,386**
Senior Superintendent	69	WK	0	$156.00	$0.00	0	$0			$0.00		$0	$0		$0	**$0**
Superintendent	69	WK	40	$134.00	$5,360.00	2,778	$372,198			$0.00		$0	$0		$0	**$372,198**
Assistant Superintendent	43	WK	40	$120.00	$4,800.00	1,736	$208,320			$0.00		$0	$0		$0	**$208,320**
Field Engineer	30	WK	40	$92.00	$3,680.00	1,215	$111,798			$0.00		$0	$0		$0	**$111,798**
Craft Foreman	69	WK	0	$92.00	$0.00	0	$0			$0.00		$0	$0		$0	**$0**
OFFICE STAFF																
Project Manager	69	WK	36	$134.00	$4,824.00	2,500	$334,979			$0.00		$0	$0		$0	**$334,979**
Assistant Project Manager	69	WK	40	$126.00	$5,040.00	2,778	$349,978			$0.00		$0	$0		$0	**$349,978**
BIM Engineer	69	WK	4	$115.00	$460.00	278	$31,942			$0.00		$0	$0		$0	**$31,942**
Project Engineer	74	WK	40	$87.00	$3,480.00	2,978	$259,051			$0.00		$0	$0		$0	**$259,051**
Project Engineer-Intern	69	WK	16	$52.00	$832.00	1,111	$57,774			$0.00		$0	$0		$0	**$57,774**
Operations Coordinator	69	WK	8	$85.00	$680.00	556	$47,219			$0.00		$0	$0		$0	**$47,219**
OTHER STAFF																
Executive Management	69	WK	6	$173.00	$1,038.00	417	$72,079			$0.00		$0	$0		$0	**$72,079**
Scheduler	69	WK	2	$144.00	$288.00	139	$19,999			$0.00		$0	$0		$0	**$19,999**
Project Accountant	69	WK	8	$108.00	$864.00	556	$59,996			$0.00		$0	$0		$0	**$59,996**
Quality Manager	69	WK	4	$155.00	$620.00	278	$43,053			$0.00		$0	$0		$0	**$43,053**
Safety Manager	69	WK	4	$120.00	$480.00	278	$33,331			$0.00		$0	$0		$0	**$33,331**
RELATED MANAGEMENT COSTS																
Software Costs	1	LS		$50.00	$0.00	0	$0			$0.00		$0	$0	$106,518	$106,518	**$106,518**
TOTAL GENERAL CONDITIONS						17,872	$2,048,103			$0		$0	$0		$106,518	$2,154,621

Wharton–Smith, Inc.
CONSTRUCTION GROUP

JOB NAME: PUBLIC UTILITIES FIELD OPERATIONS FACILITY
ESTIMATE #: 24.126.6

GENERAL REQUIREMENTS

DURATION = 16 MONTHS, PLANNED | 70627.9 DIRECT MANHOURS | 1,766 MANWEEKS | 25 MEN

DESCRIPTION	QTY	UNIT	MH/ UNIT	BASE RATE	LABOR U/P	LABOR TOTAL MH	LABOR $ AMOUNT	HR/UNIT		EQUIPMENT RATE	EQUIPMENT $ AMOUNT	MATERIAL U/P	MATERIAL $ AMOUNT	MATERIAL $ AMOUNT	SUBCONTRACTS U/P	SUBCONTRACTS $ AMOUNT	$ TOTALS
														W/ 7% TAX			
RELATED CRAFT WORKER COSTS																	
BENEFITS & EDUCATION	0	LS		$50.00	$0.00	0	$0				$0.00		$0	$0		$0	**$0**
LABOR RATE ADJUSTMENT	0	LS		$50.00	$0.00	0	$0				$0.00		$0	$0		$0	**$0**
HOLIDAY & VACATION PAY	1	LS		$50.00	$0.00	0	**$0**				$0.00		$0	$0		$0	**$0**
RECRUITING FEES	0	LS		$50.00	$0.00	0	$0				$0.00		$0	$0		$0	**$0**
CRAFT TRAVEL EXPENSE – WORKSHEET ON RIGHT	1	LS		$50.00	$0.00	0	$0				$0.00	$0.00	$0	$0		$0	**$0**
CRAFT LODGING, MEALS – WORKSHEET ON RIGHT	1	LS		$50.00	$0.00	0	$0				$0.00	$0.00	$0	$0		$0	**$0**
TEMP.FACILITIES & UTILITIES																	
WATER, INSTALL AND REMOVE TEMPORARY SYSTEM	0	LS	120	$50.00	$6,000.00	0	$0				$0.00	**$3,500.00**	$0	$0		$0	**$0**
WATER, MONTHLY	16	MO		$50.00	$0.00	0	$0				$0.00	$450.00	$7,200	$7,704		$0	**$7,704**
ELECTRIC, INSTALL & REMOVE TEMP. SYSTEM	1	LS		$50.00	$0.00	0	$0				$0.00		$0	$0	$7,000.00	$7,000	**$7,000**
ELECTRIC, MONTHLY CHARGES	16	MO		$50.00	$0.00	0	$0				$0.00	$750.00	$12,000	$12,840		$0	**$12,840**
TEMPORARY LIGHTING **(NIGHT LIGHTING)**	16	MO		$50.00	$0.00	0	$0				$0.00		$0	$0	$500.00	$8,000	**$8,000**
HARD WIRE INTERNET/PHONE, INSTALL & REMOVE – **W-S**	0	LS		$50.00	$0.00	0	$0				$0.00		$0	$0	$2,500.00	$0	**$0**
HARD WIRE INTERNET/PHONE, INSTALL & REMOVE – **ENGINEER**	0	LS		$50.00	$0.00	0	$0				$0.00		$0	$0	$300.00	$0	**$0**
INTERNET/TELEPHONE, MONTHLY CHARGES – W-S	16	MO		$50.00	$0.00	0	$0				$0.00	$750.00	$12,000	$12,840		$0	**$12,840**
INTERNET/TELEPHONE, MONTHLY CHARGES – ENGINEER	16	MO		$50.00	$0.00	0	$0				$0.00	$100.00	$1,600	$1,712		$0	**$1,712**
FIELD OFFICE, WHARTON SMITH INC	16	MO	5	$50.00	$250.00	80	$4,000				$0.00	$3,750.00	$60,000	$64,200		$0	**$68,200**
FIELD OFFICE, WHARTON SMITH – DELIVERY/RETURN	1	LS		$50.00	$0.00	0	$0				$0.00	$21,500.00	$21,500	$23,005	$25,000.00	$25,000	**$48,005**
FIELD OFFICE, ENGINEER	0	MO	5	$50.00	$250.00	0	$0				$0.00	$1,250.00	$0	$0		$0	**$0**
FIELD OFFICE, ENGINEER – DELIVERY/RETURN	0	LS		$50.00	$0.00	0	$0				$0.00	$6,700.00	$0	$0		$0	**$0**
FIELD OFFICE FURNISHINGS AND EQUIPMENT (PURCHASE)	1	LS		$50.00	$0.00	0	$0				$0.00	$750.00	$750	$803		$0	**$803**
FIELD OFFICE FURNISHINGS AND EQUIPMENT (RENTAL)	16	MO		$50.00	$0.00	0	$0				$0.00	$350.00	$5,600	$5,992		$0	**$5,992**
JOB OFFICE SUPPLIES	16	MO		$50.00	$0.00	0	$0				$0.00	$1,000.00	$16,000	$17,120		$0	**$17,120**
COMPUTER EQUIPMENT FOR FIELD OFFICE – W-S	0	LS		$50.00	$0.00	0	$0				$0.00	$20,000.00	$0	$0		$0	**$0**
COPIER/PRINTER/SCANNER RENTAL & SERVICE	16	MO		$50.00	$0.00	0	$0				$0.00	$525.00	$8,400	$8,988		$0	**$8,988**
TOOL TRAILERS – 3 REQUIRED	16	MO		$50.00	$0.00	0	$0				$0.00	$600.00	$9,600	$10,272		$0	**$10,272**
TEMPORARY TOILETS – 8 REQUIRED	16	MO		$50.00	$0.00	0	$0				$0.00	$1,650.00	$26,400	$28,248		$0	**$28,248**
TEMPORARY SEWAGE HOLDING TANKS – ENGINEER & W-S	16	MO		$50.00	$0.00	0	$0				$0.00	$1,200.00	$19,200	$20,544		$0	**$20,544**
SITE SECURITY	16	MO		$50.00	$0.00	0	$0				$0.00		$0	$0		$0	**$0**
SITE SECURITY CAMERAS	0	LS		$50.00	$0.00	0	$0				$0.00		$0	$0		$0	**$0**
TEMPORARY PARKING	0	SY		$50.00	$0.00	0	$0				$0.00		$0	$0		$0	**$0**
TEMPORARY ROADWAY	9825	SY		$50.00	$0.00	0	$0				$0.00		$0	$0	$1.50	$14,738	**$14,738**
BARRICADES	0	EA		$50.00	$0.00	0	$0				$0.00		$0	$0		$0	**$0**
TEMPORARY HANDRAIL / GUARDRAIL	52	WK		$50.00	$0.00	0	$0				$0.00		$0	$0	$150.00	$7,800	**$7,800**
DUST PARTITIONS	0	SF		$50.00	$0.00	0	$0				$0.00		$0	$0		$0	**$0**
TEMP WEATHER PROTECTION	1	LS		$50.00	$0.00	0	$0				$0.00		$0	$0	$15,000.00	$15,000	**$15,000**
TEMPORARY CHAIN LINK FENCE, INSTALL AND REMOVE	3500	LF		$50.00	$0.00	0	$0				$0.00	$0.00	$0	$0	$18.29	$64,915	**$64,915**
CONSTRUCTION EQUIPMENT & TOOLS																	
SMALL TOOLS AND SUPPLIES	16	MO		$50.00	$0.00	0	$0				$0.00	$500	$8,000	$8,560		$0	**$8,560**
RT FORKLIFT	6	MO	173.2	$50.00	$8,660.00	1,039	$51,960	1		$3,600.00	$21,600.00	$150.00	$900	$963		$0	**$74,523**
EMPLOYEE TRANSPORTATION **(BUS)**	0	WK		$50.00	$0.00	0	$0				$0.00	$100.00	$0	$0		$0	**$0**
ATV/SIDE-BY-SIDE	16	MO		$50.00	$0.00	0	$0	1		$1,600.00	$25,600.00	$100.00	$1,600	$1,712		$0	**$27,312**
CRAFT FOREMAN VEHICLE ALLOWANCE	0	MO		$50.00	$0.00	0	$0	1		$625	$0.00	$500.00	$0	$0		$0	**$0**
MOVE IN/OUT EQUIPMENT	1	EA		$50.00	$0.00	0	$0				$0.00		$0	$0		$0	**$0**
MOVE IN MATERIAL	1	EA		$50.00	$0.00	0	$0				$0.00		$0	$0		$0	**$0**
SAFETY & HEALTH & HOUSEKEEPING																	
SAFETY MEETINGS	69	WK	2.5	$50.00	$125.00	174	$8,680				$0.00		$0	$0		$0	**$8,680**
SAFETY DEVICES	1	LS		$50.00	$0.00	0	$0				$0.00	$3,001.00	$3,001	$3,211		$0	**$3,211**
PREVENTATIVE MEDICINE	0	LS		$50.00	$0.00	0	$0				$0.00		$0	$0		$0	**$0**
SAFETY AWARD PAY	0	LS		$50.00	$0.00	0	$0				$0.00		$0	$0		$0	**$0**
WORKER'S COMP CLAIMS	0	LS		$50.00	$0.00	0	$0				$0.00		$0	$0		$0	**$0**
CLEAN-UP AT END OF PROJECT	23706	SF	0	$50.00	$0.00	0	$0				$0.00		$0	$0	$0.45	$10,668	**$10,668**
CLEAN-UP THROUGHOUT DURATION OF PROJECT	69	WK	16	$50.00	$800.00	1,111	$55,552				$0.00	$10.00	$694	$743		$0	**$56,295**
DUMPSTERS	16	MO		$50.00	$0.00	0	$0				$0.00	$1,700.00	$27,200	$29,104		$0	**$29,104**
JANITORIAL – FIELD OFFICES	16	MO	0	$50.00	$0.00	0	$0				$0.00	$0.00	$0	$0	$250.00	$4,000	**$4,000**
				$50.00	$0.00	0	$0				$0.00		$0	$0		$0	**$0**
PERMITS, FEES, INSURANCE, LEGAL, ETC.																	
PERMIT FEE COSTS – WORKSHEET ON RIGHT	**0**	LS		$50.00	$0.00	0	$0				$0.00		$0	$0	$0.00	$0	**$0**
BUSINESS LICENSE FEES	**0**	LS		$50.00	$0.00	0	$0				$0.00		$0	$0	$0.00	$0	**$0**
IMPACT FEES	**0**	LS		$50.00	$0.00	0	$0				$0.00		$0	$0	$0.00	$0	**$0**
SPECIAL OR ADDITIONAL FEES	**0**	LS		$50.00	$0.00	0	$0				$0.00		$0	$0	$0.00	$0	**$0**
BUILDER'S RISK INSURANCE– COASTAL COUNTY	16	MO		$50.00	$0.00	0	$0				$0.00		$0	$0	$0.00	$0	**$0**
FLOOD INSURANCE	0	LS		$50.00	$0.00	0	$0				$0.00		$0	$0	$0.00	$0	**$0**
EXTENDED WARRANTY (BEYOND 12 MONTHS)	0	LS		$50.00	$0.00	0	$0				$0.00		$0	$0	$0.00	$0	**$0**
MAINTENANCE BOND (FOR PERCENTAGE LESS THAN 25%)	0	LS		$50.00	$0.00	0	$0				$0.00		$0	$0	$0.00	$0	**$0**
MAINTENANCE BOND (FOR PERCENTAGE 25% OR MORE)	0	LS		$50.00	$0.00	0	$0				$0.00		$0	$0	$0.00	$0	**$0**

GR's

Wharton–Smith, Inc.
CONSTRUCTION GROUP

JOB NAME: PUBLIC UTILITIES FIELD OPERATIONS FACILITY
ESTIMATE #: 24.126.6

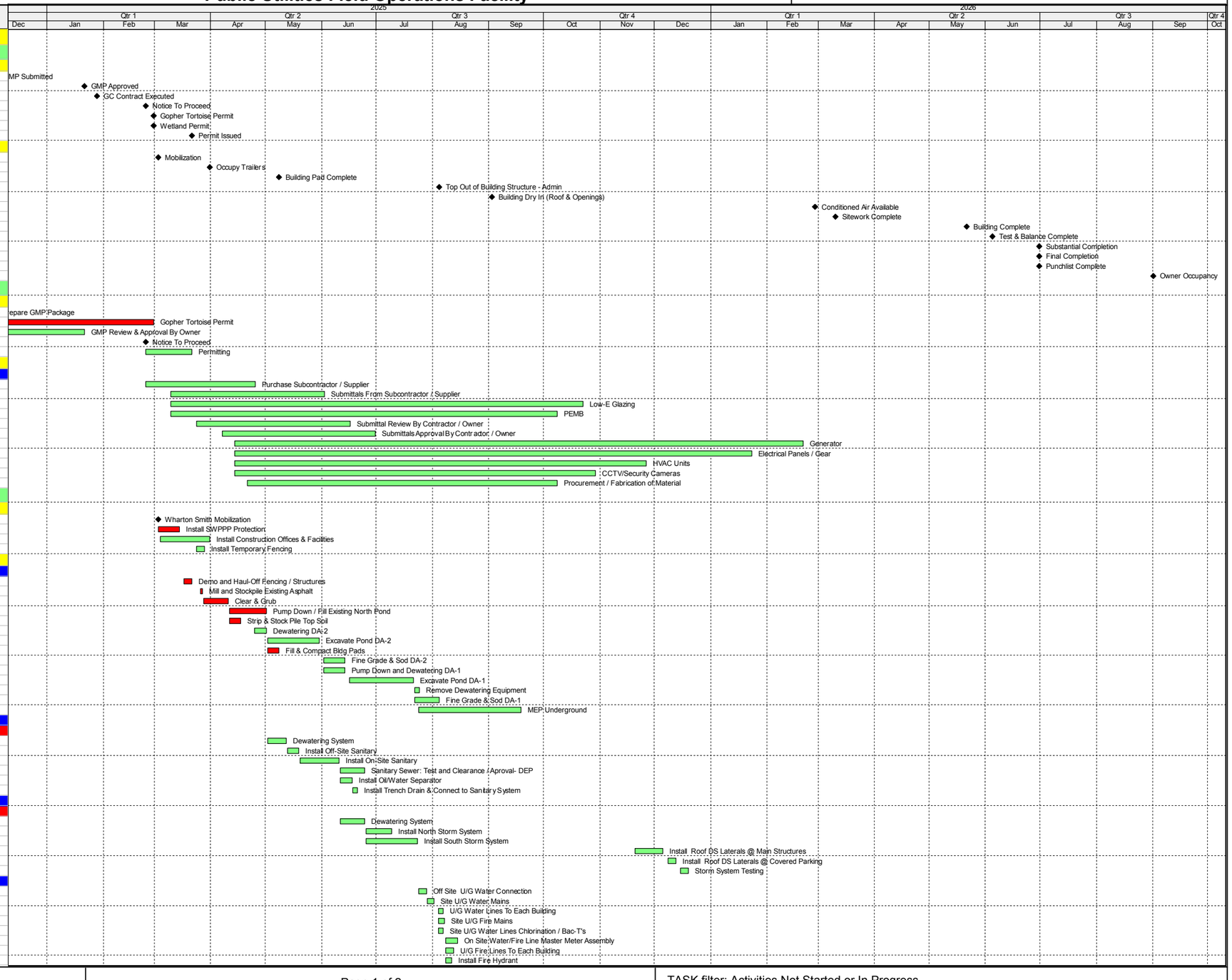
PROJECT DOCUMENTATION AND SERVICES																	
PROJECT SIGNS	2	LS	16	$50.00	$800.00	32	$1,600			$0.00	$1,500.00	$3,000	$3,210		$0	**$4,810**
INFORMATIONAL SIGNS	1	EA		$50.00	$0.00	0	$0			$0.00		$0	$0	$750.00	$750	**$750**
PHOTOGRAPHS	16	MO		$50.00	$0.00	0	$0			$0.00	$0.00	$0	$0	$275.00	$4,400	**$4,400**
PRE-CONSTRUCTION AUDIO-VIDEO DOCUMENTATION	1	LS		$50.00	$0.00	0	$0			$0.00		$0	$0	$7,150.00	$7,150	**$7,150**
MAIL & COURIER COSTS	16	MO		$50.00	$0.00	0	$0			$0.00		$0	$0	$250.00	$4,000	**$4,000**
IT SOFTWARE/LICENSING	1	LS		$50.00	$0.00	0	$0			$0.00		$0	$0	$43,491.00	$43,491	**$43,491**
DESIGN SERVICES (CADD) - AS-BUILTS	0	LS	40	$65.00	$2,600.00	0	$0			$0.00		$0	$0		$0	**$0**
PLANS & SPECIFICATIONS REPRODUCTION COSTS	1	LS		$50.00	$0.00	0	$0			$0.00	$3,500.00	$3,500	$3,745		$0	**$3,745**
REGISTERED SURVEYOR SERVICES	16	MO		$50.00	$0.00	0	$0			$0.00		$0	$0	$1,500.00	$24,000	**$24,000**
GROUND PENETRATING RADAR	1	LS		$50.00	$0.00	0	$0			$0.00		$0	$0	$56,000.00	$56,000	**$56,000**
PROJECT START-UP & CLOSEOUT																	
START-UP ELECTRIC CONSUMPTION COSTS	1	LS		$50.00	$0.00	0	$0			$0.00	$0.00	$0	$0		$0	**$0**
ADDITIONAL LABOR FOR 24/7 START-UP	0	LS		$50.00	$0.00	0	$0			$0.00		$0	$0		$0	**$0**
AS-BUILT DRAWINGS	1	LS		$50.00	$0.00	0	$0			$0.00		$0	$0	**$1,000.00**	$1,000	**$1,000**
PRECON TERMITE TREATMENT	1	LS		$50.00	$0.00	0	$0			$0.00		$0	$0	**$1,265.00**	$1,265	**$1,265**
FINAL SITE SURVEY	1	EA		$50.00	$0.00	0	$0			$0.00		$0	$0	**$35,000.00**	$35,000	**$35,000**
MISCELLANEOUS REQUIREMENTS																	
	1	LS		$50.00	$0.00	0	$0			$0.00		$0	$0		$0	**$0**
	1	LS		$50.00	$0.00	0	$0			$0.00		$0	$0		$0	**$0**
	1	LS		$50.00	$0.00	0	$0			$0.00		$0	$0		$0	**$0**
	1	LS		$50.00	$0.00	0	$0			$0.00		$0	$0		$0	**$0**
	1	LS		$50.00	$0.00	0	$0			$0.00		$0	$0		$0	**$0**
	1	LS		$50.00	$0.00	0	$0			$0.00		$0	$0		$0	**$0**
	1	LS		$50.00	$0.00	0	$0			$0.00		$0	$0		$0	**$0**
	1	LS		$50.00	$0.00	0	$0			$0.00		$0	$0		$0	**$0**
TOTAL GENERAL REQUIREMENTS						2,436	$121,792			$47,200		$248,145	$265,516		$334,176	$768,684

SECTION 3 – CONSTRUCTION SCHEDULE (100% DESIGN PHASE)

City of Port Orange
Public Utilities Field Operations Facility

Project ID: 24-126-B/L-3
Data Date: 03-Dec-24

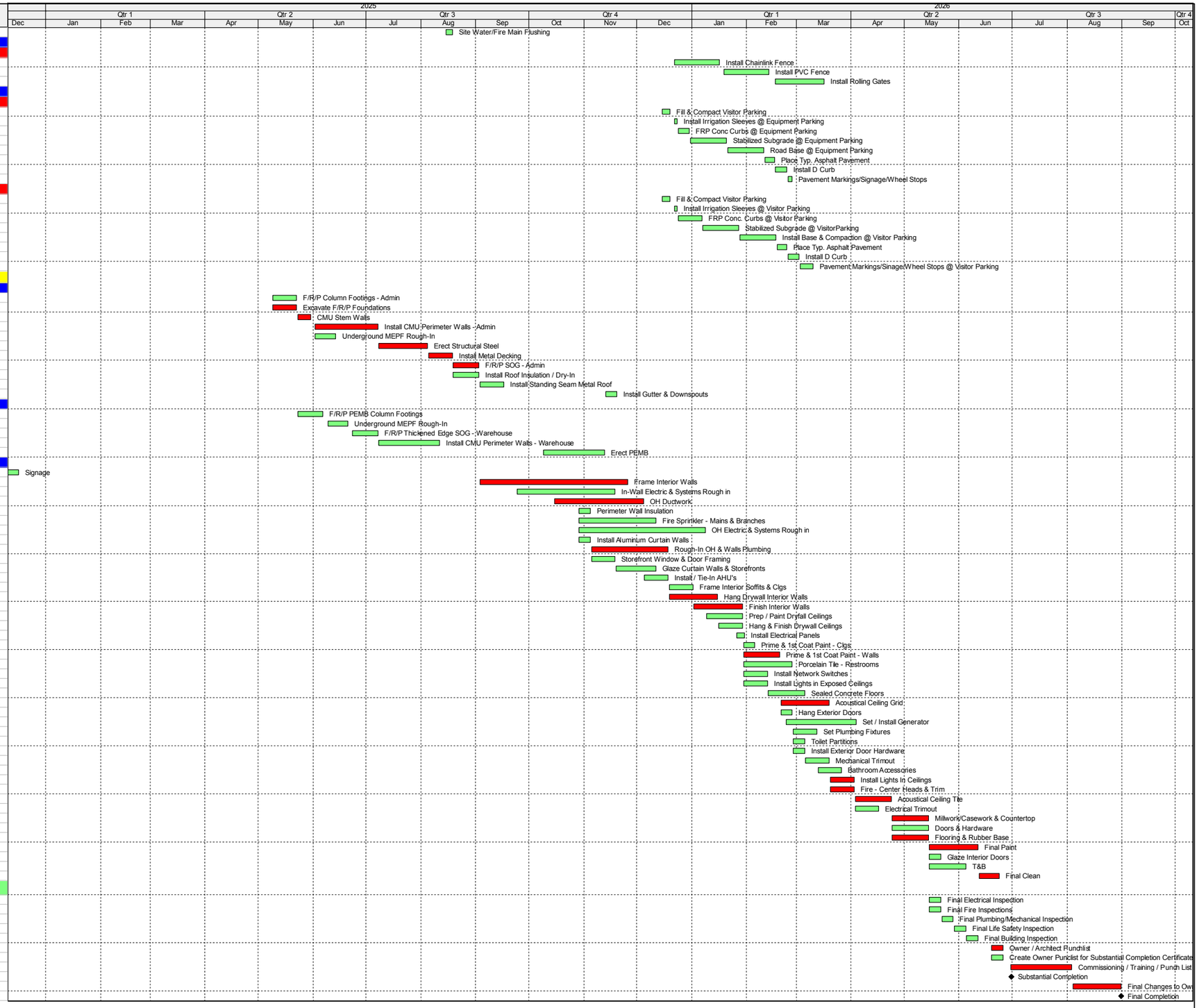
Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
COPO Public Utilities Operation Facility - 12/3 TF					
MILESTONE ACTIVITIES SCHEDULE					
PRE-CONSTRUCTION MILESTONES					
MS-170	GMP Submitted	0	0	04-Dec-24	
MS-300	GMP Approved	0	0		21-Jan-25
MS-210	GC Contract Executed	0	0		28-Jan-25
MS-240	Notice To Proceed	0	0	24-Feb-25	
MS-270	Gopher Tortoise Permit	0	0		28-Feb-25
MS-280	Wetland Permit	0	0		28-Feb-25
MS-200	Permit Issued	0	0		21-Mar-25
CONSTRUCTION MILESTONES					
MS-10	Mobilization	0	0	03-Mar-25	
MS-30	Occupy Trailers	0	0		31-Mar-25
MS-60	Building Pad Complete	0	0		08-May-25
MS-80	Top Out of Building Structure - Admin	0	0		04-Aug-25
MS-110	Building Dry In (Roof & Openings)	0	0		02-Sep-25
MS-160	Conditioned Air Available	0	0	27-Feb-26	
MS-90	Sitework Complete	0	0		10-Mar-26
MS-140	Building Complete	0	0		21-May-26
MS-180	Test & Balance Complete	0	0		04-Jun-26
MS-190	Substantial Completion	0	0		30-Jun-26
MS-250	Final Completion	0	0		31-Aug-26
MS-230	Punchlist Complete	0	0		30-Jun-26
MS-260	Owner Occupancy	0	0	01-Sep-26	
PRE-CONSTRUCTION ACTIVITIES					
GMP ACTIVITIES					
P-80	Prepare GMP Package	17	1	12-Nov-24 A	03-Dec-24
MS-290	Gopher Tortoise Permit	60	60	03-Dec-24	28-Feb-25
P-90	GMP Review & Approval By Owner	30	30	06-Dec-24	21-Jan-25
P-120	Notice To Proceed	0	0	24-Feb-25	
P-150	Permitting	20	20	24-Feb-25	21-Mar-25
SUBMITTALS & PROCUREMENT					
SUBCONTRACTS, SUBMITTALS & PROCUREMENT					
SSP-10	Purchase Subcontractor / Supplier	45	45	24-Feb-25	25-Apr-25
SSP-20	Submittals From Subcontractor / Supplier	60	60	10-Mar-25	02-Jun-25
SSP-80	Low-E Glazing	160	160	10-Mar-25	22-Oct-25
SSP-110	PEMB	150	150	10-Mar-25	08-Oct-25
SSP-30	Submittal Review By Contractor / Owner	60	60	24-Mar-25	16-Jun-25
SSP-40	Submittals Approval By Contractor / Owner	60	60	07-Apr-25	30-Jun-25
SSP-60	Generator	220	220	14-Apr-25	20-Feb-26
SSP-70	Electrical Panels / Gear	200	200	14-Apr-25	23-Jan-26
SSP-100	HVAC Units	160	160	14-Apr-25	26-Nov-25
SSP-120	CCTV/Security Cameras	140	140	14-Apr-25	29-Oct-25
SSP-50	Procurement / Fabrication of Material	120	120	21-Apr-25	08-Oct-25
CONSTRUCTION ACTIVITIES					
MOBILIZATION & TEMP FACILITIES ACTIVITIES					
MOB--20	Wharton Smith Mobilization	0	0	03-Mar-25	
MOB--30	Install SWPPP Protection	10	10	03-Mar-25	14-Mar-25
MOB--50	Install Construction Offices & Facilities	20	20	04-Mar-25	31-Mar-25
MOB--40	Install Temporary Fencing	5	5	24-Mar-25	28-Mar-25
SITE CONSTRUCTION					
SITE DEMO / PREP					
DP1-90	Demo and Haul-Off Fencing / Structures	5	5	17-Mar-25	21-Mar-25
DP1-100	Mill and Stockpile Existing Asphalt	2	2	26-Mar-25	27-Mar-25
DP1-10	Clear & Grub	10	10	28-Mar-25	10-Apr-25
DP1-70	Pump Down / Fill Existing North Pond	15	15	11-Apr-25	01-May-25
SITE-1125	Strip & Stock Pile Top Soil	5	5	11-Apr-25	17-Apr-25
DP1-130	Dewatering DA-2	5	5	25-Apr-25	01-May-25
DP1-20	Excavate Pond DA-2	20	20	02-May-25	30-May-25
SITE-1135	Fill & Compact Bldg Pads	5	5	02-May-25	08-May-25
DP1-50	Fine Grade & Sod DA-2	10	10	02-Jun-25	13-Jun-25
DP1-60	Pump Down and Dewatering DA-1	10	10	02-Jun-25	13-Jun-25
DP1-120	Excavate Pond DA-1	25	25	16-Jun-25	21-Jul-25
DP1-80	Remove Dewatering Equipment	3	3	22-Jul-25	24-Jul-25
DP1-140	Fine Grade & Sod DA-1	10	10	22-Jul-25	04-Aug-25
DP1-110	MEP Underground	40	40	24-Jul-25	18-Sep-25
SANITARY PIPE & STRUCTURES					
SANITARY 2					
SU-1110	Dewatering System	7	7	02-May-25	12-May-25
SU-1050	Install Off-Site Sanitary	5	5	13-May-25	19-May-25
SU-1090	Install On-Site Sanitary	15	15	20-May-25	10-Jun-25
SU-1100	Sanitary Sewer: Test and Clearance / Aproval- DEP	10	10	11-Jun-25	24-Jun-25
BL-625	Install Oil/Water Separator	5	5	11-Jun-25	17-Jun-25
A4530	Install Trench Drain & Connect to Sanitary System	3	3	18-Jun-25	20-Jun-25
STORM PIPE & STRUCTURES					
GROUP D					
D-60	Dewatering System	10	10	11-Jun-25	24-Jun-25
D-20	Install North Storm System	10	10	25-Jun-25	09-Jul-25
D-10	Install South Storm System	20	20	25-Jun-25	23-Jul-25
D-30	Install Roof DS Laterals @ Main Structures	10	10	20-Nov-25	05-Dec-25
D-40	Install Roof DS Laterals @ Covered Parking	5	5	08-Dec-25	12-Dec-25
D-50	Storm System Testing	5	5	15-Dec-25	19-Dec-25
DOMESTIC & FIRE WATER MAINS*					
DFWM-10	Off Site U/G Water Connection	3	3	24-Jul-25	28-Jul-25
DFWM-20	Site U/G Water Mains	4	4	29-Jul-25	01-Aug-25
DFWM-40	U/G Water Lines To Each Building	3	3	04-Aug-25	06-Aug-25
DFWM-30	Site U/G Fire Mains	4	4	04-Aug-25	07-Aug-25
DFWM-70	Site U/G Water Lines Chlorination / Bac-T's	3	3	04-Aug-25	06-Aug-25
DFWM-50	On Site Water/Fire Line Master Meter Assembly	5	5	08-Aug-25	14-Aug-25
DFWM-60	U/G Fire Lines To Each Building	3	3	08-Aug-25	12-Aug-25
DFWM-80	Install Fire Hydrant	2	2	08-Aug-25	11-Aug-25



Actual Work
Remaining Work
Critical Remaining Work
Milestone

TASK filter: Activities Not Started or In Progress.
Layout: WSI WS Executive Review Layout - Wheels

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
DFWM-110	Site Water/Fire Main Flushing	2	2	15-Aug-25	18-Aug-25
FENCING - ALL TYPES					
CHAINLINK FENCE					
SITE-1115	Install Chainlink Fence	20	20	22-Dec-25	16-Jan-26
SITE-1155	Install PVC Fence	20	20	19-Jan-26	13-Feb-26
SITE-1145	Install Rolling Gates	20	20	17-Feb-26	16-Mar-26
PARKING LOTS					
EQUIPMENT PARKING					
VISPK-140	Fill & Compact Visitor Parking	5	5	15-Dec-25	19-Dec-25
STAFFPK-20	Install Irrigation Sleeves @ Equipment Parking	2	2	22-Dec-25	23-Dec-25
STAFFPK-40	FRP Conc Curbs @ Equipment Parking	5	5	24-Dec-25	30-Dec-25
STAFFPK-10	Stabilized Subgrade @ Equipment Parking	15	15	31-Dec-25	20-Jan-26
STAFFPK-30	Road Base @ Equipment Parking	15	15	21-Jan-26	10-Feb-26
STAFFPK-110	Place Typ. Asphalt Pavement	4	4	11-Feb-26	16-Feb-26
STAFFPK-120	Install D Curb	5	5	17-Feb-26	23-Feb-26
STAFFPK-130	Pavement Markings/Signage/Wheel Stops	3	3	24-Feb-26	26-Feb-26
VISITOR PARKING					
VISPK-10	Fill & Compact Visitor Parking	5	5	15-Dec-25	19-Dec-25
VISPK-20	Install Irrigation Sleeves @ Visitor Parking	2	2	22-Dec-25	23-Dec-25
VISPK-40	FRP Conc. Curbs @ Visitor Parking	10	10	24-Dec-25	06-Jan-26
STAFFPK-140	Stabilized Subgrade @ VisitorParking	15	15	07-Jan-26	27-Jan-26
VISPK-30	Install Base & Compaction @ Visitor Parking	15	15	28-Jan-26	17-Feb-26
VISPK-110	Place Typ. Asphalt Pavement	4	4	18-Feb-26	23-Feb-26
STAFFPK-150	Install D Curb	5	5	24-Feb-26	02-Mar-26
VISPK-130	Pavement Markings/Sinage/Wheel Stops @ Visitor Parking	6	6	03-Mar-26	10-Mar-26
BUILDING CONSTRUCTION					
ADMIN STRUCTURE					
FOUND-30	F/R/P Column Footings - Admin	10	10	09-May-25	22-May-25
FOUND-50	Excavate F/R/P Foundations	10	10	09-May-25	22-May-25
CMU-10	CMU Stem Walls	5	5	23-May-25	30-May-25
CMU-80	Install CMU Perimeter Walls - Admin	25	25	02-Jun-25	07-Jul-25
CMU-90	Underground MEPF Rough-In	10	10	02-Jun-25	13-Jun-25
SLAB-50	Erect Structural Steel	20	20	08-Jul-25	04-Aug-25
CMU-40	Install Metal Decking	10	10	05-Aug-25	18-Aug-25
SLAB-40	F/R/P SOG - Admin	10	10	19-Aug-25	02-Sep-25
FOUND-40	Install Roof Insulation / Dry-In	10	10	19-Aug-25	02-Sep-25
FOUND-80	Install Standing Seam Metal Roof	10	10	03-Sep-25	16-Sep-25
FOUND-90	Install Gutter & Downspouts	5	5	13-Nov-25	19-Nov-25
WAREHOUSE STRUCTURE					
FOUND-60	F/R/P PEMB Column Footings	10	10	23-May-25	06-Jun-25
CMU-30	Underground MEPF Rough-In	10	10	09-Jun-25	20-Jun-25
FOUND-70	F/R/P Thickened Edge SOG - Warehouse	10	10	23-Jun-25	07-Jul-25
CMU-20	Install CMU Perimeter Walls - Warehouse	25	25	08-Jul-25	11-Aug-25
FOUND-100	Erect PEMB	25	25	09-Oct-25	12-Nov-25
INTERIOR FRAMING, GWB, MEP R/I & CEILINGS					
IF-360	Signage	10	10	03-Dec-24	16-Dec-24
IF-10	Frame Interior Walls	60	60	03-Sep-25	25-Nov-25
IF-70	In-Wall Electric & Systems Rough in	40	40	24-Sep-25	18-Nov-25
IF-20	OH Ductwork	35	35	15-Oct-25	04-Dec-25
IF-40	Perimeter Wall Insulation	5	5	29-Oct-25	04-Nov-25
IF-50	Fire Sprinkler - Mains & Branches	30	30	29-Oct-25	11-Dec-25
IF-60	OH Electric & Systems Rough in	50	50	29-Oct-25	08-Jan-26
EWD-80	Install Aluminum Curtain Walls	5	5	29-Oct-25	04-Nov-25
IF-30	Rough-In OH & Walls Plumbing	30	30	05-Nov-25	18-Dec-25
EWD-100	Storefront Window & Door Framing	10	10	05-Nov-25	18-Nov-25
EWD-110	Glaze Curtain Walls & Storefronts	15	15	19-Nov-25	11-Dec-25
IF-90	Install / Tie-In AHU's	10	10	05-Dec-25	18-Dec-25
IF-100	Frame Interior Soffits & Clgs	10	10	19-Dec-25	01-Jan-26
IF-110	Hang Drywall Interior Walls	20	20	19-Dec-25	15-Jan-26
IF-130	Finish Interior Walls	20	20	02-Jan-26	29-Jan-26
IF-400	Prep / Paint Dryfall Ceilings	15	15	09-Jan-26	29-Jan-26
IF-120	Hang & Finish Drywall Ceilings	10	10	16-Jan-26	29-Jan-26
IF-140	Install Electrical Panels	5	5	26-Jan-26	30-Jan-26
IF-160	Prime & 1st Coat Paint - Clgs	5	5	30-Jan-26	05-Feb-26
IF-170	Prime & 1st Coat Paint - Walls	15	15	30-Jan-26	19-Feb-26
IF-180	Porcelain Tile - Restrooms	20	20	30-Jan-26	26-Feb-26
IF-370	Install Network Switches	10	10	30-Jan-26	12-Feb-26
IF-150	Install Lights in Exposed Ceilings	10	10	30-Jan-26	12-Feb-26
IF-240	Sealed Concrete Floors	15	15	13-Feb-26	05-Mar-26
IF-220	Acoustical Ceiling Grid	20	20	20-Feb-26	19-Mar-26
EWD-70	Hang Exterior Doors	5	5	20-Feb-26	26-Feb-26
IF-390	Set / Install Generator	30	30	23-Feb-26	03-Apr-26
IF-200	Set Plumbing Fixtures	10	10	27-Feb-26	12-Mar-26
IF-210	Toilet Partitions	5	5	27-Feb-26	05-Mar-26
EWD-90	Install Exterior Door Hardware	5	5	27-Feb-26	05-Mar-26
IF-260	Mechanical Trimout	10	10	06-Mar-26	19-Mar-26
IF-230	Bathroom Accessories	10	10	13-Mar-26	26-Mar-26
IF-250	Install Lights In Ceilings	10	10	20-Mar-26	02-Apr-26
IF-270	Fire - Center Heads & Trim	10	10	20-Mar-26	02-Apr-26
IF-280	Acoustical Ceiling Tile	15	15	03-Apr-26	23-Apr-26
IF-290	Electrical Trimout	10	10	03-Apr-26	16-Apr-26
IF-300	Millwork/Casework & Countertop	15	15	24-Apr-26	14-May-26
IF-330	Doors & Hardware	15	15	24-Apr-26	14-May-26
IF-310	Flooring & Rubber Base	15	15	24-Apr-26	14-May-26
IF-320	Final Paint	20	20	15-May-26	11-Jun-26
IF-350	Glaze Interior Doors	5	5	15-May-26	21-May-26
IF-190	T&B	15	15	15-May-26	04-Jun-26
IF-380	Final Clean	8	8	12-Jun-26	23-Jun-26
FINAL INSPECTIONS & SUBSTANTIAL COMPLETION					
FIS-10	Final Electrical Inspection	5	5	15-May-26	21-May-26
FIS-40	Final Fire Inspections	5	5	15-May-26	21-May-26
FIS-20	Final Plumbing/Mechanical Inspection	5	5	22-May-26	28-May-26
FIS-30	Final Life Safety Inspection	5	5	29-May-26	04-Jun-26
FIS-50	Final Building Inspection	5	5	05-Jun-26	11-Jun-26
FIS-70	Owner / Architect Punchlist	5	5	19-Jun-26	25-Jun-26
FIS-90	Create Owner Punclist for Substantial Completion Certificate	5	5	19-Jun-26	25-Jun-26
IF-340	Commissioning / Training / Punch List	25	25	30-Jun-26	03-Aug-26
FIS-60	Substantial Completion	0	0		30-Jun-26
FIS-100	Final Changes to Owner, Final Pay App	20	20	04-Aug-26	31-Aug-26
FIS-80	Final Completion	0	0		31-Aug-26



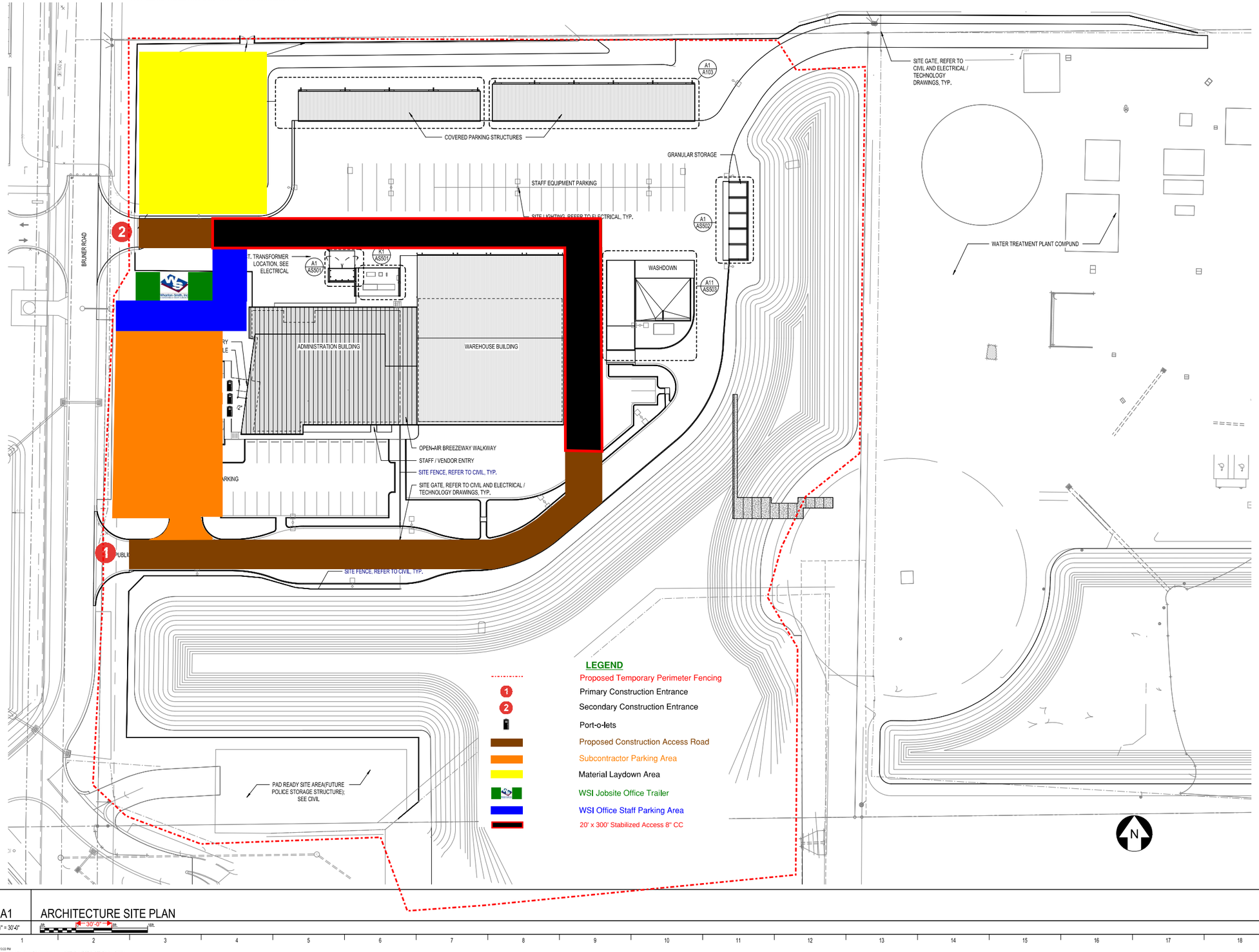
Actual Work
Remaining Work
Critical Remaining Work
Milestone

TASK filter: Activities Not Started or In Progress.
Layout: WSI WS Executive Review Layout - Wheels

GENERAL NOTES - SITE PLAN.

1. ARCHITECTURAL SITE PLAN SHOWN FOR REFERENCE ONLY, COORDINATE WITH CIVIL DRAWINGS FOR SITE INFORMATION
2. COORDINATE WITH CIVIL DRAWINGS FOR SITE SIGNAGE AND PAVEMENT MARKING INFORMATION
3. COORDINATE WITH LANDSCAPE / SITE IRRIGATION DRAWINGS
4. COORDINATE WITH ELECTRICAL DRAWINGS FOR SITE LIGHTING INFORMATION

SITE PLAN SHOWN FOR REFERENCE ONLY. REFER TO CIVIL DRAWINGS FOR ACTUAL SITE CONDITIONS



LEGEND

- Proposed Temporary Perimeter Fencing
- 1 Primary Construction Entrance
- 2 Secondary Construction Entrance
- Port-o-lets
- Proposed Construction Access Road
- Subcontractor Parking Area
- Material Laydown Area
- WSI Jobsite Office Trailer
- WSI Office Staff Parking Area
- 20' x 300' Stabilized Access 8" CC

A1 ARCHITECTURE SITE PLAN

1" = 30'-0"

SCHENKELSHULTZ ARCHITECTURE

200 E. Robinson Street
Suite 300
Orlando, FL 32801
voice 407-872-3322
fax 407-872-3303

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www.schenkelshultz.com

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REVISIONS

MARK	DESCRIPTION	DATE

Wharton-Smith Site Logistics Plan

CITY OF PORT ORANGE
PUBLIC UTILITIES FIELD OPERATIONS FACILITY

BRUNER RD & S CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE
PORT ORANGE, FL 32129

ISSUE DATE: 07/29/2022
COMM. NO.: 2021815

DRAWN BY: IMR CHECKED BY: JB

ARCHITECTURE SITE PLAN

AS011

NOT RELEASED FOR CONSTRUCTION

100% CONSTRUCTION DOCUMENTS

9/1/2022 6:13:23 PM
Autodesk Docs://2021815 Port Orange Field Operations/2021815_PORT ORANGE FIELD OPERATIONS_A_R2022_rvt

SECTION 4 – SUBCONTRACT BIDS

Aerial Innovations, Inc.
"Our Images are Your Image"

3703 W. Azeele St. Tampa, FL 33609
Tampa: 813.254.7339 · 800.223.1701
Orlando: 407.859.9995 · Fax: 813.254.7239
www.aerialinnovations.com

Certified Minority Woman Owned Company,
SBE, DBE, MWBE & FLDOT Certified
CCR Registered with Army Corp of Engineers

November 12, 2024

Estimator or Project Manager
Wharton-Smith, Inc
750 Monroe Rd
Sanford FL 32771
407-321-8410
ComEst@whartonsmith.com.

The following is a proposal to provide monthly aerial construction documentation for your new project.

Project: **PUBLIC UTILITIES FIELD OPERATIONS FACILITY**

Location: 1000 City Center Circle, Port Orange, FL

Flight Date: Photograph once monthly around the 21st, weather permitting.

Pricing:
$75.00 Includes first 3 digital views shot & delivered via email at 150ppi (Approx. 2MBs each).
$10.00 Aviation fuel surcharge. This is taxable item based on county invoice is addressed to.

UAV-Drone (stills, video & editing) & **Ground** (video, interior, exteriors & twilight) services are also available.

State, County and FDOT M/WBE certifications, workers comp, aviation liability, drone insurance and general liability insurance are available upon request. FAA drone licensed. Prices are subject to review after six (6) months from above date.

Construction documentation is an important part of every project. Our pilots are experienced, and our photographers are award winners. Aerial Innovations appreciates the opportunity to provide photography for your project.

Best regards,

Jenny Smith
Vice President
Aerial Innovations, Inc.
jenny@aerialinnovations.com

CUSTOMER APPROVAL: _____ DATE: _____

Christine Carasas

From: jenny@aerialinnovations.com
Sent: Tuesday, November 12, 2024 1:28 PM
To: Wharton Smith Commercial Estimating
Subject: Aerial photography documentation for Public Utilities Field Operations Facility
Attachments: wharton-smith - public utilities field operations facility - port orange.docx

Hello Estimator or Project Manager,

Congratulations on your new project. I have attached a proposal to provide monthly aerial photography documentation. Please review and contact me if you have any questions. I am looking forward to the opportunity to work with you once construction commences.

Kind regards,

Jenny Smith
Vice President
aerial innovations, inc.
3703 W. Azeele St, Tampa, FL 33609
407-859-9995
Jenny@aerialinnovations.com

Documenting Florida's growth since 1987!



www.aerialinnovations.com

Click here to view our award winning architectural ground photography!

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Subcontractor Bid Form-General

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Daisy Fresh Commercial Cleaning, Inc.
Scope of Work:	Final Cleaning

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	**$**15,300.00
Amount in Words:	Fifteen Thousand Three Hundred and no/100 Dollars

(1.2) Alternates (Voluntary)

None	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	None
Amount:	$

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1	None	$
2		$
3		$

(1.5) MWBE Participation

MWBE	$ 15,300.00
LDB	$ 0
VBE	$ 0

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	2.5%

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)
None			

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	001	Dated:	11/7/24	RFI No.		Dated:	
RFI No.	001	Dated:	11/11/24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	001	Dated:	10/22/24	WSI No.	005	Dated:	10/31/24
WSI No.	002 003	Dated:	10/24/24	WSI No.	006	Dated:	11/4/24
WSI No.	004	Dated:	10/28/24	WSI No.	007 008	Dated:	11/6/24 11/8/24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.	None	Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.	None	Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Daisy Fresh Commercial Cleaning, Inc.
Company Name

3812 Dunedin Ct., Apopka, FL 32712
Address (Street, City, State, Zip)

407-880-0599 melissa@daisyfreshcleaning.com
Phone Number **Email Address**

Type of Organization (Check One):

(✓) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE (✓)WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Daisy Fresh Commercial Cleaning, Inc.

By: Melissa Grisson

Printed Name: Melissa Grisson

Title: President

Dated: 11/12/24

License No.: Orange County Occupational 3103-0574345

Daisy Fresh
Commercial Cleaning, Inc.
Since 1987

3812 Dunedin Ct.
Apopka, FL 32712

November 12, 2024

Wharton-Smith Inc.
750 Monroe Rd.
Sanford, FL 32771

Attention: **James Manyette**

We are pleased to submit this proposal to perform work at the following location:

Port Orange Public Utilities

Services to be performed:

Final Construction Clean (Rough & Final) **$13,200.00**

- ✓ Includes any applicable sales tax.
- ✓ Includes 1 Rough Clean with 1 mobilization and 1 Final Clean with 2-3 consecutive mobilizations. Touch-up Cleaning is additional.
- ✓ Includes interior & exterior windows and mullions, wipe down millwork inside and out, clean restrooms including walls, porcelain, mirrors, fixtures, & dispensers, clean break room appliances free of construction debris, clean sinks, shine stainless, dust/vac exposed structure ceiling from ground, wipe doors and jams including thresholds, clean roll-up doors, clean lockers inside and out, dust/wipe clean shelving, wipe clean exterior railings, wipe all outlets and fire strobes, clean mech/elec/data rooms free of construction debris, sweep, mop, and machine scrub hard surface flooring, vacuum carpet, wipe clean base, remove minimal paint spots/drips from any and all of the above. Rough Clean $4,400; Final Clean $8,800
- ✓ Exterior windows at slanted roof appear to be accessible from the roof. Should a lift be required, it will be at an additional cost at 2026 rates, TBD.

Pressure Wash Sidewalks & Concrete Pads **$2,100.00**

Additional work per man hour fully burdened is $38.00

EXCLUSIONS:

- Excessive paint, concrete splatter, silicone, or tape residue removal will be billed at an additional time and material rate.
- Due to the liability incurred to acid wash tile, Daisy Fresh cannot perform this service should it be required. Grout haze is the responsibility of the tile installer.
- Should the owner's furnishings, stock, and/or equipment be placed prior to cleaning and require dusting or moving, it will be billed at an additional time & material rate.
- Roof, Exteriors, Parking Areas

Thank you for this opportunity to serve you.

Sincerely,

Melissa Grisson
President
Daisy Fresh Commercial Cleaning, Inc.

Toll Free: 800-350-3748
Phone: 407-880-0599
Fax: 407-880-0596
www.daisyfreshcleaning.com

State of Florida

Woman Business Certification

Daisy Fresh Commercial Cleaning, Inc.

Is certified under the provisions of
287 and 295.187, Florida Statutes, for a period from:

07/06/2023 to 07/06/2025



J. Todd Inman
Florida Department of Management Services

FLORIDA DEPARTMENT OF MANAGEMENT SERVICES
SUPPLIER DIVERSITY

Office of Supplier Diversity
4050 Esplanade Way, Suite 380
Tallahassee, FL 32399
850-487-0915
www.dms.myflorida.com/osd

Christine Carasas

From: Melissa Grisson <daisyfreshcleaning@msn.com>
Sent: Tuesday, November 12, 2024 9:13 AM
To: Wharton Smith Commercial Estimating
Cc: James Manyette
Subject: Port Orange Public Utilities-Final Cleaning Bid
Attachments: Daisy Fresh Final Cleaning Bid-Port Orange Public Utilities.pdf

Good Morning,

See attached bid for Final Cleaning.

Thank you,

Melissa Grisson
President

Daisy Fresh Commercial Cleaning, Inc.
Phone: 407-880-0599
Fax: 407-703-4639
e-mail: melissa@daisyfreshcleaning.com
Website: daisyfreshcleaning.com

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Subcontractor Bid Form-General

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Daisy Fresh Commercial Cleaning, Inc.
Scope of Work:	Final Cleaning

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	**$**15,300.00
Amount in Words:	Fifteen Thousand Three Hundred and no/100 Dollars

(1.2) Alternates (Voluntary)

None	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	None
Amount:	$

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1	None	$
2		$
3		$

(1.5) MWBE Participation

MWBE	$ 15,300.00
LDB	$ 0
VBE	$ 0

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	2.5%

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)
None			

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	001	Dated:	11/7/24	RFI No.		Dated:	
RFI No.	001	Dated:	11/11/24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	001	Dated:	10/22/24	WSI No.	005	Dated:	10/31/24
WSI No.	002 003	Dated:	10/24/24	WSI No.	006	Dated:	11/4/24
WSI No.	004	Dated:	10/28/24	WSI No.	007 008	Dated:	11/6/24 11/8/24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.	None	Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.	None	Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Daisy Fresh Commercial Cleaning, Inc.
Company Name

3812 Dunedin Ct., Apopka, FL 32712
Address (Street, City, State, Zip)

407-880-0599 melissa@daisyfreshcleaning.com
Phone Number **Email Address**

Type of Organization (Check One):

(✓) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE (✓)WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Daisy Fresh Commercial Cleaning, Inc.

By: Melissa Grisson

Printed Name: Melissa Grisson

Title: President

Dated: 11/12/24

License No.: Orange County Occupational 3103-0574345

Daisy Fresh
Commercial Cleaning, Inc.
Since 1987

3812 Dunedin Ct.
Apopka, FL 32712

November 12, 2024

Wharton-Smith Inc.
750 Monroe Rd.
Sanford, FL 32771

Attention: **James Manyette**

We are pleased to submit this proposal to perform work at the following location:

Port Orange Public Utilities

Services to be performed:

Final Construction Clean (Rough & Final) **$13,200.00**

- ✓ Includes any applicable sales tax.
- ✓ Includes 1 Rough Clean with 1 mobilization and 1 Final Clean with 2-3 consecutive mobilizations. Touch-up Cleaning is additional.
- ✓ Includes interior & exterior windows and mullions, wipe down millwork inside and out, clean restrooms including walls, porcelain, mirrors, fixtures, & dispensers, clean break room appliances free of construction debris, clean sinks, shine stainless, dust/vac exposed structure ceiling from ground, wipe doors and jams including thresholds, clean roll-up doors, clean lockers inside and out, dust/wipe clean shelving, wipe clean exterior railings, wipe all outlets and fire strobes, clean mech/elec/data rooms free of construction debris, sweep, mop, and machine scrub hard surface flooring, vacuum carpet, wipe clean base, remove minimal paint spots/drips from any and all of the above. Rough Clean $4,400; Final Clean $8,800
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Pressure Wash Sidewalks & Concrete Pads **$2,100.00**

Additional work per man hour fully burdened is $38.00

EXCLUSIONS:

- Excessive paint, concrete splatter, silicone, or tape residue removal will be billed at an additional time and material rate.
- Due to the liability incurred to acid wash tile, Daisy Fresh cannot perform this service should it be required. Grout haze is the responsibility of the tile installer.
- Should the owner's furnishings, stock, and/or equipment be placed prior to cleaning and require dusting or moving, it will be billed at an additional time & material rate.
- Roof, Exteriors, Parking Areas

Thank you for this opportunity to serve you.

Sincerely,

Melissa Grisson
President
Daisy Fresh Commercial Cleaning, Inc.

Toll Free: 800-350-3748
Phone: 407-880-0599
Fax: 407-880-0596
www.daisyfreshcleaning.com

State of Florida

Woman Business Certification

Daisy Fresh Commercial Cleaning, Inc.

Is certified under the provisions of
287 and 295.187, Florida Statutes, for a period from:

07/06/2023 to 07/06/2025



J. Todd Inman
Florida Department of Management Services

FLORIDA DEPARTMENT OF MANAGEMENT SERVICES
SUPPLIER DIVERSITY

Office of Supplier Diversity
4050 Esplanade Way, Suite 380
Tallahassee, FL 32399
850-487-0915
www.dms.myflorida.com/osd

Christine Carasas

From: James Manyette
Sent: Tuesday, November 12, 2024 11:16 AM
To: Wharton Smith Commercial Estimating
Subject: 01_Cleaning_Daisy Fresh Port Orange Public Utilities-Final Cleaning Bid
Attachments: Daisy Fresh Final Cleaning Bid-Port Orange Public Utilities.pdf

01_Cleaning_Daisy Fresh

Respectfully,

James R. Manyette | Senior Preconstruction Services Manager
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771 | Cell: (407) 810-9590

From: Melissa Grisson <daisyfreshcleaning@msn.com>
Sent: Tuesday, November 12, 2024 9:13 AM
To: Wharton Smith Commercial Estimating <comest@whartonsmith.com>
Cc: James Manyette <jmanyette@whartonsmith.com>
Subject: Port Orange Public Utilities-Final Cleaning Bid

Good Morning,

See attached bid for Final Cleaning.

Thank you,

Melissa Grisson
President

Daisy Fresh Commercial Cleaning, Inc.
Phone: 407-880-0599
Fax: 407-703-4639
e-mail: melissa@daisyfreshcleaning.com
Website: daisyfreshcleaning.com

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"We Wage War on Dirt"

Prepared for: Wharton-Smith, Inc.
750 Monroe Rd.
Sanford, FL 32771
Office: 407-321-8410

Prepared by: Spartan CS LLC
P.O. Box 181672, Casselberry, FL 32718
Office: 689-209-8579
November 12, 2024
Proposal number: 24304

Project: **Port Orange Public Utilities Field Ops Center @ 4505 Clyde Morris Blvd., Port Orange, FL 32129**

Attention: James Manyette – Senior Preconstruction Services Manager – cell: 407-810-9590
email: jmanyette@whartonsmith.com

Spartan C S, LLC. Contacts:
Beverly R Moffitt Title: Owner/Operator – AUTHORIZED SIGNER
Point of Contact: Operations/Scheduling Email: admin@spartancs.solutions Direct: 321-439-4566

Isabella Rivera-Martin Title: Head of Administration
Point of Contact: All Contract Related Documents, Pre-Qualification, Billing, and Project Administration
Email: imartin@spartancs.solutions
Direct: 689-209-4488
Office: 689-209-8579

Jon Spengler Title: Estimator
Point of Contact: Estimating, Bids/Proposals
Email: estimator@spartancs.solutions
Direct: 407-516-1337
Office: 689-209-8579

Ricky Moffitt, Title: Project Manager
Point of Contact: Field Personnel, Project Operations
Email: pm@spartancs.solutions
Direct: 689-209-4488
Office: 689-209-8579

This proposal is for one (1) final cleaning and one (1) touch up cleaning of an approximately 23,706 sf (11,417 sf admin, 12,289 sf warehouse) / 1-story new construction public works facility. This proposal includes all labor, supplies, equipment and materials (unless otherwise specified below).

Scope of work for final cleaning to include:

1. Clean exterior / interior windows including frames, sills and ledges (separate line item for exterior windows and high interior windows).
2. Sweep and mop hard surface floors, wipe down base.
3. Wipe down doors including frames, kickplates and hardware.
4. Clean electrical outlets, switches, drinking fountains, fire extinguishers and signage.
5. Wipe down walls.
6. Clean restrooms including toilets, plumbing fixtures, sinks, tile surfaces, dividers, showers, mirrors, accessories, lockers (50) inside and outside.
7. Clean casements including wiping down interiors / exteriors including drawers, shelving, hardware and countertops.
8. In admin building, clean breakrooms, conference / training rooms, offices, open work room, janitor's closet, corridors, waiting area, storage rooms, lobby and MEP / IT rooms.
9. Vacuum carpeted floors.
10. In warehouse, clean mud room, cold storage / supply room, workshops, inventory bays and wipe down interior of rollup doors.
11. Machine scrub warehouse floor (separate line item).

Scope of work for touch up cleaning to include:

1. Touch up all glass up to 8'.
2. Touch up restrooms as needed.
3. Touch up all rooms in admin building and warehouse as needed.
4. Vacuum carpeted floors.
5. Vacuum and mop hard surface floors.
6. Wipe down doors and walls as needed.
7. Wipe down surfaces to remove dust as needed.

Area to be cleaned	Square footage	Final cleaning costs	Touch up cleaning costs
Admin Building - interior	11,417 sf	$4,250.00	$3,600.00
Warehouse Building - interior	12,289 sf	$4,300.00	$3,700.00
Walk behind floor scrubber - 1 day rental	-	$900.00	
Exterior & interior high windows	-	$2,400.00	
Total: $19,150.00 – Nineteen Thousand One Hundred Fifty Dollars			
*Add. alt. – OCIP costs (If required)	$575.00		
*Add. alt. – Automated billing / payment system fees (If required)	$45.00		

*This proposal's scope does not include window screen installation, removal of blue max window protection or wiping down of owner's furniture or warehouse shelving. These can be done on Time & Material if requested.

Paint, epoxy, caulking, stucco, concrete, grout haze, adhesive, flooring protective coverings, rust and any other excessive materials, must be removed on Time & Material with prior approval from an onsite superintendent and is not included in Spartan's contractual scope.

If there are any changes of schedule, a notice of 48 hours must be given prior to our schedule date. Failure to give a 48-hour notice to change of schedule and we have come to the job site, will result in a trip charge.

Water and electricity must be available on each level of the immediate area to be cleaned prior to start of cleaning in that area.

All materials and workmanship are guaranteed to be specified, for the above work to be performed and completed in a professional manner for the sum of (Add/Alt pricing not included):

Total: $19,150.00 – Nineteen Thousand One Hundred Fifty Dollars

This proposal is valid for 90 days from the date on proposal.

NET 45 - Invoices not paid within 45 days may be subject to a 1 - 1 1/2 % per month charge.

This proposal serves as binding when accepted, any work performed under the Agreement prior to its execution shall be considered as acceptance of all terms and obligations herein, and shall bind the client to SPARTAN CS, LLC under all provisions of this agreement, as if fully executed by the client. On behalf of SPARTAN CS, LLC, thank you for the opportunity to bid on this project. If you require any documents, or have any questions, please contact us.

Accepted By: _____
Authorized Signature

Sincerely,

Title: _____

SPARTAN CS, LLC.

Print: _____

Date: _____

Christine Carasas

From: Estimator - Spartan C S, LLC <estimator@spartancs.solutions>
Sent: Tuesday, November 12, 2024 9:51 AM
To: James Manyette; Wharton Smith Commercial Estimating
Cc: Spartan C S, LLC; Isabella Rivera-Martin; Ricky Moffitt
Subject: Cleaning proposal for the Port Orange Public Utilities Field Ops Center
Attachments: Port Orange Public Utilities Field Ops Center cleaning proposal.pdf

Good morning James,

Please see the attached cleaning proposal for the Port Orange Public Utilities Field Ops Center project.

Please let me know if you have any questions and I look forward to your feedback.

Kind regards,

Jon

Jon Spengler - Estimator
Direct: (407) 516-1337
Office: (689) 209-8579
P.O. Box 181672
Casselberry, FL 32718
MBE / WBE Certified

https://www.spartancsllc.com/

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4699 110th Avenue N
Clearwater FL 33762
727-573-5440

CONSTRUCTION QUOTE

Salesperson: Paul Indomenico
Email: pindomenico@smithfence.com
Direct Line: (407) 557-4001
Contract: 56614

Date: 11/08/2024
PO:
Customer ID: WHARTON-SMI
Job: OT1633

TEMP Construction Fence Quote

Bill To: Wharton-Smith
2525 Bobcat Village Center Rd
Unit 105
North Port FL 34288

Contact:
Phone:
Email:

Job: Port Orange Public Utilities Field Ops Blc
Bruner Road

City of Port Orange FL 32129

Site Contact: James Manyette
Phone: (407) 321-8410

This quote is valid for 14 days. **Terms:** Net 30 **Rental Term:** Up To 14 Months

Description	Estimated Quantity	UOM	Unit Price	Line Total
Port Orange Public Utilities Field Ops Bldg- City of Po				
Rental Duration Up To 15 Months-				
INSTALL 6' CHAIN LINK	2,400.00	PLF	4.25	$10,200.00
INSTALL 6 x 30 DOUBLE SWING GATE	2.00	EACH	650.00	$1,300.00
INSTALL WHEELS	4.00	EACH	50.00	$200.00
Add Fuel Surcharge	1.00	EA	125.00	$125.00
(Optional)				
INSTALL 6' BLACK WINDSCREEN NO LOGO		PLF	2.50	
INSTALL CUSTOM LOGO WINDSCREEN		PLF	6.00	
-Permit by others				
-Site must be clear for 40FT truck to access				

unit cost adds per LF

Subtotal:	$11,825.00
Sales Tax:	$734.50
Quote Total:	**$12,559.50**

INSTALLATION CANNOT BE PERFORMED UNTIL SIGNED QUOTE IS RETURNED AND RECEIVED.

TO ACCEPT THIS BID PLEASE MAKE SURE ALL BILLING INFORMATION IS ACCURATE AND FILLED OUT COMPLETELY, SIGN AND EMAIL BACK TO CSR NAMED ABOVE. IF A PO OR CONTRACT IS TO BE DONE THIS MUST BE IN PLACE PRIOR TO INSTALLATION.

Customer Signatu X Date:

*** Customer ackknowledges rental agreement terms on attached page**

Quote
Continued...

Quote#: 56614
Date: 11/08/2024

Description	Estimated Quantity	UOM	Unit Price	Line Total
Print Nam	PO			

*** Extra Charges: $1.25 PLF for any inaccessible, hand carry, hand pound, stand roll, core drill, hard ground, or hillside work ***

TERMS OF RENTAL AGREEMENT

* EXTRA CHARGES: $1.25 PSF for any inaccessible, hand carry, hand pound, stand roll, core drill, hard ground, or hillside work.
* It is understood that in the context of this lease agreement between Customer/Lessee" & Smith Fence/"Lessor", the term "Fence" includes chain link fence, framework, fence panels, stands, sandbags, windscreen, gates, hardware etc.
* Quantities provided in quotation are estimated quantities. Actual footages will be adjusted upon completion of the installation, and billed accordingly, plus applicable sales tax. Early termination of lease will not result in pro-ration of lease amount. Additional services not listed will be billed at current market rate.
* Price is based on a one-time installation, and one-time full removal. Any additional mobilizations will be billed with a $500 mobilization minimum charge.
  - i.e. $500 minimum charge = general repair, replacement, remove and relocation of fence, additions, partial removal etc.

*For installation or removal, SFC requires advance notice of 7 days.
* Once rental duration expires, lessee will be charged a rate of 10% of the original rate, per item, per additional month. Any additional trips for changes or additional fence required during rental will expire on the same date as quoted on the initial quote. The minimum amount of a renewal billing is $100.00 per month. Project minimum is $750.00
* No Retainage to be withheld from any temporary fence contracts. Event projects will be paid in full (100%) prior to starting the installation. In order for any terms other than the aforementioned, those terms must be set forth and approved in writing on SFC letterhead or SFC contract.
* Clearing, grading, surveying, and staking the location of the fence locations by Lessee prior to SFC mobilizing. Lessee agrees to provide and maintain access to site and adequate working conditions for the duration of the rental. Lessee will keep all persons and property 10 feet away from fencing during rental. Temporary fencing is never to be used for anything other than its intended purpose.
* SFC is not responsible for damages incurred to job site, landscaping, silt fence, etc. while accessing the job.
*Lessee agrees to clear sufficient working area of all obstructions, and removable hazards. Lessee also agrees to keep fence clear of all debris, foliage overgrowth, signage, construction materials, etc. for the duration of the rental period. If fence materials are buried, overgrown and/or unremovable by hand, Lessee will be billed for damaged materials at current market rate replacement cost.
*The fence will not withstand any alteration. Any layout changes required, removal, repairs or relocation of fence must be performed by SFC. The Lessee assumes all liability to persons and property damaged as a result of those changes.
*Maintenance and Repair of the fence is not included. Lessee shall repair and maintain the fence and be solely responsible for such costs. If the fence requires maintenance, repair, and/or relocation, Lessor may, but not required to, enter onto any property where the fence is located and appropriately maintain, repair, or relocate the fence and charge the Lessee all costs associated.
*SFC does not recommend installing windscreen on panels with stands, or gates. The fence is at higher risk of falling versus fencing that is driven into the ground. Falling fence can cause serious injury, death, or damage property within the vicinity of the fence. The contractor shall defend, indemnify, and hold harmless Smith Fence Industries Inc. from any all suits, judgements, claims, and demands, including but not limited to cost, counsel fees, litigation expenses and liabilities with respect to injury/death of any person or persons whatsoever or damage to property of any kind by arising out of or caused by windscreen installed on panels and/or gates. Lessee assumes all responsibility.
* Lessee bears all risk of loss, damage or destruction until the fence is returned to Lessor. SFC will charge, and Lessee agrees to pay, additional charges to replace missing or destroyed materials as well as fence unable to be reused or removed from jobsite. All damaged materials will be billed at the current market rate (plus $500 mobilization)
* This quote is based on "normal soil conditions." There will be an additional charge for any asphalt/concrete/clay/lime rock/coral etc. penetration. Any damage to asphalt/concrete resulting from installation or use of the fence, and any/all costs to repair or replace damaged asphalt/concrete will be borne by the lessee.
* Prevailing wage projects subject to different pricing as well as projects with Davis Bacon Act, and/or certified payroll requirements.
* Price does not include fees for drug tests, badging, orientation classes, etc. If any of these items are required by Lessee, price is subject to change.
* If equipment is required for project due to inaccessibility and/or site conditions price is subject to change.
* All fence work to be performed under one mobilization with access to job site without delays. Any downtime due to the result of the Lessee will be billed at $125.00 per hour per 2-man crew. Note that deliveries and installations are scheduled Monday - Friday 7:00am - 3:00pm EST. Additional fees will be applied for weekends and/or after hour work.
* Any construction licenses or permits to be pulled and borne for by the lessee.
* Underground utility locates must be called in or pulled by the Lessee. The cost of any damages to underground construction utilities (telephone, gas, water, sewer, electrical, sprinkler, cable, fiberoptic, etc.) to be borne by the Lessee. SFC also not responsible for property lines, cables, pipeline etc.
* If job requires private locates with GPR (ground penetrating radar), this service and cost is to be borne by the Lessee.
* This fence is not a permanent fence and does not meet state swimming pool inspection codes. Smith Fence assumes no liability for this fence.
* If Maintenance of Traffic (MOT) is required for fence installation at any time during project duration. MOT to be provided by and at the expense of the Lessee.
* SFC is not a design/engineering firm. Standard temporary fence is not wind load rated.
* PAYMENT: Invoice balance to be paid in full upon completion of the initial install. Net 30 due on invoice. After 45 days if total amount is not paid in full, lessee agrees to allow any Smith Industries Inc. employee working on behalf of Lessor, in any capacity, access to ALL (the Lessee's) property for the purpose of removing the Lessor's property, including but not limited to ALL fencing. Such access is agreed to be automatic and shall occur during normal business hours. Lessee & Lessor agree that non-payment of the total amount owed within 45 days as agreed herein, shall be notice to the Lessee that the Lessor may enforce its agreement and/or remove its property. Lessee agrees that no additional prior notice be given by Lessor prior to the removal of its property should the above clauses be enforced by Lessor due to the Lessee's breach of this agreement. The parties agree Lessor is entitled to pursue any and all available claims against Lessee should Lessee prevent the removal of Lessor's property and/or, if the above clauses are breached. All fencing will be removed, and lessee agrees to pay Smith Industries Inc.'s attorney's fees and any other cost incurred to enforce payment of delinquent bill plus interest at the rate of 1.75% per month, or at the maximum rate permitted by applicable law. Continuous neglect for payment of invoices may result in a Mechanic's and Materialman's lien against the property and our unprotected assets. The parties to this contract agree to personal jurisdiction in Pinellas County, Florida. All articles are rented "as-is" and Lessee by signing this agreement accepts these conditions.
* It is understood that SFC retains ownership of the fence materials and reserves the right to remove it at any time, if the Lessee refuses to comply with the conditions of this agreement, as set forth.
*Lessee of described fencing hereby agrees to indemnify and hold harmless, Smith Industries Inc. from any and all liability which may arise out of the rental use of fencing provided. Lessee agrees that it is liable for all injury to third party who may be injured, in any way, by the installation, use or removal of fencing. Lessee warrants that it has selected the right for installation of the fencing, and that any damage to property of the lessee or third parties is not the responsibility of Smith Industries Inc. Lessee agrees to hold Smith Industries Inc. free of all costs, including legal defense cost, court cost, attorney fees, arising out of any injury to lessee or third party. Lessee assumes all responsibility for the fencing placed at the designated job site and agrees to be fully responsible for the care, custody, and control of the fencing. Smith Industries Inc. makes no warranties, expressed or implied, as to the fencing to perform any particular task or function. All fencing, posts, gates, and appurtenant devices are rented "as is" and lessee by signing this agreement accepts these conditions.
*Lessee acknowledges that Lessor has and may exercise all lien rights and hereby waives any objections in defects in such lien documents. If Lessee is not the owner of the property on which the fence is to be installed, Lessee shall obtain the owner's written consent to Lessor's full exercise of all such lien rights. Lessor's exercise or non-exercise of lien rights will not alter or release Lessee's obligations.
* Fence is not to be sublet. Lessee is responsible for any state, local, or federal taxes, including any property taxes that may apply to this fence while it is rented.
* By signing this agreement, the Lessee agrees to the quantities, prices, terms and conditions as set forth.

IF CUSTOMER PROVIDED CONTRACT IS REQUIRED, THE FOLLOWING ITEMS TO BE INCLUDED IN CONTRACT: 1. SFC's original quote with contract verbiage 2. No "not to exceed contract" will be accepted (pricing is based on estimated quantities) 3. NO RETAINAGE to be withheld 4. PSF & unit rates, plus applicable sales tax 5. Remove and relocate charges (same rate as install rates) 6. Additional trip charge minimum ($500) 7. Rental duration.

Updated 04/20/22

Customer Initial_____ Date_____











Chain Link Fence

A post-driven temporary chain link fence from Smith Fence is a reliable and cost-effective solution ensuring your construction site is well protected, limits liability, and improves the overall esthetics of your jobsite. It's the first choice for most in the construction industry.

Benefits and Features

• Secure In-Ground Installation sch 40 posts
• Installs in a Variety of Surfaces

Comes in 4', 6' or 8' Tall

Optional Add-ons:

- Top Rail
- Tension wire(top or bottom)
- 3 strand barbwire
- Variety of swing and roll gates

smith fence







TEMPORARY FENCE PANELS

Features & Benefits

- Easy to Install, Maintain & Remove
- Eliminates Digging and Setting Posts
- Installs on a Variety of Surfaces
- Repositions Easily for Extended Use
- Alternative to In-Ground Posts

. 8 gauge Saddle clamps to secure panel

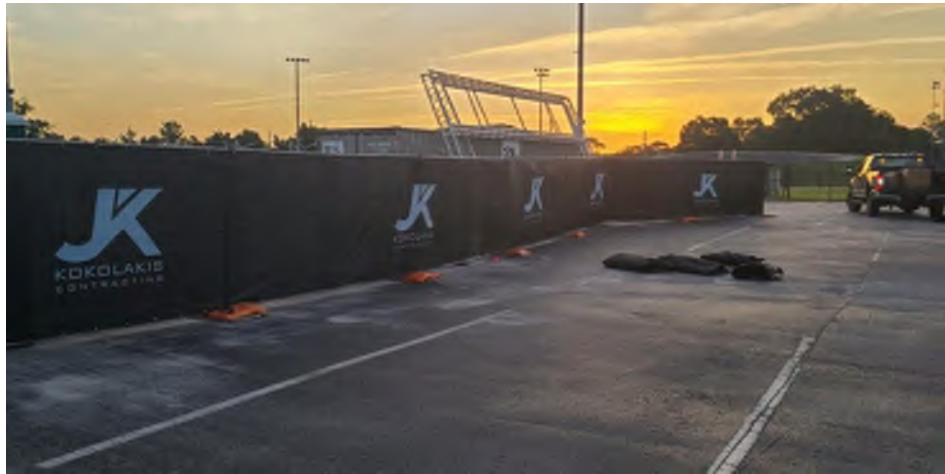
smith fence

WINDSCREEN OPTIONS

Smith fence screen selection keeps debris out while monetizing your worksite or venue. Choose from windscreen rolls and custom-printed fence screens in a variety of fabrics. Contain dust or boost your brand with custom printed screen options or full graphic













WATER BARRIERS

Smith Fence water barrier is the ideal product for traffic and pedestrian channelization in any environment. The special swivel pin and lock design allow users to easily connect and rotate barriers 90 degrees to meet the needs of almost any work zone or path.

smith fence

Bike Barricades

Features & Benefits

- Made of Durable, Lightweight Steel
- Portable & Freestanding
- Easy to Install, Reposition and Remove
- Utilizes Hook & Sleeve Joining System











Temporary wood fence

When you need privacy and durability to keep your site safe.
Use steel posts driven for quick installation and removal

smith fence

Aluminum High Resolution Graphic Fence





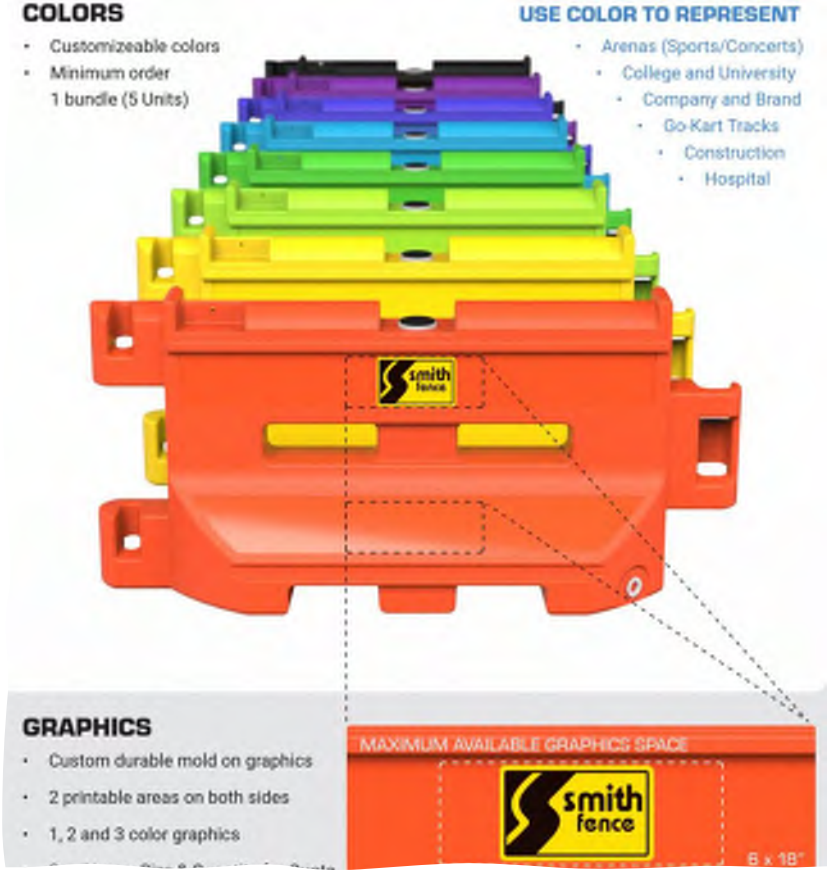
smith fence

GUARDSAFE 36

- **Protect people and property with highly visible, long lasting polyethylene barrier and barricade systems.**
- Will not crumble or break after multiple deployments like concrete barriers.
- Ideal for crowd, and traffic control, checkpoints, and security
- Create continuous lines or curves angled up to 90 degrees with an easy to use swivel pin design
- Molded-in recessed handles make for easy handling.
- Large, threaded top fill-port and dual bottom drain plugs make it easy to load and unload with sand or water ballast.
- Two molded-in pockets on top of barrier accept standard blinking lights.
- Flat side surfaces easily accept reflective striping.
- Durable polyethylene construction stands up to harsh weather conditions and resists cracks and dents upon impact.
- High resistance to sunlight and ultraviolet radiation means the product stays in service longer.
- Bright colors improve safety and are easier to see than concrete or wood.
- Lightweight design makes handling easy.
- FHWA MASH TL-1 approved as a Longitudinal Channelizing Device (LCD).
- 24" wide base for more stability and option to drive posts for even more support.
- Add panels to top or continuous chain link









ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	0511900E1100113	Main Panel Chain Link Fence, 6ft-1/2"	1
2	0511900E1100108	1.63 Ø Post x 76" Tall	1
3	0511900E1100107	Swivelier Clamp 1x1/8 x 1x1/8	4

REVISIONS				
REVISION	ZONE	REV.	DESCRIPTION	DATE	APPROVED
NEW		A	Release Drawing	1/18/2021	BJS

72 1/2"" Center to Center Spacing

69 1/2

NO *Post Caps Unless Requested*

Ø 1.38 Posts

11 1/2" Ga. Chain Link Wire

48.00

96.0"

Note: *1 Post Per Assembly*

Ø 1.63 Dia Posts

5.0

36.00

GuardSafe 36" Barrier

DETAIL A
SCALE 1 : 4

3.0"

3.0"

MATERIAL		NAME	DATE
FINISH	DRAWN BY:	BJS	1/18/2021
DO NOT SCALE DRAWING	APPROVED BY:		

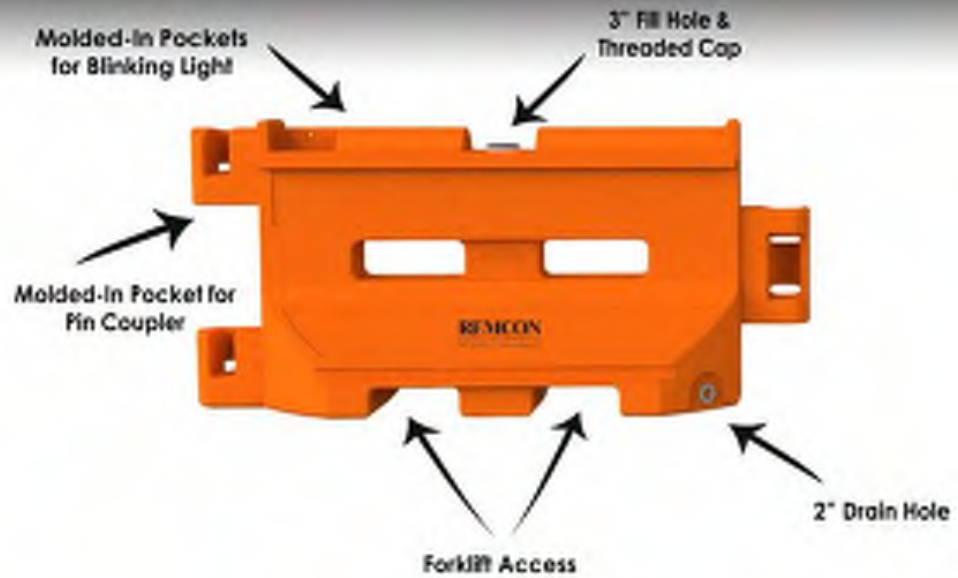
TITLE: Ramcon - GuardSafe 36 Barrier w/ Fence Topper 72.5"

HEIGHT:

SCALE:

smith fence

GS36 GUARDSAFE® 36 BARRICADE



Remcon's GUARDSAFE® 36 barricade is a water-filled Longitudinal Channelizing Device (LCD) ideal for traffic and pedestrian channelization in almost any environment. The barricade is manufactured with rotationally-molded polyethylene, which allows it to withstand the harshest weather conditions and resist dents and cracks.

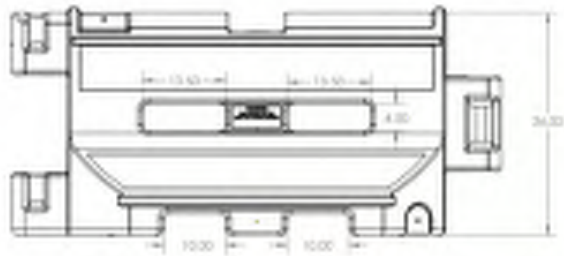
- Each unit includes:
  - Swivel pin to connect and rotate barricades up to 90 degrees
  - Recessed handles, forklift holes, and lightweight design, which allow for easier movement and positioning
  - Threaded top fill-port and bottom drain plugs for easy loading and unloading with sand or water ballast
- Available in three standard high-visibility colors: natural, orange, and yellow. Custom colors available upon request.
- Accepts rolled fence or fence panels to increase visibility and security for any project
- Ideal for temporary work zones, perimeter fencing, checkpoints, security, as well as crowd and traffic control
- MWUTCD MASH TL-3 approved as a Longitudinal Channelizing Device (LCD)

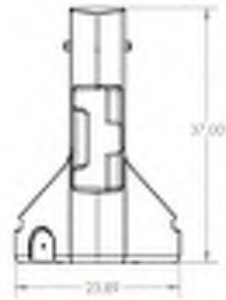
• Phone: (800)328-3362 • Cell:(307)257-4001 • Website: www.smithfence.com

smith fence

GS36

GUARDSAFE® 36 BARRICADE







Inches of Water	U.S. LBS	U.S. Gallons	Cubic Feet
16.5	600	63.47	8.48
15	574	60.4	8.07
12	508	52.4	7
9	420	40.72	5.44
6	282	25.38	3.39
3	156	10.29	1.38
0	70	-	-

Product Description	Width		Length		Height		Weight	
	in	cm	in	cm	in	cm	lbs	kgs
GUARDSAFE® 36 LCD	24	60.96	72	182.88	36	91.44	70	31.75

• Phone: (800) 229-3362 • Cell (417)557-4001 • Website: www.SmithFence.com

Christine Carasas

From: Paul Indomenico <PIndomenico@smithfence.com>
Sent: Friday, November 8, 2024 11:33 AM
To: Wharton Smith Commercial Estimating
Subject: FW: [External] WSI 008 Notification - Port Orange Public Utilities Field Ops Bldg.
Attachments: Wharton-Smith- Port Orange Public Utilities Field Ops Bldg- City of Port Orange, FL.PDF; Temporary Fence Brochure.pdf; GUARDSAFE 36 Brochure.pdf

Hey James,

Please see attached and let me know if you have any questions. Thanks, and have a great weekend

Paul Indomenico
Temporary Fence Sales, Smith Fence Company
8808 Florida Rock Road Orlando, Fl 32824
Office: 727-573-5440 Cell: 407-557-4001
pindomenico@smithfence.com



Offices in Clearwater, Orlando, and Miami

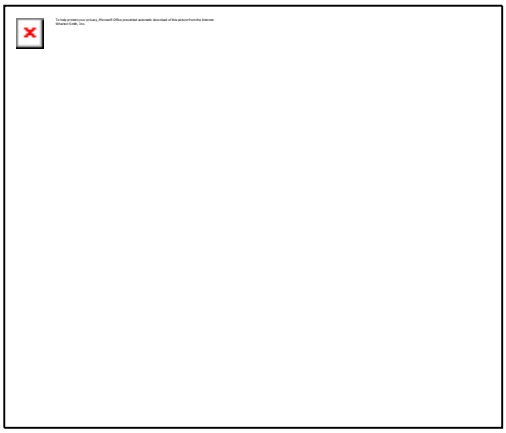
*****TEMPORARY FENCE, PANELS, BARRICADES, WINDSCREEN, BANNERS, FULL GRAPHIC SCREEN, ALUMINUM FENCING W/ GRAPHICS******

visit us on *www.smithfence.com*

WSI NOTIFICATION

From: Wharton-Smith, Inc.
Contact: James Manyette
Email: comest@whartonsmith.com
Phone:

Sent: Friday, November 8, 2024 10:32 AM ET



Attention: **Paul Indomenico**
Firm Name: **Smith Fence**

Project: **Port Orange Public Utilities Field Ops Bldg.**
Owner: **City of Port Orange**
Bid Due Date: **Tuesday, November 12, 2024 2:00 PM ET**

Attention All Bidders:
A new WSI (Wharton-Smith Supplemental Instruction) has been posted to ConstructConnect/iSqFt. This document and any referenced attachments are available under the "Documents" section, under "Other Documents", and can be accessed by following the link below.

Please be sure to click a response button below to let us know your interest in bidding this project.

Thank you,

Wharton-Smith, Inc.

Click here to view the project

Access Number: M2Q7-2LV2

Documents referenced in this transmittal:

WSI 008.pdf

Let us know your bid intention here:

For help, visit http://www.isqft.com/start/pages/contact-support/ or call us at (877) 4CC-TOOL (422-8665).

If you do not wish to receive further iSqFt messages, unsubscribe by clicking here or by calling 1-888-768-4569. If you would like to change or edit your preferences for this or other iSqFt accounts, please visit the **My Profile** page after logging in. To learn more about the use of personal information by iSqFt, please read our Privacy Policy.

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PRO-TEK
— SERVICES OF CENTRAL FLORIDA, INC —

Proposal #
5537

Pre-Construction Termite Proposal

Proposal Date
10/14/2024

Wharton-Smith, Inc.
750 Monroe Road
Sanford FL 32771

Project:

City of Port Orange Public Utilities Facility
4505 Clyde Morris Blvd.
Port Orange, FL

Scope of Work:

Treatment Type: Soil Treatment
Product: Dominion 2L
Guarantee: 5 Year Written Warranty

Notes:

Treatable Area:	23706
Cost per SF:	$0.050
Trip Charge:	$0.00
Tax Rate:	6.500%
Sales Tax:	$77.04
Total Cost:	$1,262.34

****** Note: Mobilizations made to treat minimal SF areas (including ramps, sidewalks, cut-outs, etc.) may be charged a flat trip charge or the quoted SF cost.******

****** Price Quote is valid for 30 days.***

Please sign and return to accept cost and terms.

BY: _____

Authorized Company Representative

Tiffany Lightner Menist, V.P.

Pro-Tek Representative – Tiffany Lightner Menist, Vice President

*** This is NOT an invoice**

Thank you for your consideration!

Toll free: 800-223-2606 | Phone: 407-862-2511 | Fax: 407-862-0051 | info@pro-tekservices.net

598 Northlake Blvd, Suite 1016, Altamonte Springs FL 32701

RECEIVED
OCT 17 2024
WHARTON-SMITH, INC

Monday, October 14, 2024

Headquarters
11345 U.S. Highway 1
Sebastian, FL. 32958
Orlando
723 Progress Way
Sanford, FL. 32771

KSM ENGINEERING AND TESTING

Mailing
P.O. Box 78-1377
Sebastian, FL. 32978
Phone: 772-589-0712
C.A. # 5693
KSMengineering.net

Professional Service Agreement

KSM Proposal #CMT24778
November 12, 2024

Client: **Wharton Smith, Inc.**
Attn: James Manyette
750 Monroe Road, Sanford, FL 32771
Phone: 407-321-8410
Email: comest@whartonsmith.com

Re: **Construction Materials Testing Proposal for**
City of Port Orange Public Utilities Field Operations Facility
4505 Clyde Morris Blvd
City of Port Orange, FL

Dear Mr. Manyette:
Thank you for the opportunity to submit a proposal to perform material testing services on the above referenced project. Keller, Schleicher and MacWilliam Engineering and Testing, Inc. (referred to as "KSM Engineering and Testing") proposes the following testing services relating to the above-mentioned Project in general accordance with the Industry Standard of Care.

Project Description
It is our understanding the proposed project will consist of the ground up construction of a new 11,417 sq ft administration building and a 12,289 sq ft pre-engineered metal warehouse building with associated sitework and underground utilities at 4505 Clyde Morris Blvd in City of Port Orange, FL. Per our review of the provided Construction Documents, we have estimated the following services will need to be completed for the project. The amount of tests and/or hours listed below are estimated values for this Agreement and the total cost for each service will be based on the **"Actual"** number of requested tests and/or hours required to complete the above project.

	Services	Estimated Amount
1.	**Underground Utilities**	
	Density (Compaction) Tests	298
	Modified Proctors	3
	Soil Classification Testing	3
2.	**Stabilized Subgrades and Under Curbs**	
	Density (Compaction) Tests	32
	Modified Proctors	2
	Limerock Bearing Ratio (LBRs)	2
3.	**Rock Base**	
	Density (Compaction) Tests	20
	Modified Proctors	2
	Limerock Bearing Ratio (LBRs)	2
4.	**Sidewalks, Site Fill, Dumpster Pad etc.**	
	Density (Compaction) Tests	18
5.	**Building Pad**	
	Density (Compaction) Tests	32
	Modified Proctor	1
	Soil Classification Testing	1
6.	**Concrete Testing (Curbs, Sidewalks Building etc.)**	
	4 Cylinders for Compressive Strength (min. 4 per set, includes slump and (1) hr. tech time)	26

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Orlando
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C.A. # 5693
KSMengineering.net

7.	**Special Inspections Bolt/Weld/Steel (*Contractor provides lift)***	
	On-site Inspection (3 hours min per trip)	8
8.	**Extraction & Gradation**	
	Each	6
9.	**Technician Standby Time *(If/As Needed)***	
	Per Hour	5

Special Inspections will be billed at the Project Engineer rate. Work performed to furnish the signed and sealed Engineering Report will also be billed at the Professional Service Engineer rates.

Project Rates and Estimated Total

The attached fee schedule is KSM Engineering and Testing rates for services along with estimated costs in order to complete the services indicated above. Please note the provided fees are for KSM Engineering and Testing's normal business hours, which are: Monday through Friday, 7:00am to 5:00pm.

- Any service requested to be completed outside of KSM Engineering & Testing's normal business hours is subject to additional fees, to include, but not limited to, a minimum 4-hour charge of Technician time at 1.5x the indicated rate.
- KSM Technician Stand by Time is invoiced in half hour increments. Stand by Time is defined as any time a KSM Technician is on site and is not actively performing a requested service. General Stand By time is, but not limited to, during concrete pours while waiting on trucks or when the technician is requested to witness material being compacted in lifts.
- A charge of about 18% of the total cost incurred for each separate test, or a minimum fee of $35.00, whichever is greater, will be invoiced for each completed report.
- The project will only be invoiced for the work performed at the unit rates provided with the exception of contract minimums. All testing and inspection services is on a will call basis. We appreciate a minimum of 24 hours to properly schedule services.

Cost estimate breakdown is shown on the attached Fee Schedule.

***Estimated Total:** **$23,560.00**

*We note that the cost is estimated. Final cost will be based on the unit prices and actual number of hours/tests required. The final cost may be higher or lower than the total estimated cost. If a testing service is requested that is not presented on the attached Fee Schedule, a unit rate for the service will be provided prior to performing the work. We look forward to working with you on this project.

Respectfully Submitted,

Edgar S. MacWilliam
Vice President of Operations

ESM/ts/KSM
This proposal is good for 90 days

Accepted this _____day of _____, 2024, by

_____
Signature

_____
Printed Name

All invoices are due upon receipt. Invoices over thirty days late will be charged a 1.5% late fee.

Headquarters
11345 U.S. Highway 1
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Orlando
723 Progress Way
Sanford, FL. 32771

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C.A. # 5693
KSMengineering.net

Schedule and Additional Services

KSM will work closely with the Client to establish a favorable schedule to complete all field and laboratory work. The above indicated fee is based on the site being open and accessible for our truck-mounted drill rig or for a KSM technician to gain access to the project site to complete the requested geotechnical testing. Open and accessible means that a normal size truck can safely drive into the site and perform the required borings, heavily wooded areas or sites with steep inclines or declines will need to be cleared / altered in order for KSM to access the site safely. **Additional fees will apply if another drill rig is required to be mobilized to complete the required soil boring or if our technicians are unable to perform the requested testing.** Please note that if unsuitable material is encountered, KSM will have to mobilize another drill rig as the truck-mounted drill rig is not designed for deep borings and reserves the right to amend our total fee. If additional locations are requested after the approval of this Agreement, KSM reserves the right to amend as required based upon the request.

Cancellation Terms

KSM's schedule to complete the requested field work varies each day and is unfortunately weather dependent. If KSM is unable to perform the required field work due to unforeseen weather conditions, KSM will automatically move your project onto the next available workday and the client shall be notified. Please note that if you wish to cancel any services to be performed by KSM, the client must do so in writing and prior to the scheduled day of the service. Cancellation via phone is not accepted unless accompanied by an email the same day. Cancellation after field work has begun or completed will be subjected to partial or full payment of the agreed upon fee and the client agrees to pay the fees to cover the work completed.

Limitation of Liability

The client hereby agrees, to the fullest extent permitted by law, that KSM's and its officers and employees total liability to the client and all others for any and all injuries, claims, losses, expenses, damages (including consequential damages), or claim expenses arising out of the agreement or its breach, from any cause shall not exceed $1,000 or the total amount of the Service provided, whichever is greater. Such causes include, but are not limited to, KSM negligence, errors, omissions, strict liability, breach of contract, and breach of warranty. The client agrees to defend, indemnify and hold KSM harmless from all claims for liability in excess of the limits set forth above, for injury or loss sustained or alleged by any person or entity, whether a party to the agreement or not, and allegedly arising out of KSM performance or services.

Client Terms & Conditions

KSM will perform the Services in accordance with the following "Industry Standard of Care: (A) in a prompt, diligent, competent and professional manner; (B) during normal business hours for Client; and (C) in accordance with: (1) that degree of care and skill exercised by engineers providing similar services to other customers and in accordance with the custom and trade of KSM's industry; (2) any practices otherwise specified in writing by Client to KSM; (3) the specific plans, specifications, standards, descriptions, recommendations and drawings that have been provided to KSM including, without limitation, any amendments or alterations to them made by Client from time to time; and (4) in compliance with all applicable laws, including any and all state engineering rules and regulations. In the event KSM shall provide any type of inspection services, it is understood and agreed that KSM neither guarantees such contractors' or subcontractors' performance nor assumes any duty to supervise construction and safety procedures followed by the Client or its contractor(s) and subcontractor(s) nor for any public liability for property damage caused through acts of the Client and its contractor(s) and subcontractor(s).

Client recognizes that KSM is not responsible for or have control over means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the construction of a building or project on the behalf of Client or the Client's customers, nor shall KSM be responsible for Client and its contractor(s) or subcontractor(s) failing to comply with building code or specific recommendations or structural design by KSM. If Client makes any alteration to the provided report or permit drawings without the consent of KSM in connection with any reuse by Client, Client shall defend, indemnify and hold harmless KSM against claims arising solely out of such alteration; provided, however, nothing herein shall be deemed to release KSM from liability for that portion of the Project Documents prepared by KSM.

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Sebastian, FL. 32958
Orlando
723 Progress Way
Sanford, FL. 32771

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C.A. # 5693
KSMengineering.net

Any claim arising out of or related in any way to this Completed Service or Agreement (a "Claim") shall be subject to mediation as a condition precedent to binding dispute resolution. Unless the Parties mutually agree otherwise, mediations under this Agreement shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of this Agreement. The Parties shall share the mediator's fee and any filing fees equally. The mediation proceeding shall be held in the city with the largest population in the state in which a project for which Services are provided is located over which the dispute arises. If the Parties do not resolve a dispute through mediation, the method of binding dispute resolution shall be Litigation in a court of competent jurisdiction. DUE TO THE SPECIALIZED NATURE OF CONSTRUCTION LITIGATION, EACH PARTY HEREBY WAIVES ITS RIGHT TO A TRIAL BY JURY.

PURSUANT TO SECTION 558.0035 FLORIDA STATUTES; KELLER, SCHLEICHER and MacWILLIAM IS THE RESPONSIBLE PARTY FOR THE PROFESSIONAL SERVICES IT AGREES TO PROVIDE UNDER THIS AGREEMENT. NO INDIVIDUAL PROFESSIONAL EMPLOYEE, AGENT, DIRECTOR, OFFICER, PRINCIPAL, ETC. MAY BE INDIVIDUALLY LIABLE FOR NEGLIGENCE ARISING OUT OF THIS CONTRACT OR SERVICE.

KSM Engineering & Testing
FEE SCHEDULE
Wharton-Smith, Inc. - City of Port Orange Public Utilities Field Operations Facility
4505 Clyde Morris Blvd, City of Port Orange, FL
KSM Proposal No. CMT24778

	DESCRIPTION OF WORK	QTY.	RATE	UNITS	AMOUNT
I	**FIELD EXPLORATION - CONSTRUCTION MATERIALS**				
1	In-Place Density Tests (4 test minimum per trip)	400	$26.00	each	$10,400.00
2	Special Inspection - (3 hour minimum per trip) - Bolt/Weld	8	$150.00	hour	$1,200.00
3	Sr. Engineering Technician - Standby Time	5	$50.00	hour	$250.00
			Field Total		**$11,850.00**
II	**LABORATORY TESTING SERVICES - CONSTRUCTION MATERIALS**				
1	Modified or Standard Proctor Test	8	$90.00	each	$720.00
2	Limerock Bearing Ratio	4	$300.00	each	$1,200.00
3	Atterberg Limits	4	$80.00	each	$320.00
4	Organic Content	4	$45.00	each	$180.00
5	Grain Size Analysis (Full Sieve)	4	$60.00	each	$240.00
6	Compressive Strength Tests of Concrete Cylinders				
	-- Set of 4 including sampling, slump, and pick-up	26	$110.00	set	$2,860.00
	-- extra cylinders		$15.00	each	$0.00
7	Extraction and Gradation	6	$225.00	each	$1,350.00
			Lab Total		**$6,870.00**
III	**PROFESSIONAL SERVICES**				
1	Senior Engineer	6	$175.00	per hour	$1,050.00
2	Project Engineer	5	$150.00	per hour	$750.00
3	Project Manager	12	$125.00	per hour	$1,500.00
4	CADD/Drafting	0	$75.00	per hour	$0.00
5	Administrative Assistant	28	$55.00	per hour	$1,540.00
			Professional Total		**$4,840.00**
			Estimated Total		**$23,560.00**

Notes

1 MOT and other misc. or related costs shall be billed as a direct pass-through cost.
2 Weekend and over-time work will be charged at the regular rate time 1.5.
3 Services and/or equipment not listed will be negotiated on a case by case basis.

Christine Carasas

From: Tiffany Scalise <TiffanyS@ksmengineering.net>
Sent: Tuesday, November 12, 2024 10:46 AM
To: Wharton Smith Commercial Estimating
Cc: Eric McAra; Lauren Hamilton
Subject: Proposal for City of Port Orange Public Utilities Field Operations Facility
Attachments: Wharton-Smith, Port Orange Public Utilities Field Ops Facility - CMT24778.pdf

Good morning,

Here is the proposal you requested for City of Port Orange Public Utilities Field Operations Facility. Please let me know if you have any questions.

Thank you,

Tiffany Scalise
Administrative Marketing Assistant
tiffanys@ksmengineering.net
Main Office 772-589-0712
Company site www.ksmengineering.net
KSM ENGINEERING AND TESTING
Certified DBE/WBE in the State of Florida

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Subcontractor Bid Form-General

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Frann Construction
Scope of Work:	Concrete Div. 03 & Masonry Div. 04

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

Concrete bids shall be complete including, but not limited to: Foundations, tie columns, column encasements, slabs on grade, “flatwork” (concrete pavement, sidewalks, equipment pads, etc.), rebar and all work associated with Division 03 specifications and drawings.

PART 1: PRICING

(1.1) Total Base Bid

Concrete “flatwork” (sidewalks, conc. pavement, equipment pads, etc.)	$ 200,647.00
All other concrete foundations, slabs, tie columns, CIP walls, etc.	$ 887,095.00
Total Amount:	**$** 1,087,742.00
Amount in Words:	

(1.2) Alternates (Voluntary)

Masonry - CMU Add	$ 411,555.00
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	
Amount:	$

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	2.5%

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)
Split Faced CMU	8 -10		

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1	Dated:	11/01/24	RFI No.		Dated:	
RFI No.	2	Dated:	11/11/24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10/22/24	WSI No.	4	Dated:	10/28/24
WSI No.	2	Dated:	10/24/24	WSI No.	5	Dated:	10/31/24
WSI No.	3	Dated:	10/24/24	WSI No.	6 Thru 8	Dated:	11/4 - 11/8

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Frann Construction

Company Name

246 S. Park Ave, Apopka, FL 32703

Address (Street, City, State, Zip)

407-630-0531

Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Frann Construction Inc.

By: Matthew Ryan

Printed Name: Matt Ryan

Title: Estimator

Dated: 11/12/24

License No.:

Bid Proposal

$1,499,297.00

Date: 11/12/2024
Project: Port Orange Public Utilities Field Ops. Bldg.
Frann Construction Inc is pleased to provide you a quote for the project named above.

Admin & Warehouse Shell Scope of Work: $581,387.00

- Coordinate all work with project superintendent
- Layout from provided points
- Continuous foundations and Column pads
- Excavations and compaction, Spoils to remain on site
- Column Piers
- Setting of anchor bolts and grouting of base plates (anchor bolts & base plates provided by other)
- 4”thk SOG with 10mil vapor barrier and 6x6,w1.4 wwm for Admin bldg. – Approx. 11,250 sf
- 6”thk SOG with 10mil vapor barrier and #4 rebar at 16” oc ew – Approx. 16,700sf
- Finegrade
- Form & pour diamond blockouts
- Sawcutting of SOG
- Concrete
- Reinforcement
- Formwork
- Pumping and hoisting
- Daily trash cleanup to onsite dumpster provided by others
- Site Supervision
- Work is based on a 40-hour work week

Parking A & B, Granular Storage, Ramp & Washdown Pit Scope of Work: $305,708.00

- Coordinate all work with project superintendent
- Layout from provided points
- Continuous foundations
- Excavations and compaction, Spoils to remain on site
- CIP Concrete Walls at Granular Storage and Ramp/Wash Down Pit
- 6”thk Parking A SOG with 10mil vapor barrier and rebar reinforcing – Approx. 3,615 sf
- 6”thk Parking B SOG with 10mil vapor barrier and rebar reinforcing – Approx. 5,030 sf
- 6”thk Granular Storage SOG with 10mil vapor barrier and rebar reinforcing – Approx. 1,390 sf

- 8”thk Ramp & Wash Down Pit SOG with rebar reinforcing – Approx. 3,270 sf
- Setting of embed angle (angle provided by other)
- Finegrade
- Sawcutting of SOG
- Concrete
- Reinforcement
- Formwork
- Pumping and hoisting
- Daily trash cleanup to onsite dumpster provided by others
- Site Supervision
- Work is based on a 40-hour work week

Sitework Scope of Work: $200,647.00

- Coordinate all work with project superintendent
- Layout from provided points
- Continuous foundations
- Excavations and compaction, Spoils to remain on site
- 6”thk Dumpster Pad and Apron SOG with 6x6,W2.9 wwm (per J1/S201) – Approx. 540 sf
- 4”thk Sidewalk unreinforced – Approx. 5,080 sf
- 6”thk Sidewalk with fibermesh – Approx. 1,670 sf
- 6”thk Paving with fibermesh – Approx. 1,345 sf
- Bollards – Approx. 48ea
- ADA mats where indicated on drawings
- Finegrade
- Sawcutting of sidewalk and paving
- Concrete
- Formwork
- Pumping and hoisting
- Daily trash cleanup to onsite dumpster provided by others
- Site Supervision
- Work is based on a 40-hour work week

Masonry Scope of Work: $411,555.00

- Coordinate all work with project superintendent
- Layout from provided points
- 8” regular block
- 8” split faced block
- 4” split faced block
- Cell fill grout
- Rebar
- scaffolding
- Pumping and hoisting
- Daily trash cleanup to onsite dumpster provided by others
- Site Supervision
- Work is based on a 40-hour work week

All construction material pricing on this proposal is based on the market conditions as of **11/12/2024**
any unforeseen price escalation on construction material has been excluded on this proposal. This Proposal is good for 15 days and is null and void thereafter at the option of Frann Construction,

Exclusions

All/Any Demo, Engineering, Testing, Permits, Dewatering of ground water, Backfill of any MEP trenches, Locate of existing utility, Site Walls, Building & Site Curbs, Gravel, Grading, Bathroom facilities, Removal of spoils off site, Pavers, Embeds or plates, lightweight or Insulated concrete, Colored Concrete, Aggregate subbase, Polishing of concrete, Staining of concrete, Any waterproofing of concrete or masonry, Penetrating sealers, Sign/Light Pole/fence/gate foundations, MEP and Housekeeping pads, .

Christine Carasas

From: Matt <Matt@frannconstruction.com>
Sent: Tuesday, November 12, 2024 7:48 AM
To: Wharton Smith Commercial Estimating
Cc: Danielle Stinnett; Michael Gotlib
Subject: Port Orange Utilities Field Ops Bldg Proposal
Attachments: Bid Form_Concrete_Rev.10-25.pdf; Port Orange Public Utilities Field Ops Bldg Proposal.pdf

Good morning,
Please find attached our proposal for Port Orange Utilities Field Ops Facility.
Thanks,

Matt Ryan
Estimator, Frann Construction, Inc.
C: 407.630.0531 | matt@frannconstruction.com
246 S Park Ave. Apopka FL 32703

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Subcontractor Bid Form-General

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Structural Construction of Orlando, Inc.
Scope of Work:	Division 3 Concrete + Division 4 Masonry

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

Concrete bids shall be complete including, but not limited to: Foundations, tie columns, column encasements, slabs on grade, "flatwork" (concrete pavement, sidewalks, equipment pads, etc.), rebar and all work associated with Division 03 specifications and drawings.

PART 1: PRICING

(1.1) Total Base Bid

Concrete "flatwork" (sidewalks, conc. pavement, equipment pads, etc.)	$ 130,000.00
All other concrete foundations, slabs, tie columns, CIP walls, etc.	$ 549,000.00
Total Amount:	$ 679,000.00
Amount in Words:	

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $50,000)

Material/Equipment Types:	
Amount:	$ 250,000.00

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	N/A

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1 - 8	Dated:	11/12/2024	WSI No.		Dated:	
WSI No.		Dated:		WSI No.		Dated:	
WSI No.		Dated:		WSI No.		Dated:	

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Structural Construction of Orlando, Inc.
Company Name

2200 Winter Springs Blvd, Suite 106-310, Oviedo, FL 32765
Address (Street, City, State, Zip)

(321) 231 - 9508 Strucon12@aol.com
Phone Number **Email Address**

Type of Organization (Check One):

(✓) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of _____.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Structural Construction of Orlando, Inc.
By: _____
Printed Name: James Courtney
Title: President
Dated: 11/12/2024
License No.: CGC037510

Date: November 12, 2024

From: Jim Courtney
Structural Construction of Orlando
Phone: 321-231-9508
Fax: 407-977-1222
Strucon12@aol.com

Project: Port Orange Public Utilities Field Building

Location: Port Orange, FL

To: Estimator

Scope of Work

Main Building Plans:

A. **Foundations**
B. **Slab on Grade**
C. **Beams**
D. **CMU**
E. **Split face**
F. **Sidewalk**
G. **Dumpster**
H. **Pavement**
I. **Bollards**
J. **Wire**
K. **Anchor Bolt installation**
L. **Rebar**
M. **Vapor Barrier**
N. **Concrete Pump**
O. **Parking Area**
P. **Warehouse Slab**
Q. **Columns**
R. **Will work from the GC's layout using control lines established by others**
S. **Will take the slab on grade from fine grade to finish grade including any saw cuts.**

Exclusions:

A. **Dewatering except rain water**
B. **Site work demolition & mass excavating**
C. **Exterior Curb**
D. **Water proofing**
E. **Paving**
F. **Embeds (Steel Sub)**
G. **ADA Mats**
H. **Brick pavers,**
I. **Fill dirt**
J. **Spoil Removal**
K. **Pervious Concrete**
L. **Any testing**
M. **Soil poisoning**

Bid Amount: $1,223,000.00

Breakout

Site: $130,000.00

CIP: $549,000.00

CMU: $544,000.00

Christine Carasas

From: Jim Courtney <strucon12@aol.com>
Sent: Tuesday, November 12, 2024 12:52 PM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Utilities Field Operations Building Proposal
Attachments: Port Orange Public Utilities - Bid form.pdf; Port Orange Public Utilties.docx

Jim Courtney
Structural Construction of Orlando
321-231-9508
scoincflorida.com

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!

Subcontractor Bid Form-General

Wharton-Smith, Inc. CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	BNG Construction, Inc.
Scope of Work:	Div. 3 - Concrete

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

Concrete bids shall be complete including, but not limited to: Foundations, tie columns, column encasements, slabs on grade, "flatwork" (concrete pavement, sidewalks, equipment pads, etc.), rebar and all work associated with Division 03 specifications and drawings.

PART 1: PRICING

(1.1) Total Base Bid

Concrete "flatwork" (sidewalks, conc. pavement, equipment pads, etc.) Site Concrete	$461,500.00
All other concrete foundations, slabs, tie columns, CIP walls, etc. Buildings Concrete:	$537,525.00
Total Amount:	$999,025.00
Amount in Words:	Nine Hundred Nintey Nine Thousand Twenty Five Dollars

(1.2) Alternates (Voluntary)

Alternates #1 and #2 Are Excluded.	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $50,000)

Material/Equipment Types:	Concrete and Rebar Material
Amount:	$ 343,660.00

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1	$
2	$
3	$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %: 1.421%

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1	Dated:	11/7/24	RFI No.	Dated:
RFI No.	2	Dated:	11/11/24	RFI No.	Dated:
RFI No.		Dated:		RFI No.	Dated:

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10/22/24	WSI No.	4	Dated:	10/28/24
WSI No.	2	Dated:	11/24/24	WSI No.	5	Dated:	10/31/24
WSI No.	3	Dated:	10/24/24	WSI No.	6	Dated:	11/4/24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.	7	Dated:	11/6/24	ASI No.	8	Dated:	11/8/24

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.	Dated:	Addenda No.	Dated:
Addenda No.	Dated:	Addenda No.	Dated:

(2.5) Additional Acknowledgements

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Continued Next Page

PART 3: BIDDER INFORMATION

BNG Construction, Inc.
Company Name

2995 Stonewall Place, Sanford, Fl 32773
Address (Street, City, State, Zip)

407-688-1747 thollinsworth@bngconstruction.net
Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: BNG Construction, Inc.
By:
Printed Name: Bryan Beckman
Title: Vice President
Dated: 11/12/24
License No.: CGC # 1504945



#CGC1504945

DATE: 11/12/24

PROPOSAL

BNG Construction Inc.
2995 Stonewall Place
Sanford, FL 32773
Office Ph & Fax (407)688-1747 / 1748

Job name **Port Orange Public Utilities**
Street:
City: Port Orange

		By BNG	By others
	Labor, Equipment & Machinery to complete the Concrete Work Except as Noted Below.		
#1	Prep and Pour Foundations with Reinforcing as Specified.	X	
#2	Supply and Install Termite Treatment Under Slab on Grade.	X	
#3	Supply and Install 10 Mil Stego Wrap Vapor Barrier Under Building Slabs on Grade.	X	
#4	Form, Prep and Pour the Admin. & Warehouse Slabs on Grade with Reinforcing As Specified.	X	
	The Admin. Slab and the Warehouse Slab are Both Figured as being Poured Entirely With Colored Concrete. The Monolithic Design of the Warehouse Requires that the Entire Slab & Foundations be Poured with Colored Concrete. The Admin Slab could be Broken Up but it would not be Cost Effective. **No Color is Specified so an Allowance of $35.00 PCY for Color is Included.**	X	
#5	Provide and Install all Rebar as Specified.	X	
#6	The Trench Drain Concrete Work is Included. Embed Material is NOT included.	X	
#7	The CIP Concrete Beams & Columns are Included as being Installed from the Masons Scaffolding.	X	
#8	Installing Embeds, Supplied by Others, which are contained in our Work is Included.	X	
#9	Grouting under Column Base Plates is Included.	X	
#10	Included in the Site Concrete Bid are the Dumpster Slab/Apron, Mechanical Yard, Granular Storage & PEMB Parking Structures, Ramp and Washdown Pit, Building Sidewalks, ADA Warning Mats and Installation of Pipe Bollards As Shown on Sheet C6.	X	
#11	Supply or Install Gravel, Sand or Base/Sub Base of any kind is NOT included.		X
#12	Concrete Sealers & Hardeners and Polishing Concrete are Not Included.		X
#13	Welding and Weldable Rebar are NOT included.		X
#14	Light Pole Bases, Flagpole Base, Sign Foundations and Anchor Bolt/Bolt Material are NOT included.		X
#15	A Mockup is NOT included and Surface Mounted Bollards are NOT included.		X
#16	Any Work at the Future Police Impound Lot Pad is NOT included.		X
#17	Removing Any Excess Or Unsuitable Export Materials is NOT included.		X
#18	Diamond Dowels at Saw Cut Joints As Shown in Det. A12/S201are NOT included.		X
#19	Pre-Cast Wall Caps or Any Pre-Cast Concrete is NOT included.		X
#20	Any Work at Oil Seperator Area is NOT included.		X
#21	The Sidewalks Included are Figured as 4" Thick and 3000 Psi Concrete & W1.4 WWF.		X

Buildings Concrete Bid:$537,525.00
Site Concrete Bid:$461,500.00

SCOPE OF WORK

Na= not applicable
Lab= Labor
Mat= Materials
BNG= BNG Construction Inc.

		By BNG Lab	By BNG Mat	By Others Lab	By Others Mat
#1	Corner pins/ hubs & elevations of each building----------			X	X
#2	Temporary electric----------			X	X
#3	Temporary toilet----------			X	X
#4	Temporary water----------			X	X
#5	Accessible road to & around each building			X	X
#6	Submittals submitted to GC----------	X	X		
#7	Approved submittals before starting job	X	X		
#8	Good clean fill dirt to be at 1/10ft-----			X	X
#9	Remove excess fill dirt material-------			X	X
#10	Density and required compaction ----------			X	X
#11	Lay - out other trades----------			X	X
#12	Lay-out building from your pins/hubs-	X	X		
#13	Excavate footings and pads----------	X	X		
#14	Backfill footings and pads----------	X	X		
#15	Light Compaction of the footings and pads backfill material----------	X	X		
#16	Install earth formed footings	X	X		
#17	Protection of footings/pads for others-			X	X
#18	Well pointing (holding water table 12" below bottom of footings)---------			X	X
#19	Dewatering of surface rain water---	X	X		
#20	Back - fill other trades----------			X	X
#21	Termite treat slab area----------	X	X		
#22	Place & finish concrete slab----------	X	X		
#23	Saw cut slab control joints----------	X	X		
#24	Control joint sealants----------			X	X
#25	Curing compound (slab)----------	X	X		
#26	Slab accessories----------	X	X		
#27	Ground slab poured before roof is installed----------	X	X		
#28	Ground slab poured before all block walls are installed----------	NA			
#29	Wire mesh ----------	X	X		
#30	Floating & patching floor for covering			X	X
#31	Tractor (fine grading)----------	X	X		

Initials_____

SCOPE OF WORK

Na= not applicable
Lab= Labor
Mat= Materials
BNG= BNG Construction Inc.

	By BNG Lab-Mat		By Others Lab-Mat	
#35 Fill beam block ----------	NA			
#36 Form & pour concrete columns------	X	X		
#37 Sono-tube columns----------	NA			
#38 Concrete columns to be rubbed out--	X	X		
#39 Structural steel columns----------			X	X
#40 Grout steel columns----------	X			
#41 Grout block cells----------			X	X
#42 Form and pour tie beams ----------	X	X		
#43 Lay-out and installation of sleeves--			X	X
#44 Window sills (formed & poured)---			X	X
#45 Truss & joist anchors & pockets---			NA	
#46 Grouting of truss & bar joist-------			NA	
#47 Shoring or bracing of bar joist-------			NA	
#48 Formed arches----------	NA		NA	
#49 Cast-in-Place rebar----------	X	X		
#50 Masonry Rebar----------			X	X
#51 Concrete materials----- for BNG only	X	X		
#52 Anchor J - Bolts ----------	X			X
#53 Protection of J-bolts----------			X	X
#54 Concrete pump--------- for BNG only	X	X		
#55 Crane (BNG usage only)	NA			
#56 Concrete test----------			X	X
#57 Trash in one location----------	X			
#58 Trash removed from job site -------			X	X
#59 Steel door jambs----------			X	X
#60 Sidewalks adjacent to building-------	X	X		
#61 Sidewalks adjacent to roads--------	X	X		
#62 Dumpster slab----------	X	X		
#63 Compactor pad----------	NA			
#64 Saw cut control joints in flat work--	X	X		
#65 Hand tooled control joints----------	NA			
#66 Concrete paving----------	X	X		
#67 Colored concrete----------	X	X		
#68 House keeping pads----------	X	X		

Initials_____

SCOPE OF WORK

Na= not applicable
Lab= Labor
Mat= Materials
BNG= BNG Construction Inc.

		By BNG Lab-Mat		By Others Lab-Mat	
#69	Light pole bases----------	NA			
#70	Pipe bollards ----------	NA			X
#71	Concrete ribbon curbs----------			X	X
#72	Joint backer rod and filler----------			X	X
#73	Stair nosing----------	NA			
#74	Formed & poured stairs----------	NA			
#75	Fill steel stair pans----------	NA			
#76	Precast slabs set, level, grout------	NA			
#77	Topping for precast slabs----------	NA			
#78	Precast concrete joist----------	NA			
#79	Precast soffit beams----------	NA			
#80	Hambro bar joist----------	NA			
#81	Hand rails for BNG personnel protection only----------	X	X		
#82	Demolition of anykind----------			X	X
#83	Schedule in writing and agreed upon before work begins----------	X	X		
#84	Three more complete sets of plans			X	X
#85	Work with a spirit of cooperation	X	X	X	X
#86	Notify BNG of any changes to job plans since bid date----------			X	X
#87	Performance & payment bond--			NA	
#88	Direct Owner Purchase---------			NA	
#89	Subbase under SOG			X	X
#90	Concrete staining			X	X
#91	Concrete floor sealers/hardeners			X	X

* Square footages or lengths given are for information only, and are not an integral or binding part of this proposal.

Initials_____

Terms and Conditions

Page 5

All materials are guaranteed to be as specified. All work to be completed in a workman like manner according to ASTM standards. Any alterations or deviations from above specifications involving extra cost will be executed only upon a written change order, and will become an extra charge over and above the estimate, All agreement contingent upon strikes, accidents or delays beyond our control. This proposal subject to acceptance within 3 days and is null and void thereafter at the o the option of BNG Construction Inc. With your acceptance of this proposal it becomes part of the contract between your company and BNG Construction Inc. The structural drawings
takes precedence over architectural drawings. We reserve the right to modify or change our price for this job any time before bid opening. Our bid reflects us working off the mason's scaffolding.Tiebeams formed and pour in this order. First floor beam off the ground floor slab. Second floor beam off the second floor slab and so forth type. We will not accept a penalty clause in your contract. We bid the documents as is. If there is additional engineering later that changes the design and adds more labor and or materials. We will submit a extra and require you to pay it.
Due to the volatility of material prices BNG Construction cannot hold pricing for more than 3 days from the date of this proposal without a letter of intent to use BNG to perform the concrete for this project.

	Plan Sheets	Plan date	Plan Sheets	Plan Date	Plan Sheets	Plan Date	Plan Sheet	Plan Date	Plan Sheets
#1									
#2									
#3									
#4									
#5									
#6									
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	Sheets	Dates
#1		
#2		
#3		
#4		

	Addendum's Sheets	Addendum's Dates
#5		
#6		
#7		
#8		

Initials_____

Christine Carasas

From: Terry Hollinsworth <thollinsworth@bngconstruction.net>
Sent: Wednesday, November 13, 2024 9:40 AM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Public Utilities Fiele OPS Building - Our Concrete Proposals
Attachments: 20241113103045.pdf

Please find our Proposals for the Project attached, Thank you!

Thank you,
Terry Hollinsworth
Estimator
407-688-1747 ext 212
407-688-1748 fax
Email: thollinsworth@bngconstruction.net
Website: www.bngconstruction.net

Structural Concrete Specialists
Concrete, Masonry, Tilt Wall
CGC#1504945

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Subcontractor Bid Form-General

Wharton-Smith, Inc. CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	BNG Construction, Inc.
Scope of Work:	Div. 3 - Concrete

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

Concrete bids shall be complete including, but not limited to: Foundations, tie columns, column encasements, slabs on grade, "flatwork" (concrete pavement, sidewalks, equipment pads, etc.), rebar and all work associated with Division 03 specifications and drawings.

PART 1: PRICING

(1.1) Total Base Bid

Concrete "flatwork" (sidewalks, conc. pavement, equipment pads, etc.) Site Concrete	$ 466,495.00
All other concrete foundations, slabs, tie columns, CIP walls, etc. Buildings Concrete	$ 537,525.00
Total Amount:	$ 1,004,020.00
Amount in Words:	One Million Four Thousand Twenty Dollars

(1.2) Alternates (Voluntary)

Alternates #1 and #2 Are Excluded.	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $50,000)

Material/Equipment Types:	Concrete and Rebar Material
Amount:	$ 343,660.00

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %: 1.421%	

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1	Dated:	11/7/24	RFI No.		Dated:	
RFI No.	2	Dated:	11/11/24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10/22/24	WSI No.	4	Dated:	10/28/24
WSI No.	2	Dated:	11/24/24	WSI No.	5	Dated:	10/31/24
WSI No.	3	Dated:	10/24/24	WSI No.	6	Dated:	11/4/24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.	7	Dated:	11/6/24	ASI No.	8	Dated:	11/8/24

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

BNG Construction, Inc.
Company Name

2995 Stonewall Place, Sanford, Fl 32773
Address (Street, City, State, Zip)

407-688-1747 thollinsworth@bngconstruction.net
Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: BNG Construction, Inc.
By: _____
Printed Name: Bryan Beckman
Title: Vice President
Dated: 11/12/24
License No.: CGC # 1504945

#CGC1504945

DATE: 11/18/24

REVISED

PROPOSAL

BNG Construction Inc.
2995 Stonewall Place
Sanford, FL 32773
Office Ph & Fax (407)688-1747 / 1748

Job name **Port Orange Public Utilities**
Street:
City: Port Orange

		By BNG	By others
	Labor, Equipment & Machinery to complete the Concrete Work Except as Noted Below.		
#1	Prep and Pour Foundations with Reinforcing as Specified.	X	
#2	Supply and Install Termite Treatment Under Slab on Grade.	X	
#3	Supply and Install 10 Mil Stego Wrap Vapor Barrier Under Building Slabs on Grade.	X	
#4	Form, Prep and Pour the Admin. & Warehouse Slabs on Grade with Reinforcing As Specified.	X	
	The Admin. Slab and the Warehouse Slab are Both Figured as being Poured Entirely With Colored Concrete. The Monolithic Design of the Warehouse Requires that the Entire Slab & Foundations be Poured with Colored Concrete. The Admin Slab could be Broken Up but it would not be Cost Effective. **No Color is Specified so an Allowance of $35.00 PCY for Color is Included.**	X	
#5	Provide and Install all Rebar as Specified.	X	
#6	The Trench Drain Concrete Work is Included. Embed Material is NOT included.	X	
#7	The CIP Concrete Beams & Columns are Included as being Installed from the Masons Scaffolding.	X	
#8	Installing Embeds, Supplied by Others, which are contained in our Work is Included.	X	
#9	Grouting under Column Base Plates is Included.	X	
#10	Included in the Site Concrete Bid are the Dumpster Slab/Apron, Mechanical Yard, Granular	X	
	Storage & PEMB Parking Structures, Ramp and Washdown Pit, Building Sidewalks, ADA	X	
	Warning Mats and Installation of Pipe Bollards As Shown on Sheet C6.	X	
#11	Supply or Install Gravel, Sand or Base/Sub Base of any kind is NOT included.		X
#12	Concrete Sealers & Hardeners and Polishing Concrete are Not Included.		X
#13	Welding and Weldable Rebar are NOT included.		X
#14	Light Pole Bases, Flagpole Base, Sign Foundations and Anchor Bolt/Bolt Material are NOT included.		X
#15	A Mockup is NOT included and Surface Mounted Bollards are NOT included.		X
#16	Any Work at the Future Police Impound Lot Pad is NOT included.		X
#17	Removing Any Excess Or Unsuitable Export Materials is NOT included.		X
#18	Diamond Dowels at Saw Cut Joints As Shown in Det. A12/S201are NOT included.		X
#19	Pre-Cast Wall Caps or Any Pre-Cast Concrete is NOT included.		X
#20	Any Work at Oil Seperator Area is NOT included.		X
#21	The Sidewalks Included are Figured as 4" Thick and 3000 Psi Concrete & W1.4 WWF.		X

Buildings Concrete Bid:$537,525.00
Site Concrete Bid:$466,495.00.00

SCOPE OF WORK

Page 2

01/00/00

Na= not applicable
Lab= Labor
Mat= Materials
BNG= BNG Construction Inc.

		By BNG Lab-Mat		By Others Lab-Mat	
#1	Corner pins/ hubs & elevations of each building----------			X	X
#2	Temporary electric----------			X	X
#3	Temporary toilet----------			X	X
#4	Temporary water----------			X	X
#5	Accessible road to & around each building			X	X
#6	Submittals submitted to GC----------	X	X		
#7	Approved submittals before starting job	X	X		
#8	Good clean fill dirt to be at 1/10ft-----			X	X
#9	Remove excess fill dirt material-------			X	X
#10	Density and required compaction ----------			X	X
#11	Lay - out other trades----------			X	X
#12	Lay-out building from your pins/hubs-	X	X		
#13	Excavate footings and pads----------	X	X		
#14	Backfill footings and pads----------	X	X		
#15	Light Compaction of the footings and pads backfill material----------	X	X		
#16	Install earth formed footings	X	X		
#17	Protection of footings/pads for others-			X	X
#18	Well pointing (holding water table 12" below bottom of footings)--------			X	X
#19	Dewatering of surface rain water---	X	X		
#20	Back - fill other trades----------			X	X
#21	Termite treat slab area----------	X	X		
#22	Place & finish concrete slab----------	X	X		
#23	Saw cut slab control joints----------	X	X		
#24	Control joint sealants----------			X	X
#25	Curing compound (slab)----------	X	X		
#26	Slab accessories----------	X	X		
#27	Ground slab poured before roof is installed----------	X	X		
#28	Ground slab poured before all block walls are installed----------	NA			
#29	Wire mesh ----------	X	X		
#30	Floating & patching floor for covering			X	X
#31	Tractor (fine grading)----------	X	X		

Initials_____

SCOPE OF WORK

Na= not applicable
Lab= Labor
Mat= Materials
BNG= BNG Construction Inc.

	By BNG Lab-Mat		By Others Lab-Mat	
#35 Fill beam block	NA			
#36 Form & pour concrete columns	X	X		
#37 Sono-tube columns	NA			
#38 Concrete columns to be rubbed out	X	X		
#39 Structural steel columns			X	X
#40 Grout steel columns	X			
#41 Grout block cells			X	X
#42 Form and pour tie beams	X	X		
#43 Lay-out and installation of sleeves			X	X
#44 Window sills (formed & poured)			X	X
#45 Truss & joist anchors & pockets			NA	
#46 Grouting of truss & bar joist			NA	
#47 Shoring or bracing of bar joist			NA	
#48 Formed arches	NA		NA	
#49 Cast-in-Place rebar	X	X		
#50 Masonry Rebar			X	X
#51 Concrete materials---- for BNG only	X	X		
#52 Anchor J - Bolts	X			X
#53 Protection of J-bolts			X	X
#54 Concrete pump------ for BNG only	X	X		
#55 Crane (BNG usage only)	NA			
#56 Concrete test			X	X
#57 Trash in one location	X			
#58 Trash removed from job site			X	X
#59 Steel door jambs			X	X
#60 Sidewalks adjacent to building	X	X		
#61 Sidewalks adjacent to roads	X	X		
#62 Dumpster slab	X	X		
#63 Compactor pad	NA			
#64 Saw cut control joints in flat work	X	X		
#65 Hand tooled control joints	NA			
#66 Concrete paving	X	X		
#67 Colored concrete	X	X		
#68 House keeping pads	X	X		

Initials_____

SCOPE OF WORK

Na= not applicable
Lab= Labor
Mat= Materials
BNG= BNG Construction Inc.

		By BNG Lab-Mat		By Others Lab-Mat	
#69	Light pole bases----------	NA			
#70	Pipe bollards ----------	NA			X
#71	Concrete ribbon curbs----------			X	X
#72	Joint backer rod and filler----------			X	X
#73	Stair nosing----------	NA			
#74	Formed & poured stairs----------	NA			
#75	Fill steel stair pans----------	NA			
#76	Precast slabs set, level, grout------	NA			
#77	Topping for precast slabs----------	NA			
#78	Precast concrete joist----------	NA			
#79	Precast soffit beams----------	NA			
#80	Hambro bar joist----------	NA			
#81	Hand rails for BNG personnel protection only----------	X	X		
#82	Demolition of anykind----------			X	X
#83	Schedule in writing and agreed upon before work begins----------	X	X		
#84	Three more complete sets of plans			X	X
#85	Work with a spirit of cooperation	X	X	X	X
#86	Notify BNG of any changes to job plans since bid date----------			X	X
#87	Performance & payment bond--			NA	
#88	Direct Owner Purchase----------			NA	
#89	Subbase under SOG			X	X
#90	Concrete staining			X	X
#91	Concrete floor sealers/hardeners			X	X

* Square footages or lengths given are for information only, and are not an integral or binding part of this proposal.

Initials_____

Terms and Conditions

Page 5

All materials are guaranteed to be as specified. All work to be completed in a workman like manner according to ASTM standards. Any alterations or deviations from above specifications involving extra cost will be executed only upon a written change order, and will become an extra charge over and above the estimate. All agreement contingent upon strikes, accidents or delays beyond our control. This proposal subject to acceptance within 3 days and is null and void thereafter at the c the option of BNG Construction Inc. With your acceptance of this proposal it becomes part of the contract between your company and BNG Construction Inc. The structural drawings
takes precedence over architectural drawings. We reserve the right to modify or change our price for this job any time before bid opening. Our bid reflects us working off the mason's scaffolding.Tiebeams formed and pour in this order. First floor beam off the ground floor slab. Second floor beam off the second floor slab and so forth type. We will not accept a penalty clause in your contract. We bid the documents as is. If there is additional engineering later that changes the design and adds more labor and or materials. We will submit a extra and require you to pay it.
Due to the volatility of material prices BNG Construction cannot hold pricing for more than 3 days from the date of this proposal without a letter of intent to use BNG to perform the concrete for this project.

	Plan Sheets	**Plan date**	**Plan Sheets**	**Plan Date**	**Plan Sheets**	**Plan Date**	**Plan Sheet**	**Plan Date**	**Plan Sheets**
#1									
#2									
#3									
#4									
#5									
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	Sheets	Dates
#1		
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Addendum's

Sheets	Dates

Addendum's

Initials_____

Manuel Gonzalez
Monday, November 18, 2024 10:10 AM
Wharton Smith Commercial Estimating
FW: Port Orange Public Utilities Fiele OPS Building - Our Concrete Proposals
REV. CONCRETE PROPOSAL PORT ORANGE PUBLIC UTILITIES.pdf



Manuel D Gonzalez | Senior Preconstruction Services Manager
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
49 E Chase St, Pensacola, FL 32502 | Office: (850) 328-4350 | Cell: (850) 287-3242

From: Terry Hollinsworth <thollinsworth@bngconstruction.net>
Sent: Monday, November 18, 2024 8:30 AM
To: Manuel Gonzalez <mdgonzalez@whartonsmith.com>
Subject: RE: Port Orange Public Utilities Fiele OPS Building - Our Concrete Proposals

Good morning Manny. The Breakdown you mentioned below is Exactly as I have it broken down on BNG's Proposal.

Please see our Revised Proposals attached. I had taken the Granular Storage Slab off on parts of two different sheets and somehow failed to include 75 lf of ME10 Turned Down Edge Footing.

I have added it in on our Revised Proposals. It resulted in an add of $4,995.00 to our Total Price.

I am working on getting you a price for the Diamond Dowel Plates at the Sawed Joints on the Warehouse. Thanks!

Thank you,

Terry Hollisworth

From: Manuel Gonzalez <mdgonzalez@whartonsmith.com>
Sent: Friday, November 15, 2024 5:11 PM
To: Terry Hollinsworth <thollinsworth@bngconstruction.net>
Subject: RE: Port Orange Public Utilities Fiele OPS Building - Our Concrete Proposals

Terry,

If you can do it by Monday mid-morning, please separate your price breakout so that all that is in your site number is concrete paving, concrete paving at ramp/washdown-pit/dumpster/mech-yard, and concrete sidewalks. Everything on structural drawings in building concrete, and footings for dumpster and mechanical yard in building concrete.

Manuel D Gonzalez | Senior Preconstruction Services Manager
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
49 E Chase St, Pensacola, FL 32502 | Office: (850) 328-4350 | Cell: (850) 287-3242

From: Terry Hollinsworth <thollinsworth@bngconstruction.net>
Sent: Thursday, November 14, 2024 10:03 AM
To: Manuel Gonzalez <mdgonzalez@whartonsmith.com>
Subject: RE: Port Orange Public Utilities Fiele OPS Building - Our Concrete Proposals

Sorry, I forgot to attach the Highlighted Sheet AS001 in my last email. Here it is.

Thank you,

Terry Hollisworth

From: Terry Hollinsworth
Sent: Thursday, November 14, 2024 11:01 AM
To: Manuel Gonzalez <mdgonzalez@whartonsmith.com>
Subject: RE: Port Orange Public Utilities Fiele OPS Building - Our Concrete Proposals

Manuel, please see the attached sheet AS011. The items Highlighted in Blue are in the Buildings Concrete Price and the items Highlighted in Yellow are contained in the Site Concrete Price.

Thank you,

Terry Hollisworth

From: Manuel Gonzalez <mdgonzalez@whartonsmith.com>
Sent: Wednesday, November 13, 2024 3:46 PM
To: Terry Hollinsworth <thollinsworth@bngconstruction.net>
Subject: RE: Port Orange Public Utilities Fiele OPS Building - Our Concrete Proposals

Terry,

I'm seeing a big difference in how bidders split their pricing between building and site. Please highlight sheet AS011 in two colors to correspond to the two prices you gave us.

Manuel D Gonzalez | Senior Preconstruction Services Manager
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
49 E Chase St, Pensacola, FL 32502 | Office: (850) 328-4350 | Cell: (850) 287-3242

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#CGC1504945

DATE: 11/18/24

REVISED

PROPOSAL

BNG Construction Inc.
2995 Stonewall Place
Sanford, FL 32773
Office Ph & Fax (407)688-1747 / 1748

Job name **Port Orange Public Utilities**
Street:
City: Port Orange

		By BNG	By others
	Labor, Equipment & Machinery to complete the Concrete Work Except as Noted Below.		
#1	Prep and Pour Foundations with Reinforcing as Specified.	X	
#2	Supply and Install Termite Treatment Under Slab on Grade.	X	
#3	Supply and Install 10 Mil Stego Wrap Vapor Barrier Under Building Slabs on Grade.	X	
#4	Form, Prep and Pour the Admin. & Warehouse Slabs on Grade with Reinforcing As Specified.	X	
	The Admin. Slab and the Warehouse Slab are Both Figured as being Poured Entirely With Colored Concrete. The Monolithic Design of the Warehouse Requires that the Entire Slab & Foundations be Poured with Colored Concrete. The Admin Slab could be Broken Up but it would not be Cost Effective. **No Color is Specified so an Allowance of $35.00 PCY for Color is Included.**	X	
#5	Provide and Install all Rebar as Specified.	X	
#6	The Trench Drain Concrete Work is Included. Embed Material is NOT included.	X	
#7	The CIP Concrete Beams & Columns are Included as being Installed from the Masons Scaffolding.	X	
#8	Installing Embeds, Supplied by Others, which are contained in our Work is Included.	X	
#9	Grouting under Column Base Plates is Included.	X	
#10	Included in the Site Concrete Bid are the Dumpster Slab/Apron, Mechanical Yard, Granular	X	
	Storage & PEMB Parking Structures, Ramp and Washdown Pit, Building Sidewalks, ADA	X	
	Warning Mats and Installation of Pipe Bollards As Shown on Sheet C6.	X	
#11	Supply or Install Gravel, Sand or Base/Sub Base of any kind is NOT included.		X
#12	Concrete Sealers & Hardeners and Polishing Concrete are Not Included.		X
#13	Welding and Weldable Rebar are NOT included.		X
#14	Light Pole Bases, Flagpole Base, Sign Foundations and Anchor Bolt/Bolt Material are NOT included.		X
#15	A Mockup is NOT included and Surface Mounted Bollards are NOT included.		X
#16	Any Work at the Future Police Impound Lot Pad is NOT included.		X
#17	Removing Any Excess Or Unsuitable Export Materials is NOT included.		X
#18	Diamond Dowels at Saw Cut Joints As Shown in Det. A12/S201are NOT included.		X
#19	Pre-Cast Wall Caps or Any Pre-Cast Concrete is NOT included.		X
#20	Any Work at Oil Seperator Area is NOT included.		X
#21	The Sidewalks Included are Figured as 4" Thick and 3000 Psi Concrete & W1.4 WWF.		X

Buildings Concrete Bid:$537,525.00
Site Concrete Bid:$466,495.00.00
Add Diamond Dowels At Sawn Joints in Warehouse Building - Add $29,200.00

SCOPE OF WORK

Page 2

01/00/00

Na= not applicable
Lab= Labor
Mat= Materials
BNG= BNG Construction Inc.

		By BNG Lab	By BNG Mat	By Others Lab	By Others Mat
#1	Corner pins/ hubs & elevations of each building----------			X	X
#2	Temporary electric----------			X	X
#3	Temporary toilet----------			X	X
#4	Temporary water----------			X	X
#5	Accessible road to & around each building			X	X
#6	Submittals submitted to GC----------	X	X		
#7	Approved submittals before starting job	X	X		
#8	Good clean fill dirt to be at 1/10ft-----			X	X
#9	Remove excess fill dirt material-------			X	X
#10	Density and required compaction ----------			X	X
#11	Lay - out other trades----------			X	X
#12	Lay-out building from your pins/hubs-	X	X		
#13	Excavate footings and pads----------	X	X		
#14	Backfill footings and pads----------	X	X		
#15	Light Compaction of the footings and pads backfill material----------	X	X		
#16	Install earth formed footings	X	X		
#17	Protection of footings/pads for others-			X	X
#18	Well pointing (holding water table 12" below bottom of footings)---------			X	X
#19	Dewatering of surface rain water---	X	X		
#20	Back - fill other trades----------			X	X
#21	Termite treat slab area----------	X	X		
#22	Place & finish concrete slab----------	X	X		
#23	Saw cut slab control joints----------	X	X		
#24	Control joint sealants----------			X	X
#25	Curing compound (slab)----------	X	X		
#26	Slab accessories----------	X	X		
#27	Ground slab poured before roof is installed----------	X	X		
#28	Ground slab poured before all block walls are installed----------	NA			
#29	Wire mesh ----------	X	X		
#30	Floating & patching floor for covering			X	X
#31	Tractor (fine grading)----------	X	X		

Initials_____

SCOPE OF WORK

Na= not applicable
Lab= Labor
Mat= Materials
BNG= BNG Construction Inc.

		By BNG Lab-Mat		By Others Lab-Mat	
#35	Fill beam block ----------	NA			
#36	Form & pour concrete columns------	X	X		
#37	Sono-tube columns----------	NA			
#38	Concrete columns to be rubbed out--	X	X		
#39	Structural steel columns----------			X	X
#40	Grout steel columns----------	X			
#41	Grout block cells----------			X	X
#42	Form and pour tie beams ----------	X	X		
#43	Lay-out and installation of sleeves--			X	X
#44	Window sills (formed & poured)---			X	X
#45	Truss & joist anchors & pockets---			NA	
#46	Grouting of truss & bar joist--------			NA	
#47	Shoring or bracing of bar joist-------			NA	
#48	Formed arches----------	NA		NA	
#49	Cast-in-Place rebar----------	X	X		
#50	Masonry Rebar----------			X	X
#51	Concrete materials---- for BNG only	X	X		
#52	Anchor J - Bolts ----------	X			X
#53	Protection of J-bolts----------			X	X
#54	Concrete pump--------- for BNG only	X	X		
#55	Crane (BNG usage only)	NA			
#56	Concrete test----------			X	X
#57	Trash in one location----------	X			
#58	Trash removed from job site -------			X	X
#59	Steel door jambs----------			X	X
#60	Sidewalks adjacent to building-------	X	X		
#61	Sidewalks adjacent to roads--------	X	X		
#62	Dumpster slab----------	X	X		
#63	Compactor pad----------	NA			
#64	Saw cut control joints in flat work--	X	X		
#65	Hand tooled control joints----------	NA			
#66	Concrete paving----------	X	X		
#67	Colored concrete----------	X	X		
#68	House keeping pads----------	X	X		

Initials_____

Na= not applicable
Lab= Labor
Mat= Materials
BNG= BNG Construction Inc.

		By BNG Lab-Mat		By Others Lab-Mat	
#69	Light pole bases----------	NA			
#70	Pipe bollards ----------	NA			X
#71	Concrete ribbon curbs----------			X	X
#72	Joint backer rod and filler----------			X	X
#73	Stair nosing----------	NA			
#74	Formed & poured stairs----------	NA			
#75	Fill steel stair pans----------	NA			
#76	Precast slabs set, level, grout------	NA			
#77	Topping for precast slabs----------	NA			
#78	Precast concrete joist----------	NA			
#79	Precast soffit beams----------	NA			
#80	Hambro bar joist----------	NA			
#81	Hand rails for BNG personnel protection only----------	X	X		
#82	Demolition of anykind----------			X	X
#83	Schedule in writing and agreed upon before work begins----------	X	X		
#84	Three more complete sets of plans			X	X
#85	Work with a spirit of cooperation	X	X	X	X
#86	Notify BNG of any changes to job plans since bid date----------			X	X
#87	Performance & payment bond--			NA	
#88	Direct Owner Purchase---------			NA	
#89	Subbase under SOG			X	X
#90	Concrete staining			X	X
#91	Concrete floor sealers/hardeners			X	X

* Square footages or lengths given are for information only, and are not an integral or binding part of this proposal.

Initials_____

Terms and Conditions

All materials are guaranteed to be as specified. All work to be completed in a workman like manner according to ASTM standards. Any alterations or deviations from above specifications involving extra cost will be executed only upon a written change order, and will become an extra charge over and above the estimate. All agreement contingent upon strikes, accidents or delays beyond our control. This proposal subject to acceptance within 3 days and is null and void thereafter at the option of BNG Construction Inc. With your acceptance of this proposal it becomes part of the contract between your company and BNG Construction Inc. The structural drawings takes precedence over architectural drawings. We reserve the right to modify or change our price for this job any time before bid opening. Our bid reflects us working off the mason's scaffolding.Tiebeams formed and pour in this order. First floor beam off the ground floor slab. Second floor beam off the second floor slab and so forth type. We will not accept a penalty clause in your contract. We bid the documents as is. If there is additional engineering later that changes the design and adds more labor and or materials. We will submit a extra and require you to pay it.
Due to the volatility of material prices BNG Construction cannot hold pricing for more than 3 days from the date of this proposal without a letter of intent to use BNG to perform the concrete for this project.

	Plan Sheets	**Plan date**	**Plan Sheets**	**Plan Date**	**Plan Sheets**	**Plan Date**	**Plan Sheet**	**Plan Date**	**Plan Sheets**
#1									
#2									
#3									
#4									
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#25									

Addendum's Addendum's

	Sheets	Dates		Sheets	Dates
#1			#5		
#2			#6		
#3			#7		
#4			#8		

Initials_____

Christine Carasas

From: Manuel Gonzalez
Sent: Monday, November 18, 2024 12:16 PM
To: Wharton Smith Commercial Estimating
Subject: FW: Port Orange Public Utilities Field OPS Buildings
Attachments: Add Diamond Dwls-CONC PROPOSAL PORT ORANGE PUBLIC UTILITIES.pdf

Revised

Manuel D Gonzalez | Senior Preconstruction Services Manager
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
49 E Chase St, Pensacola, FL 32502 | Office: (850) 328-4350 | Cell: (850) 287-3242

From: Terry Hollinsworth <thollinsworth@bngconstruction.net>
Sent: Monday, November 18, 2024 10:51 AM
To: Manuel Gonzalez <mdgonzalez@whartonsmith.com>
Subject: Port Orange Public Utilities Field OPS Buildings

Manny, Please see our Proposal which includes the Add to Install the Diamond Dowel Baskets in the Warehouse, which is $29,200.00

Thank you,
Terry Hollinsworth
Estimator
407-688-1747 ext 212
407-688-1748 fax
Email: thollinsworth@bngconstruction.net
Website: www.bngconstruction.net

Structural Concrete Specialists
Concrete, Masonry, Tilt Wall
CGC#1504945

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Subcontractor Bid Form-General

Wharton-Smith, Inc. CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	BNG Construction, Inc.
Scope of Work:	Div. 3 - Concrete

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

Concrete bids shall be complete including, but not limited to: Foundations, tie columns, column encasements, slabs on grade, "flatwork" (concrete pavement, sidewalks, equipment pads, etc.), rebar and all work associated with Division 03 specifications and drawings.

PART 1: PRICING

(1.1) Total Base Bid

Concrete "flatwork" (sidewalks, conc. pavement, equipment pads, etc.) Site Concrete	$ 466,495.00
All other concrete foundations, slabs, tie columns, CIP walls, etc. Buildings Concrete	$ 569,685.00
Total Amount:	$ 1,036,180.00.00
Amount in Words:	One Million Thirty Six Thousand One Hundred Eighty Dollars

(1.2) Alternates (Voluntary)

Alternates #1 and #2 Are Excluded.	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $50,000)

Material/Equipment Types:	Concrete and Rebar Material
Amount:	$ 343,660.00

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %: 1.421%	

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1	Dated:	11/7/24	RFI No.		Dated:	
RFI No.	2	Dated:	11/11/24	RFI No.		Dated:	
RFI No.	3	Dated:	11/15/24	RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10/22/24	WSI No.	4	Dated:	10/28/24
WSI No.	2	Dated:	11/24/24	WSI No.	5	Dated:	10/31/24
WSI No.	3	Dated:	10/24/24	WSI No.	6	Dated:	11/4/24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.	7	Dated:	11/6/24	ASI No.	8	Dated:	11/8/24

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

Wharton-Smith, Inc.
CONSTRUCTION GROUP

PART 3: BIDDER INFORMATION

BNG Construction, Inc.
Company Name

2995 Stonewall Place, Sanford, Fl 32773
Address (Street, City, State, Zip)

407-688-1747 thollinsworth@bngconstruction.net
Phone Number **Email Address**

Type of Organization (Check One):

(x) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: BNG Construction, Inc.
By: _____
Printed Name: Bryan Beckman
Title: Vice President
Dated: 11/18/24
License No.: CGC # 1504945

#CGC1504945

DATE: 11/18/24

REVISED

PROPOSAL

BNG Construction Inc.
2995 Stonewall Place
Sanford, FL 32773
Office Ph & Fax (407)688-1747 / 1748

Job name **Port Orange Public Utilities**
Street:
City: Port Orange

		By BNG	By others
	Labor, Equipment & Machinery to complete the Concrete Work Except as Noted Below.		
#1	Prep and Pour Foundations with Reinforcing as Specified.	X	
#2	Supply and Install Termite Treatment Under Slab on Grade.	X	
#3	Supply and Install **15 Mil** Stego Wrap Vapor Barrier Under Building Slabs on Grade.	X	
#4	Form, Prep and Pour the Admin. & Warehouse Slabs on Grade with Reinforcing As Specified.	X	
	The Admin. Slab and the Warehouse Slab are Both Figured as being Poured Entirely With Colored Concrete. The Monolithic Design of the Warehouse Requires that the Entire Slab & Foundations be Poured with Colored Concrete. The Admin Slab could be Broken Up but it would not be Cost Effective. **No Color is Specified so an Allowance of $35.00 PCY for Color is Included.**	X	
#5	Provide and Install all Rebar as Specified.	X	
#6	The Trench Drain Concrete Work is Included. Embed Material is NOT included.	X	
#7	The CIP Concrete Beams & Columns are Included as being Installed from the Masons Scaffolding.	X	
#8	Installing Embeds, Supplied by Others, which are contained in our Work is Included.	X	
#9	Grouting under Column Base Plates is Included.	X	
#10	Included in the Site Concrete Bid are the Dumpster Slab/Apron, Mechanical Yard, Granular Storage & PEMB Parking Structures, Ramp and Washdown Pit, Building Sidewalks, ADA Warning Mats and Installation of Pipe Bollards As Shown on Sheet C6.	X X X	
#11	Supply or Install Gravel, Sand or Base/Sub Base of any kind is NOT included.		X
#12	Concrete Sealers & Hardeners and Polishing Concrete are Not Included.		X
#13	Welding and Weldable Rebar are NOT included.		X
#14	Light Pole Bases, Flagpole Base, Sign Foundations and Anchor Bolt/Bolt Material are NOT included.		X
#15	A Mockup is NOT included and Surface Mounted Bollards are NOT included.		X
#16	Any Work at the Future Police Impound Lot Pad is NOT included.		X
#17	Removing Any Excess Or Unsuitable Export Materials is NOT included.		X
#18	**Diamond Dowels at Saw Cut Joints As Shown in Det. A12/S201are Included.**	X	
#19	Pre-Cast Wall Caps or Any Pre-Cast Concrete is NOT included.		X
#20	Any Work at Oil Seperator Area is NOT included.		X
#21	The Sidewalks Included are Figured as 4" Thick and 3000 Psi Concrete & W1.4 WWF.		X

Buildings Concrete Bid:$569,685.00
Site Concrete Bid:$466,495.00.00

SCOPE OF WORK

Na= not applicable
Lab= Labor
Mat= Materials
BNG= BNG Construction Inc.

		By BNG Lab-Mat		By Others Lab-Mat	
#1	Corner pins/ hubs & elevations of each building----------			X	X
#2	Temporary electric----------			X	X
#3	Temporary toilet----------			X	X
#4	Temporary water----------			X	X
#5	Accessible road to & around each building			X	X
#6	Submittals submitted to GC----------	X	X		
#7	Approved submittals before starting job	X	X		
#8	Good clean fill dirt to be at 1/10ft-----			X	X
#9	Remove excess fill dirt material-------			X	X
#10	Density and required compaction ----------			X	X
#11	Lay - out other trades----------			X	X
#12	Lay-out building from your pins/hubs-	X	X		
#13	Excavate footings and pads----------	X	X		
#14	Backfill footings and pads----------	X	X		
#15	Light Compaction of the footings and pads backfill material----------	X	X		
#16	Install earth formed footings	X	X		
#17	Protection of footings/pads for others-			X	X
#18	Well pointing (holding water table 12" below bottom of footings)--------			X	X
#19	Dewatering of surface rain water---	X	X		
#20	Back - fill other trades----------			X	X
#21	Termite treat slab area----------	X	X		
#22	Place & finish concrete slab----------	X	X		
#23	Saw cut slab control joints----------	X	X		
#24	Control joint sealants----------			X	X
#25	Curing compound (slab)----------	X	X		
#26	Slab accessories----------	X	X		
#27	Ground slab poured before roof is installed----------	X	X		
#28	Ground slab poured before all block walls are installed----------	NA			
#29	Wire mesh ----------	X	X		
#30	Floating & patching floor for covering			X	X
#31	Tractor (fine grading)----------	X	X		

Initials_____

SCOPE OF WORK

Na= not applicable
Lab= Labor
Mat= Materials
BNG= BNG Construction Inc.

	By BNG Lab-Mat		By Others Lab-Mat	
#35 Fill beam block	NA			
#36 Form & pour concrete columns	X	X		
#37 Sono-tube columns	NA			
#38 Concrete columns to be rubbed out	X	X		
#39 Structural steel columns			X	X
#40 Grout steel columns	X			
#41 Grout block cells			X	X
#42 Form and pour tie beams	X	X		
#43 Lay-out and installation of sleeves			X	X
#44 Window sills (formed & poured)			X	X
#45 Truss & joist anchors & pockets			NA	
#46 Grouting of truss & bar joist			NA	
#47 Shoring or bracing of bar joist			NA	
#48 Formed arches	NA		NA	
#49 Cast-in-Place rebar	X	X		
#50 Masonry Rebar			X	X
#51 Concrete materials---- for BNG only	X	X		
#52 Anchor J - Bolts	X			X
#53 Protection of J-bolts			X	X
#54 Concrete pump---------- for BNG only	X	X		
#55 Crane (BNG usage only)	NA			
#56 Concrete test			X	X
#57 Trash in one location	X			
#58 Trash removed from job site			X	X
#59 Steel door jambs			X	X
#60 Sidewalks adjacent to building	X	X		
#61 Sidewalks adjacent to roads	X	X		
#62 Dumpster slab	X	X		
#63 Compactor pad	NA			
#64 Saw cut control joints in flat work	X	X		
#65 Hand tooled control joints	NA			
#66 Concrete paving	X	X		
#67 Colored concrete	X	X		
#68 House keeping pads	X	X		

Initials_____

SCOPE OF WORK

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		By BNG Lab-Mat		By Others Lab-Mat	
#69	Light pole bases----------	NA			
#70	Pipe bollards ----------	NA			X
#71	Concrete ribbon curbs----------			X	X
#72	Joint backer rod and filler----------			X	X
#73	Stair nosing----------	NA			
#74	Formed & poured stairs----------	NA			
#75	Fill steel stair pans----------	NA			
#76	Precast slabs set, level, grout------	NA			
#77	Topping for precast slabs----------	NA			
#78	Precast concrete joist----------	NA			
#79	Precast soffit beams----------	NA			
#80	Hambro bar joist----------	NA			
#81	Hand rails for BNG personnel protection only----------	X	X		
#82	Demolition of anykind----------			X	X
#83	Schedule in writing and agreed upon before work begins----------	X	X		
#84	Three more complete sets of plans			X	X
#85	Work with a spirit of cooperation	X	X	X	X
#86	Notify BNG of any changes to job plans since bid date----------			X	X
#87	Performance & payment bond--			NA	
#88	Direct Owner Purchase---------			NA	
#89	Subbase under SOG			X	X
#90	Concrete staining			X	X
#91	Concrete floor sealers/hardeners			X	X

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Initials_____

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takes precedence over architectural drawings. We reserve the right to modify or change our price for this job any time before bid opening. Our bid reflects us working off the mason's scaffolding.Tiebeams formed and pour in this order. First floor beam off the ground floor slab. Second floor beam off the second floor slab and so forth type. We will not accept a penalty clause in your contract. We bid the documents as is. If there is additional engineering later that changes the design and adds more labor and or materials. We will submit a extra and require you to pay it.
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	Sheets	Dates
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Addendum's

Sheets	Dates

Addendum's

Initials_____

Christine Carasas

From: Terry Hollinsworth <thollinsworth@bngconstruction.net>
Sent: Monday, November 18, 2024 4:50 PM
To: Wharton Smith Commercial Estimating; Manuel Gonzalez
Subject: RE: Port Orange Public Utilities Field Operations Facility-Our Revised Proposals
Attachments: 20241118173518.pdf

Sorry, I forgot the attachment. Here it is.

Thank you,

Terry Hollisworth

From: Terry Hollinsworth <thollinsworth@bngconstruction.net>
Sent: Monday, November 18, 2024 4:47 PM
To: comest@whartonsmith.com; Manuel Gonzalez <mdgonzalez@whartonsmith.com>
Subject: Port Orange Public Utilities Field Operations Facility-Our Revised Proposals

Hi Manny and James. Please find BNG's & Wharton Smith's Revised Proposals attached.

The Diamond Dowel Baskets and 15 Mil Stego Wrap Vapor Barrier have been incorporated into each Proposal.

Please let me know if you have any questions. Thanks!

Thank you,
Terry Hollinsworth
Estimator
407-688-1747 ext 212
407-688-1748 fax
Email: thollinsworth@bngconstruction.net
Website: www.bngconstruction.net

Structural Concrete Specialists
Concrete, Masonry, Tilt Wall
CGC#1504945

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Subcontractor Bid Form-General

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Structural Construction of Orlando, Inc
Scope of Work:	Division 3 Concrete

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

Concrete bids shall be complete including, but not limited to: Foundations, tie columns, column encasements, slabs on grade, "flatwork" (concrete pavement, sidewalks, equipment pads, etc.), rebar and all work associated with Division 03 specifications and drawings.

PART 1: PRICING

(1.1) Total Base Bid

Concrete "flatwork" (sidewalks, conc. pavement, equipment pads, etc.)	$ 285,000.00
All other concrete foundations, slabs, tie columns, CIP walls, etc.	$ 590,000.00
Total Amount:	$ 875,000.00
Amount in Words:	

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $50,000)

Material/Equipment Types:	
Amount:	$ 250,000.00

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1-8	Dated:	11/12/2024	WSI No.		Dated:	
WSI No.		Dated:		WSI No.		Dated:	
WSI No.		Dated:		WSI No.		Dated:	

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Structural Construction of Orlando, Inc
Company Name

2200 Winter Springs Blvd, Suite 106-310, Oviedo, FL 32765
Address (Street, City, State, Zip)

(321) 231 - 9508 Strucon12@aol.com
Phone Number **Email Address**

Type of Organization (Check One):

(✓) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of _____.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Structural Construction of Orlando, Inc.
By: _____
Printed Name: James Courtney
Title: President
Dated: 11/14/2024
License No.: CGC037510

	Y/N
Column Foundations	
F36 (3-6x3-6x1-2 w/4 #5 e.w. BOT)	Y
F40 (4-0x4-0x1-2 w/4 #5 e.w. BOT)	Y
F46 (4-6x4-6x1-2 w/4 #5 e.w. BOT)	Y
F70 (7-0x7-0x1-2 w/7 #5 e.w. BOT)	Y
Pre-Eng Building Column Foundations	
MF70 (7-0 x 7-0 x 1-2 w/7 #5 e.w. BOT)	Y
MF90 (9-0 x 9-0 x 1-6 w/8 #6 e.w. BOT)	Y
MF96 (9-6 x 9-6 x 1-8 w/7 #7 e.w. BOT)	Y
MF110 (11-0 x 11-0 x 1-10 w/9 #7 e.w. BOT)	Y
MF130 (13-0 x 13-0 x 2-1 w/12 #7 e.w. BOT)	Y
MF136 (13-6 x 13-6 x 2-2 w/10 #8 e.w. BOT)	Y
MF160 (16-0 x 16-0 x 2-7 w/14 #8 e.w. BOT)	Y
Pre-Eng Parking Area Foundations	
MF60 (6-0 x 6-0 x 1-0 w/6 #5 e.w. BOT)	Y
MF66 (6-6 x 6-6 x 1-1 w/6 #5 e.w. BOT)	Y
MF80 (8-0 x 8-0 x 1-4 w/7 #6 e.w. BOT)	Y
MF86 (8-6 x 8-6 x 1-4 w/7 #6 e.w. BOT)	Y
Continuous Foundations	
WF20 (Cont. x 2-0 x 1-0 w/2 #5, #5 @ 48" BOT)	Y
WF26 (Cont. x 2-6 x 1-0 w/3 #5, #5 @ 48" BOT)	Y
ME10 (Cont. x 1-0 x 1-4 w/1 #5, BOT) Monolithic Edge	Y
MWF20 (Cont. x 2-0 x 1-0 w/2 #5 Cont. #5@48"OC, BOT) Monolithic Wall Footing	Y
M8/S101B & M13/S101B Wall Footings at Street Sweeper Ramp & Washdown Pit	Y
Dumpster; footings at screen wall	Y
Mechanical yard; footings at screen wall	Y
Slab on Grade	
4" SOG (6x6-W1.4x1.4 WWF on 10 mil VB) - Admin Building	Y
Thicken Slab at Pad Footings - 1'-6"	Y
6" SOG (#4 @16" OC EW on 10 mil VB) - Warehouse Building	Y
SC-1 Integrally Colored Concrete at Admin & Warehouse Buildings	Y
6" SOG (#4 @16" OC EW on 10 mil VB) - Parking Area A & B	Y
6" SOG (#4 @16" OC EW on 10 mil VB) - Granular Storage	Y
6" SOG (#4 @16" OC EW on 10 mil VB) - Granular Storage	Y
Concrete Columns	
Tie Column - TC1 - 2-0 x 0-8 6#5 Vert. #3 Ties @ 12 OC - 18'	Y
Column Encasement at Parking Area Columns	Y
Cast-in-Place Concrete Wall	
12" CIP Wall #5@12" OC EF EW - Granular Storage	Y
Precast Wall Cap	Y
6" CIP Wall #5@12" OC EF EW - Granular Storage	Y
8" CIP Wall - Ramp	Y
8" CIP Wall - Wash Down Pit	Y
Misc. Concrete	
Underslab Vapor Barrier	Y
Termite Treatment	Y
House Keeping Pads	Y
Install column anchor bolts	Y
Grout column base plates	Y
Furnish and install rebar, and WWM	Y
Sitework; per sheet C7	
Concrete paving; washdown pit, ramp, dumpster, Mech. Yard	Y
Concrete sidewalks	Y

Revised

Date: November 12, 2024

From: Jim Courtney
Structural Construction of Orlando
Phone: 321-231-9508
Fax: 407-977-1222
Strucon12@aol.com

Project: Port Orange Public Utilities Field Building

Location: Port Orange, FL

To: Estimator

Scope of Work

Main Building Plans:

A. **Foundations**
B. **Slab on Grade**
C. **Beams**
D. **Columns**
E. **Colored Concrete**
F. **Sidewalk**
G. **Dumpster**
H. **Pavement**
I. **Bollards**
J. **Wire**
K. **Anchor Bolt installation**
L. **Rebar**
M. **Vapor Barrier**
N. **Concrete Pump**
O. **Parking Area**
P. **Warehouse Slab**
Q. **Will work from the GC's layout using control lines established by others**
R. **Will take the slab on grade from fine grade to finish grade including any saw cuts.**

Exclusions:

A. **Dewatering except rain water**
B. **Site work demolition & mass excavating**
C. **Exterior Curb**
D. **CMU**
E. **Water proofing**
F. **Paving**
G. **Embeds (Steel Sub)**
H. **ADA Mats**
I. **Brick pavers,**
J. **Fill dirt**
K. **Spoil Removal**
L. **Pervious Concrete**
M. **Any testing**

Bid Amount: $875,000.00

Breakout

Site: $285,000.00

CIP: $590,000.00

Christine Carasas

From: Jim Courtney <strucon12@aol.com>
Sent: Thursday, November 14, 2024 12:59 PM
To: Manuel Gonzalez; Wharton Smith Commercial Estimating
Subject: Port Orange Public Utilities - Proposal
Attachments: Port Orange Public Utilties - Scope Sheet.pdf; Port Orange Public Utilties - Revised.docx; Port Orange Public Utilties - bid form - revised.pdf

Revised bid form. Please let me know if you have any questions

Jim Courtney
Structural Construction of Orlando
321-231-9508
scoincflorida

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Subcontractor Bid Form-General

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Structural Construction of Orlando, Inc.
Scope of Work:	Division 3 Concrete

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

Concrete bids shall be complete including, but not limited to: Foundations, tie columns, column encasements, slabs on grade, "flatwork" (concrete pavement, sidewalks, equipment pads, etc.), rebar and all work associated with Division 03 specifications and drawings.

PART 1: PRICING

(1.1) Total Base Bid

Concrete "flatwork" (sidewalks, conc. pavement, equipment pads, etc.)	$ 350,000.00
All other concrete foundations, slabs, tie columns, CIP walls, etc.	$ 625,000.00
Total Amount:	$ 975,000.00
Amount in Words:	

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $50,000)

Material/Equipment Types:	
Amount:	$ 375,000.00

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1-8	Dated:	11-12-2024	WSI No.		Dated:	
WSI No.		Dated:		WSI No.		Dated:	
WSI No.		Dated:		WSI No.		Dated:	

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Structural Construction of Orlando, Inc.
Company Name

2200 Winter Springs Blvd, Suite 106-310, Oviedo, FL 32765
Address (Street, City, State, Zip)

(321) 231 - 9508 — **Phone Number**

Strucon12@aol.com — **Email Address**

Type of Organization (Check One):

(✓) Corporation
( ) Partnership
( ) Sole Proprietorship
( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of _____.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Structural Construction of Orlando, Inc.
By: _____
Printed Name: James Courtney
Title: President
Dated: November 18, 2024
License No.: CGC037510

Revised

Date: November 18, 2024

From: Jim Courtney
Structural Construction of Orlando
Phone: 321-231-9508
Fax: 407-977-1222
Strucon12@aol.com

Project: Port Orange Public Utilities Field Building

Location: Port Orange, FL

To: Estimator

Scope of Work

Main Building Plans:

A. **Foundations**
B. **Slab on Grade**
C. **Beams**
D. **Columns**
E. **Colored Concrete**
F. **Sidewalk**
G. **Dumpster**
H. **Pavement**
I. **Bollards**
J. **Wire**
K. **Anchor Bolt installation**
L. **Rebar**
M. **Vapor Barrier**
N. **Concrete Pump**
O. **Parking Area**
P. **Warehouse Slab**
Q. **Will work from the GC's layout using control lines established by others**
R. **Will take the slab on grade from fine grade to finish grade including any saw cuts.**

Exclusions:

A. **Dewatering except rain water**
B. **Site work demolition & mass excavating**
C. **Exterior Curb**
D. **CMU**
E. **Water proofing**
F. **Paving**
G. **Embeds (Steel Sub)**
H. **ADA Mats**
I. **Brick pavers,**
J. **Fill dirt**
K. **Spoil Removal**
L. **Pervious Concrete**
M. **Any testing**

Bid Amount: $975,000.00

Breakout

Site: $350,000.00

CIP: $625,000.00

	Y/N
Column Foundations	
F36 (3-6x3-6x1-2 w/4 #5 e.w. BOT)	Y
F40 (4-0x4-0x1-2 w/4 #5 e.w. BOT)	Y
F46 (4-6x4-6x1-2 w/4 #5 e.w. BOT)	Y
F70 (7-0x7-0x1-2 w/7 #5 e.w. BOT)	Y
Pre-Eng Building Column Foundations	
MF70 (7-0 x 7-0 x 1-2 w/7 #5 e.w. BOT)	Y
MF90 (9-0 x 9-0 x 1-6 w/8 #6 e.w. BOT)	Y
MF96 (9-6 x 9-6 x 1-8 w/7 #7 e.w. BOT)	Y
MF110 (11-0 x 11-0 x 1-10 w/9 #7 e.w. BOT)	Y
MF130 (13-0 x 13-0 x 2-1 w/12 #7 e.w. BOT)	Y
MF136 (13-6 x 13-6 x 2-2 w/10 #8 e.w. BOT)	Y
MF160 (16-0 x 16-0 x 2-7 w/14 #8 e.w. BOT)	Y
Pre-Eng Parking Area Foundations	
MF60 (6-0 x 6-0 x 1-0 w/6 #5 e.w. BOT)	Y
MF66 (6-6 x 6-6 x 1-1 w/6 #5 e.w. BOT)	Y
MF80 (8-0 x 8-0 x 1-4 w/7 #6 e.w. BOT)	Y
MF86 (8-6 x 8-6 x 1-4 w/7 #6 e.w. BOT)	Y
Continuous Foundations	
WF20 (Cont. x 2-0 x 1-0 w/2 #5, #5 @ 48" BOT)	Y
WF26 (Cont. x 2-6 x 1-0 w/3 #5, #5 @ 48" BOT)	Y
ME10 (Cont. x 1-0 x 1-4 w/1 #5, BOT) Monolithic Edge	Y
MWF20 (Cont. x 2-0 x 1-0 w/2 #5 Cont. #5@48"OC, BOT) Monolithic Wall Footing	Y
M8/S101B & M13/S101B Wall Footings at Street Sweeper Ramp & Washdown Pit	Y
Dumpster; footings at screen wall	Y
Mechanical yard; footings at screen wall	Y
Slab on Grade	
4" SOG (6x6-W1.4x1.4 WWF on 10 mil VB) - Admin Building	Y
Thicken Slab at Pad Footings - 1'-6"	Y
6" SOG (#4 @16" OC EW on 10 mil VB) - Warehouse Building	Y
SC-1 Integrally Colored Concrete at Admin & Warehouse Buildings	Y
6" SOG (#4 @16" OC EW on 10 mil VB) - Parking Area A & B	Y
6" SOG (#4 @16" OC EW on 10 mil VB) - Granular Storage	Y
6" SOG (#4 @16" OC EW on 10 mil VB) - Granular Storage	Y
Concrete Columns	
Tie Column - TC1 - 2-0 x 0-8 6#5 Vert. #3 Ties @ 12 OC - 18'	Y
Column Encasement at Parking Area Columns	Y
Cast-in-Place Concrete Wall	
12" CIP Wall #5@12" OC EF EW - Granular Storage	Y
Precast Wall Cap	Y
6" CIP Wall #5@12" OC EF EW - Granular Storage	Y
8" CIP Wall - Ramp	Y
8" CIP Wall - Wash Down Pit	Y
Misc. Concrete	
Underslab Vapor Barrier	Y
Termite Treatment	Y
House Keeping Pads	Y
Install column anchor bolts	Y
Grout column base plates	Y
Furnish and install rebar, and WWM	Y
Sitework; per sheet C7	
Concrete paving; washdown pit, ramp, dumpster, Mech. Yard	Y
Concrete sidewalks	Y

Christine Carasas

From: Jim Courtney <strucon12@aol.com>
Sent: Monday, November 18, 2024 11:49 AM
To: Wharton Smith Commercial Estimating; Manuel Gonzalez
Subject: Port Orange Public Utilities - Proposal
Attachments: Port Orange Public Utilties - Bid Form.pdf; Port Orange Public Utilties - Revised.docx; Port Orange Public Utilties - Scope Sheet.pdf

Revised bid form. Please let me know if you have any questions

Jim Courtney
Structural Construction of Orlando
321-231-9508
scoincflorida

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Subcontractor Bid Form-General

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Truant Construction,LLC
Scope of Work:	03 Concrete

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

Concrete bids shall be complete including, but not limited to: Foundations, tie columns, column encasements, slabs on grade, “flatwork” (concrete pavement, sidewalks, equipment pads, etc.), rebar and all work associated with Division 03 specifications and drawings.

PART 1: PRICING

See Our Proposal for ALL Inclusions and Exclusions

(1.1) Total Base Bid

Concrete “flatwork” (sidewalks, conc. pavement, equipment pads, etc.)	$ 119,500.00
All other concrete foundations, slabs, tie columns, CIP walls, etc.	$ 1,285,700.00
Total Amount:	**$** 1,405,200.00
Amount in Words:	One million four hundred five thousand two hundred dollars

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	Concrete Material/Reinforcement Material
Amount:	$ $ 361,600.00 / $ 68,600.00

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1	Deduct Integral Color in SOG	$ -($43,000.00)
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	2%

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)
Rebar Shop Drawings	3-4 weeks		
Reinforcement Material	2-3 weeks after Shop drawing approval		

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1-15	Dated:	11/07/24	RFI No.		Dated:	
RFI No.	16-24	Dated:	11/11/24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	001	Dated:	10/22/24	WSI No.	005	Dated:	10/31/24
WSI No.	002	Dated:	10/24/24	WSI No.	006	Dated:	11/04/24
WSI No.	003	Dated:	10/24/24	WSI No.	007	Dated:	11/06/24
	004		10/28/24		008		11/08/24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Truant Construction, LLC

Company Name

911 Beville Rd. Suite 7, South Daytona, Fl 32119

Address (Street, City, State, Zip)

386-788-5109 brett@truantconstruction.com

Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Truant Construction, LLC

By: _____

Printed Name: Brett Colley

Title: Director of Preconstruction

Dated: 11/12/2024

License No.: _____

911 Beville Rd Suite 5
South Daytona, Fl 32119
(386) 788-5109 Fax (386) 788-5288

November 12, 2024

Wharton Smith, Inc.
750 Monroe Road
Sanford, Fl 32771
p - 407.321.8410
e - comest@whartonsmith.com

ATTN: ***Estimating Department***

RE: **Port Orange Public Utilities Field Operations Facility**
Port Orange, Fl

After review of the drawings for the above stated project, Truant Construction presents the following price to provide concrete construction services subject to the following qualifications:

Construction Services	**Included**	**Excluded**	**See Alternate Add**
Excavation for our work	X		
Backfill/Fill for our work	X		
Form Foundations	X		
Place Foundations	X		
Form Columns	X		
Place Columns	X		
Form Beams	X		
Place Beams	X		
Form Foundation/Retaining Walls	X		
Place Walls	X		
Fine Grade SOG	X		
Form SOG Edge Forms	X		
Mud Sills		X	
Supply & Install Vapor Barrier	X		
Supply WWM (6x6 1.4x1.4)	X		
Install WWM (6x6 1.4x1.4)	X		
rebar where required	X		
Supply & Install Expansion Material	X		
Saw Cut Expansion Joints	X		
Form Diamond Blockouts SOG	X		

Place Diamond Blockouts SOG	X		
Furnish & Install Plate dowel baskets	X		
Form Slab Depressions	X		
Place & Finish SOG	X		
Form & Place Equipment Pads (Exterior)		X	
Form & Place Equipment Pads (Interior)		X	
Form & Place Locker Bases		X	
Supply & Install Cure for slabs	X		
Supply Concrete Pump for Foundations	X		
Supply Concrete Pump for Slabs	X		
Supply Concrete Buckets for Vertical Conc.	X		
Rebar Material	X		
Rebar Labor	X		
Rebar Labor & Material for Masonry Work		X	
Welded Rebar Labor and Material		X	
Oxygen & Acetylene	X		
Tie Wire	X		
Supply Embeds		X	
Install Embeds	X		
Supply Anchor Bolts		X	
Install Anchor Bolts	X		
Traffic Control of our Deliveries	X		
Supply Crane		X	
Supply Forklift	X		
Supply Concrete Material	X		
Supply Colored Concrete In SOG	X		
Supply Fibermesh where Required	X		
Patch all our defective work	X		
Rub finish concrete		X	
Safety Rails on Forming Level		X	
Site Roads and Staging areas		X	
SOG Concrete Grinding		X	
Concrete Hardeners & Sealers		X	
Concrete Polishing		X	
Waterproofing & Waterstop		X	
Soil Poisonings		X	
Masonry work of any type		X	
Dovetail material		X	
Install Dovetail		X	
Testing of any type		X	
Permits of any type		X	
Locates for Existing Underground Utilities		X	
Sanitary Facilities		X	
Dewatering		X	
Sleeves for other trades		X	
Trench Drains		X	
Supply Rebar Shop Drawings	X		
Layout of our Work	X		
Sitework Concrete			X
Bollard Steel		X	

Specific Provisions

Building corners and elevations by others.

Power and Water within 100' of working area from start of project.

All schedules based on 40 hour work week. Saturdays to be worked as weather make up days only.

Shop drawings and materials for anchor bolts and embeds to be provided.

If a conflict between structural and architectural drawings, the structural drawings will overrule design.

Rebar Caps Installed one time. Provided by GC

Dumpsters for and haul off of Spoils to be provided by GC

Any and all concrete shown on MEP drawings are excluded.

Any item not specifically included above is excluded from our bid.

We do not acknowledged any FF or FL numbers on elevated decks and or

Slab on Grade less than 7" thick

Qualifications

Buildings

768 cy of Regular Not Integral Colored Concrete Material

870 cy of Integral Colored Concrete Material (Warehouse)

46 tons of Reinforcement Material

11,283 sf of Trowel Finish Admin Building

16,679 sf of Trowel Finish Warehouse Building

8,673 sf of Trowel Finish PEMB A&B

1,386 sf of Trowel Finish Granular Storage

3,321 sf of Trowel Finish Street Sweeper Ramp and Wash Down

Site Work "Flatwork" (Any work not listed below is ECLUDED)

5,482 sf of 6" Sidewalks

24 sf of ADA Detectable Mats

2,616 sf of 8" Concrete Paving w/Fiber

531 sf of Dumpster Pad

49 Bollards Installed (Steel pipe provided by others)

Payment Terms

Truant Payment terms TBD

All Drawings Included for this Proposal

Architectural Set dated : 9/30/2024

Civil Set dated : 9/30/2024

Structural Set dated : 9/30/2024

Price

For the performance of the above stated scope of work, the Contractor agrees to pay Truant Construction the lump sum price of:

$ $1,285,700 Base Bid Buildings
One million two hundred eighty five thousand seven hundred dollars

$ $119,500 Add for Site Flatwork (See Qualifications)
One hundred nineteen thousand five hundred dollars

Above price is subject to revision or withdrawal if not accepted, in writing, within thirty days from date on page 1 of proposal.

TRUANT CONSTRUCTION, LLC

By: Brett Colley

Brett Colley
Director of Preconstruction

E240069

Christine Carasas

From: Brett <Brett@truantconstruction.com>
Sent: Tuesday, November 12, 2024 1:50 PM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Field OPS Buildings
Attachments: Bid Form Concrete Truant Signed.pdf; PO Public Utilities Field OPS Proposal.pdf

Good afternoon,

Here is your completed bid form and our proposal showing all inclusions and exclusions, as well as quantities for the Port Orange Public Utilities Field Operations Buildings. If you should have any questions, please do not hesitate to call.

Sincerely,

Brett Colley
Director of Preconstruction
Truant Construction, LLC
911 Beville Rd. Suite 7
South Daytona, Fl 32119
O – 386.788.5109
F – 386.788.5288

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Subcontractor Bid Form-General

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	VMG Construction Inc
Scope of Work:	Concrete

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

Concrete bids shall be complete including, but not limited to: Foundations, tie columns, column encasements, slabs on grade, “flatwork” (concrete pavement, sidewalks, equipment pads, etc.), rebar and all work associated with Division 03 specifications and drawings.

PART 1: PRICING

(1.1) Total Base Bid

Concrete “flatwork” (sidewalks, conc. pavement, equipment pads, etc.)	$ $115,904.00
All other concrete foundations, slabs, tie columns, CIP walls, etc.	$ $1,022,037.00
Total Amount:	**$** $1,137,941.00

Amount in Words:	One Million One Hundred Thirty Seven Thousand Nine Hundred Forty One Dollars

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	
Amount:	$ $327,879.00 - Bldg ODP
	$327,879.00 - Site ODP

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$ $1,137,941.00
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	1.5%

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	#1	Dated:	11-7-24	RFI No.		Dated:	
RFI No.	#2	Dated:	11-11-24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	001	Dated:	004	WSI No.	007	Dated:	
WSI No.	002	Dated:	005	WSI No.	008	Dated:	
WSI No.	003	Dated:	006	WSI No.		Dated:	

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.	N/A	Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.	N/A	Dated:		Addenda No.		Dated:	
Addenda No.	N/A	Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

VMG Construction Inc

Company Name

43 1st St Winter Garden, Fl 34787

Address (Street, City, State, Zip)

407-676-2384 LValle@VMGConstructionInc10.com

Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of _____.

Subcontractor's Minority Certification, if applicable:

(X)MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: VMG Construction Inc

By: Luis Valle

Printed Name: Luis Valle

Title: Estimator

Dated: 11-12-24

License No.: P07000096955

VMG CONSTRUCTION INC.
TILT WALLS - C.I.P. - SLABS

BID PROPOSAL

Preliminary pending scope review

PROJECT: Pt Orange
Date: 11/12/2024
Estimator: Luis Valle

VMG CONSTRUCTION INC is pleased to provide you with a Quote for the project named above. The scope of work includes furnish and install necessary Material, labor, equipment, taxes, and insurance to complete the job, according to plans and specifications. All permits are provided by the general contractor.**Upon acceptance of VMG concrete proposal this document will be part of the contract documents.** If the proposal is not part of the contract document than VMG proposal cannot be referenced.

Buildings

Concrete foundations, slab on grade, and CIP	$1,022,037.00

Site

Site sidewalks, Site paving, and dumpster	$115,904.00

Bid Documents

Civil drawings dated	9/30/2024
Architectural drawings dated thru	9/30/2024
Structural drawings dated thru	9/30/2024
Specs dated	9/30/2024
Addendums thru (No. / Date):	N/A

Bldg. Tilt Walls –C.I.P.- Slabs Scope of Work:

Scope Items

- State Sales Tax and Local Sur-Tax
- County/city occupational licenses.
- Attendance of weekly job site meetings.
- Daily clean up to onsite dumpster (supplied by others)
- Man power to complete the job according to schedule
- Permit fees are excluded
- Inspection of specialty engineers is excluded
- Material testing is excluded
- Provide job site water for our use is excluded
- Concrete pumps for foundations are included to a point.
- All VMG work will suspend including punch out if money is owed for more than 120 days.
- Pricing based on documents available. If addition quantity is not shown on documents and shown on a BIM a change order will be provided.

Foundations

• Foundation	3,000 PSI
• Surveying layout and elevations for each building from provided points by general contractor.	Included

- Forming of all foundations is excluded
- Earth forming of all foundations
- Excavation and compaction. Mass excavation and compaction greater than 4’ by others
- Tailgating of concrete
- Spoils relocated to area on site dictated by GC
- Installation of bolt pattern templates & bolts (Bolts provided by others)
- Setting of bolt elevation for column bases (One Nut Only)
- Pumping of rainwater only

- Grouting of column bases
- Termite treatment for foundations is excluded.
- 7 Step down pipe penetrations are included. Extra step-down pipe penetration will need a signed change order. Unless quantity of pipe penetration is clearly called out in struct drawings, concrete scope of work, or final scope out.
- Surveying is excluded

Layout of Building. Clarification as follows:

General contractor is responsible for the layout and elevation of each building. We will check and let the general contractor know of any discrepancy.

Pumping of footing concrete. Clarification as follows:

Boom Pump - Pumping of foundation concrete may be required if adequate access to the building pad is not provided by general contractor or if the building pad has been disturbed by other trades and not properly back filled. Any costs associated with this

Digging of pad foundations and continuous foundations. Clarifications as follows:

Excavation of building pad for perimeter footings at loading docks or where top of footing is to be –4' or deeper to be by others and to be within +/- 1" of top of footings. Excess soil to be stockpile on site.

Slab on grade

• Slab on Grade Quantity: Approx.	41,889 sf
• Slab on grade Concrete PSI	3,000 & 4,000 PSI
• Slab on grade Concrete Thickness	4", 6" & 8"
• Slab on grade reinforcing: Supply and installation of	WWF & rebar
• Vapor Barrier: Supply and installation of	Stego - 10-mils thick
• Slab on grade Intregral Concrete Color (Group 4)	Included
• Soil treatment	
• Slab on grade per plans	
• Pour Back Strip	
• Fine grade of building pad +/- 1" *Please clarification below	
• Concrete reinforcement	
• Conveyance of concrete	
• Formwork	
• Column block outs per plans	
• Mechanical pads not showing in structural drawings are excluded.	
• Cleaning of slab after panels are erected is included	

- Concrete infill of demo per Mechanical, Electrical, or Plumbing drawings is excluded. Unless quantity of square footage to be infilled is clearly called out in structural docs or concrete scope of work.

Cracks & Curling in Slabs. Clarification as follows:

VMG Construction is not liable for any cracks & curling in the slab as long as plans and specifications are followed in every phase of work. All concrete slabs crack. VMG will provide crack control joints, but if cracks appear and you would like VMG Construction to fix the cracks additional pricing will be provided if requested.

Fine grade and compaction of Slab on Grade. Clarification as follows:

Clean fill shall be used to build up the slab on grade. If a retention pond that needs to be excavated or other near by soil that is be relocated and to be used for the slab fill. VMG is not responsible for the compaction test and/or any of the slab cracks that may occur due rain or any other conditions that could affect the relocated slab fill. Especially if the fill was once in low lying areas with muck.

Slab on metal deck

	N/A
• Slab on metal deck Quantality	N/A
• Slab on metal deck Concrete PSI	N/A
• Slab on metal deck Concrete AVERAGE thickness	N/A
• Slab on metal deck reinforcing: Supply and Install	N/A
• Pan Stairs	N/A
• Pumping of slab on metal deck	N/A
• Slab on metal deck to be unshored	N/A

	N/A
Top of Slab of metal deck concrete. Clarification as follows:	N/A

Slab on metal deck concrete thickness to be pinned from metal deck and not be lasered. All liability of the elevation of slab on metal deck to be on the steel chamfering calculations. Slab on metal deck to be unshored.

Tilt

• Tilt panel Count:	N/A
• Tilt Panel Sf	N/A
• Tilt Concrete PSI	N/A
• Tilt Concrete Thickness	N/A
• Casting Bed installation and removal	N/A
• Form liner Type (Qty: Sf)	N/A
• Brace rental for	N/A
• Grout under panels	N/A
• Installation of tilt panel embeds. FND to Tilt and Tilt to Tilt. Embeds supplied by others	N/A
• Pumping of Tilt up walls	N/A
• Reveals per plans	N/A
• Bracing of panels to the inside of Slab	N/A
• Mock-up panel	N/A
• Tilt wall panels Erection. One crane mobilization	N/A
• Installation of anchors at panel to footing connections. Anchor Bolts supplied by others.	N/A
• Anchors for panel to footing connections per plan	N/A
• Panel to Panel and Panel to Footing Welds Included (Excludes all other Welding).	N/A
• Patching of panels for medium Text-Coating	N/A
• Installation of Hollow Metal Frames only while forming panels. No post installation.	N/A
• Architectural shop drawings for window and revel layout	N/A
• Structural embed shop drawings layout	N/A
• Lifting and Bracing book shop drawings with inserts layout and panel weight	N/A
• Install beveled reveal joints	N/A
• FAA Permit for crane erection is excluded	N/A
• Assumed to have access to all sides of the building for tilt erection	N/A
• J Bolts and PT Nailer are provided by others	N/A
• Scupper to be formed prior to pouring of tilt panels	N/A
• Engineering of the tilt panels are **excluded** from VMG Scope of work.	N/A

Thin Brick and Precast Lead Items Clarification as follows:

Slab on metal deck concrete thickness to be pinned from metal deck and not be lasered. All liability of the elevation of slab on metal deck to be on the steel chamfering calculations. Slab on metal deck to be unshored.

Cast In Place Concrete

• Cast In Place Labor and Material	
• Concrete	4,000 PSI
• Xypex	N/A
• Conveyance of concrete	
• Formwork	
• Reinforcing	
• Rubbing and patching CIP that will be exposed.	
• Temporary scaffold stairs are excluded.	
• Cast In Place Walls	303 Lf
• Cast In Place Columns	28 Ea
• Cast In Place Conc Beams & Tie Beams	514 Lf
• Cast In Place Tie Columns	2 Ea
• Cast In Place Stairs	N/A

Site Sidewalks

• Sidewalk Concrete PSI	3,000 PSI
• Sidewalk Concrete Thickness	4.00 Inches

• Sidewalk reinforcing: Supply and Install	WWF 6x6 W1.4xW1.4
• Right of way sidewalk is excluded	
• Truncated domes: Supply and Install	7 Ea
Sidewalks 4"	6,426 Sf
• E	

Sidewalks exclusion is as follows:

Right away sidewalk outside the property line and Sidewalks inside the property lines with in 25 ft of an active city, county, or state road is excluded. Any DOT permits for sidewalks are excluded. Sidewalk takeoff can be provided upon request.

Site Concrete

• Site Paving Concrete PSI	0 PSI
• Site Paving Concrete Thickness	5.00 Inches
• Site Paving Reinforcing	WWF 6x6 W1.4xW1.4
• Bollards	6 Ea
Site Paving - Apron 8" W2.9xW2.9	409 Sf
Site Paving - Apron 8" W2.9xW2.9	2,740 Sf

Site Dumpster

· Dumpster foundation	55 Lf
· Dumpster slab	500 Sf
· Dumpster bollards	6 Ea

Site Canopy Footers	N/A
• Layout and elevations for each building from provided points by general contractor.	N/A
• Forming of all foundations is excluded	N/A
• Earth forming of all foundations	N/A
• Excavation and compaction. Mass excavation and compaction greater than 4’ by others	N/A
• Tailgating of concrete	N/A
• Spoils relocated to area on site dictated by GC	N/A
• Pumping of rainwater only	N/A
Canopy FND3'x3'x3'	N/A
Canopy FND 4'x4'x4'	N/A
Canopy FND 5'x5'x5'	N/A
Canopy FND 6'x6'x6'	N/A

Site Foundations

- Layout and elevations from provided points by general contractor.
- Forming of all foundations is excluded
- Earth forming of all foundations
- Excavation and compaction. Mass excavation and compaction greater than 4’ by others
- Tailgating of concrete
- Spoils relocated to area on site dictated by GC
- Pumping of rainwater only

CMU

· CMU material standard gray, normal weight, 8x16 inch regular units.	· Excluded
· Mortar type S normal gray in color	· Excluded
· Rebar supply and install	· Excluded
· Horizontal joint reinforcing	· Excluded
· Supply labor, materials, and equipment needed for pumping of concrete into masonry cells	· Excluded
· Supply scaffolding needed for our scope of work	· Excluded
· Supply and install Expansion joint and sash blocks per plans and specifications	· Excluded
· Layout of window and door openings according to approved plans (Changes in opening sizes or locations may require a change order	· Excluded
· Fireproofing of CMU is excluded	· Excluded

All construction material pricing on this proposal is based on the market conditions as of **above date** any unforeseen price escalation on construction material has been excluded on this proposal. **This Proposal is good for 30 days and is null and void thereafter at the option of VMG Construction Inc, Due to volatility of material prices VMG Construction Inc. cannot hold prices for more than 30 days from the date of this proposal without a letter of intent to use VMG Construction Inc to preform the concrete for this project**. Our bid Reflects working out of working regular time hours,

Exclusions:

General Exclusions:

*Any concrete not in proposal or GCs scope of work *Bond *Location or relocation of existing Utilities additives *Structural precast concrete *Precast concrete hollow core supply and install *Permit Fees *Material Testing *Providing job site water *Lightweight insulating concrete *Special concrete *Building pad *Color concrete *Caulking *Waterproofing *Foam/ Insulation *Supply of bollards* Rain leader guard *Toilet facilities *Protection of adjacent work

Foundations:

*Dewatering of ground water *Mass Excavation *Mass Backfill *Removal of any spoils offsite *Foam/ insulation *Geofoam

Slab on Grade:

*Dewatering of ground water *Polished Concrete *Removal of any spoils offsite *Concrete sealer *Color concrete *Caulking *Foam/ insulation *Surface mounted bollards *Sealed concrete or sealed high gloss *Stained concrete *Trench drain installed and set at elevation by others *Geofoam *Load Dowel Baskets

Tilt:

*Post installation of hollow metal door frames *Supply of embeds and expansion clips *Crane access road *Extra rebar per lifting engineering *Engineering of tilt panels *Caulking *Backer rods *Foam/ insulation *FAA Permit *Non shrink grout under panels

Slab on Metal Deck:

*Shoring of metal deck and other shoring *Laser of top of concrete when pouring, top of concrete to be pinned.

Cast in Place:

*Supply of all embeds and clips *CIP concrete benches in courtyard* Crane access road* Temporary scaffold stairs *Caulking*waterproofing*Pavers *sealant*foam/ insulation *FAA Permit * Crane for CIP

Site:

*Site concrete not listed above *Right of way sidewalks*Site Curbs*Color concrete*Type D curbing *Gutter Curbing *Ribbon curb *Caulking *Surface mounted bollards *Trench drain installed and set at elevation by others* Pavers * Paver conc sub slab*Load dowel baskets

CMU:

* Fireproofing of CMU *Brick *Caulking *Stone veneer*Stone banding supply and install architectural precast shapes * Brick modular supply and install *CMU Foam

General Conditions

Upon acceptance of this proposal and contract being executed. The General Contractor agrees to attach this scope of work to the base contract. Upon 50% completion of project, retainage is to be reduced by 50% until substantial completion. Balance of retainage to be paid in full no more than (30) thirty days after substantial completion of our scope of work. Any additional work not contained in this proposal will be considered a Change Order, and as such, will be billed as Cost + 10% Profit with a $3,000 a day Overhead fee.

This scope is being respectfully submitted for your consideration.

_____ Date: _____

Name, Estimator, VMG Construction

This scope is being respectfully submitted for your consideration.

Christine Carasas

From: Luis Valle <lvalle@vmgconstructioninc10.com>
Sent: Tuesday, November 12, 2024 1:55 PM
To: James Manyette; Wharton Smith Commercial Estimating
Cc: Adolfo Galvan; Chris Hall; Larry Sease; Jose Zarate; Eric Martinez
Subject: Port Orange Public Utilities Ops Bldg - Conc Proposal - VMG Construction
Attachments: Pt Orange Utilities - Conc Proposal - VMG Construction 11-12-24.pdf; Pt Orange Utilities - Bid Form_Concr_Rev.10-25 - VMG Construction 11-12-24.pdf

Good afternoon,

The concrete cost Port Orange Public Utilities Ops Bldg is as follows:

Buildings
Concrete foundations, slab on grade, and CIP $1,022,037.00

Site
Site sidewalks, Site paving, and dumpster $115,904.00

Best Regards,



VMG CONSTRUCTION INC.
TILT WALLS - C.I.P. - SLABS

Luis Valle | **Estimator**
C 407-676-2384 | **P** 407-347-9536 Ext 1003 | **F** 407-877-7264
LValle@VMGconstructioninc10.com
Check out our web site!
WWW.VMGCONSTRUCTIONINC10.COM

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City of Port Orange

Public Utilities Field Operations Facility

Concrete

Bid Package

Prepared by Wharton-Smith (Construction Manager at Risk)

Issued 10/07/2024

Wharton-Smith Contact:
Keri Strawder – Project Manager
kstrawder@whartonsmith.com

Architect: Schenkel Shultz

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SECTION 1 – INVITATION TO BID

Invitations were sent electronically via ConstructConnect platform

See also Bid Manual for Invitation information

SECTION 2 – LIST OF BID DOCUMENTS

1. Bid Manual
2. Project Specifications – Issued for Bid – Dated September 30, 2024 (Volumes 1 &2)
3. Project Drawings – Issued for Bid – Dated September 30, 2024
4. Wharton-Smith Standard Subcontract with Bond
5. Wharton-Smith Team Player – Instructions for Subcontractor Pay Applications

SECTION 3 – INSTRUCTION TO BIDDERS

See Bid Manual

SECTION 4 – BID REQUIREMENTS AND CONDITIONS

See Bid Manual

SECTION 5 – BID PROPOSAL EVALUATION

5.1 GENERAL

5.1.1 Bid Proposals will be evaluated based upon review of the following:

A. Cost – The evaluation of this criterion will be based on the Bidder's total base bid, bid alternates, unit prices.

B. Value Engineering – This criterion measures the ability of the Bidder to identify potential areas of cost savings or improvements of the final project.

C. Bidder's ability to meet all other criteria outlined herein.

5.1.2 Reference the Instructions to Bidders section of this Bid Manual and the Bid Form for more information regarding detailed requirements of the Bid Proposals.

5.1.3 In evaluating Bids, Wharton-Smith, Inc. shall consider the submission of the Bidders, and whether or not the Bids comply with the prescribed requirements as outlined in these Instructions, the Bid Form, this Bid Manual, and all associated Owner and Bid Related documents provided with this Bid Package.

5.1.4 Wharton-Smith, Inc. may conduct such investigations and require supplemental information as it deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of the Bidders, proposed Subcontractors, proposed equipment and material suppliers, and other persons and organizations to provide the materials in accordance with the Contract Documents to Wharton-Smith, Inc.'s satisfaction within the prescribed time.

5.1.5 Bidder shall, upon request of Wharton-Smith, Inc., submit documentation evidencing its capability to execute the work properly within the time specified. This information must be received by Wharton-Smith, Inc. within ten (10) calendar days of Bidder receiving written request.

5.2 RECOMMENDATION AND APPROVAL OF RANKING

5.2.1 The CMAR will review all Bid Proposals that are received in conformance of the requirements herein and provide a recommendation to the Owner. The Owner, at its sole discretion, may accept the CMAR's recommendation or re-evaluate the Bid Proposals. The Owner will establish and approve the final recommended of award for the Bid Package. The Owner will be the sole judge of its own interests, the proposals, and the resulting agreements. The Owner's decision will be final.

5.3 AWARD OF CONTRACT

5.3.1 Award shall be based on products, equipment and materials named in the Contract Documents. Consideration of any decisions regarding substitution shall not be made until after Award of Contracts.

5.3.2 If the Contract is to be awarded, Wharton-Smith, Inc. will give the Bidder a Notice of Award after the Owner's agreement of the Bidder to receive Award.

5.3.3 The Awarded Bidder will be required to enter into a Purchase Order Agreement or Subcontract Agreement with Wharton-Smith, Inc. This agreement will contain the same terms and conditions as shown in the sample agreement provided in this Bid Manual. The Purchase Order or Subcontract will also contain the defined work scope as shown in this Bid Manual. Modifications to this Agreement will not be allowed.

SECTION 6 – SCOPE OF WORK

The Bidder shall utilize the information within this section of the Bid Manual to assist in the development of the Bid Proposal. The outlined scopes herein are not intended to detail the complete scope of the Bid Package. The Bidder is responsible for reviewing the Contract Documents to understand the full scope and requirements.

The Subcontractor Is to furnish all labor, equipment, material, subcontracts, and supervision required to complete the Scope of Work generally described as the **CONCRETE PACKAGE**, detailed herein, for the Public Utilities Field Operations Facility. All work shall be complete and in accordance with the Contract Documents. In the event of conflicts between the Scope of Work and other parts of the Contract Documents, this section shall take precedence.

6.1 WORK OVERVIEW

Provide complete, all required **CONCRETE**, for the Project known as **City of Port Orange Public Utilities Field Operations Facility.**

The Work included in this Subcontract is project specific and outlines the general Scope of Work for this Subcontract, all in complete accordance with the Plans and Specifications as defined in Exhibit "C" attached hereto.

Other Specification Sections may form a part of this Subcontract, whether listed or not.

The Scope of this Subcontract includes, but is not necessarily limited to the furnishing and installation of the following Work by this Subcontractor.

1. Visitors - No one shall be admitted to the jobsite by the Subcontractor, except as necessary to perform the Work hereunder, without, in each instance, first obtaining the approval of the Contractor.

2. Replace Guardrails - This Subcontractor shall install, maintain and replace all required guardrails in accordance with OSHA Standards for the purpose of safety at all openings and suspended work at the locations not protected and where Subcontractor is performing work. Subcontractor is also responsible for all construction fencing, temporary walkways, overhead protection, signage, and/or barricades to perform work outside the boundaries of Contractor furnished construction fencing.

3. Ongoing Operations/Residential Environment/Parking - Without limitation of the foregoing, Subcontractor understands that the Work may be constructed near on-going business or facility operations and may be in and around private residences and neighborhoods. Subcontractor shall use its best efforts, in conformity with the applicable standard of care, to perform the services hereunder in a manner which will not interfere with the on-going business operations and residences. All construction employees are to enter and park in the construction parking area designated by Contractor. Subcontractors are responsible for all off-site parking of employees which may be required and busing to jobsite via route identified by Contractor. Busing of employees, jobsite vehicles or deliveries shall not be routed through surrounding neighborhoods.

4. Jobsite Storage - Subcontractor is aware of the existing site conditions and the limited space availability. On-site storage and staging of materials and equipment will be allowed, only as specifically approved by Contractor's Project Superintendent or Project Manager. All deliveries of Subcontractor will be coordinated through Contractor. If scheduled deliveries are not ready at appointed time, Contractor may refuse acceptance and deliveries will be rescheduled. All cost and/or delays associated with the refusal of deliveries will be the responsibility of the Subcontractor. Subcontractor has included in this Subcontract price, all off-site storage as may be required, including, but not limited to transportation of materials from staging area to site.

5. Phased Turnover - This Subcontractor acknowledges that the Project may have phased turnover in accordance with the Project Schedule and that several mobilizations may be required and are included as part of this Subcontract. Additionally, Subcontractor acknowledges that the Project may have multi-buildings and that concurrent work on each building will be required in order to complete some phases ahead of the Project Schedule and all costs for doing same are included.

6. Owner's Facilities - All Project employees are subject to the Owner's rules and regulations while employed within their property limits. Use of the Owner's other parking lots and facilities by this Project's workmen are not permitted.

7. Limitation of Noise/Hours of Work - Subcontractor shall comply with all city, county, state and local jurisdictional authorities' Noise and Hours of Work Regulations.

8. Extra Work Percentages: For the purpose of changes to the Subcontract, the allowable overhead and profit is a combined 10%; but in no event shall these percentages exceed amounts authorized in the Owner-Contractor Agreement.

9. Closeout Documentation: This Subcontractor agrees to furnish all closeout documents, training, attic stock, and any punch work required within sixty (60) calendar days from Substantial Completion. Any Closeout documentation, attic stock, training or punch work deemed incomplete or missing passed the allotted time is subject to Liquidated Damages.

10. Warranties: This Subcontractor shall provide all warranties as required for this Scope of Work per the Contract Documents. This includes any required "Extended" Warranty for any product provided as part of this Scope of Work per the Contract Documents.

11. The word "provide" used herein means to "furnish and install" and is inclusive of all labor, material, equipment, shipping, coordination, tools, planning, shop drawings, field measuring, preparation and all other items required to complete the Work.

12. Subcontractor shall provide seventy-two (72) hour notice to Contractor prior to any material deliveries arriving at the jobsite. A representative of the Subcontractor shall be present on-site at the time of all deliveries. The Subcontractor shall also be responsible for the inventory, unloading, storage, security, and protection of the materials delivered.

13. Protection of existing surfaces and post-construction cleanup is included in this Subcontract Agreement.

14. Any rework or damage to in-place work resulting from the prosecution of this Scope of Work is the sole responsibility of this Subcontractor.

15. Subcontractor shall provide all horizontal and vertical transportation of materials, hoisting, and stabilization of grade required to safely complete their scope of work, including all necessary labor and equipment required to safely relocate materials from storage to the work area.

16. Subcontractor shall provide flagmen and traffic control people as necessary to get trucks in and out of the site in a safe and effective manner.

17. **CARE AND CUSTODY:** The Subcontractor shall provide labor and equipment to receive, unload, inventory, store, and provide for the care and custody of all materials it procures for its own behalf, or is furnished by others for installation by this Subcontractor, until such time as the material is permanently installed and accepted by the Owner and Architect.

18. This Subcontractor has sole responsibility to receive, inventory, and install all material associated with this Scope of Work in strict accordance with the Contract Documents. Wharton Smith will not be responsible for the acceptance of any subcontractor deliveries.

19. This Subcontractor shall participate in the coordination drawing process as required by Construction Manager and the Contract Documents. This Subcontractor shall coordinate the proposed locations of their work with the requirements of all related work to verify non-interference and compliance with ceiling heights, obstructions imposed by recessed lighting fixtures, shift spaces and other limitations. All access door locations shall be indicated. Conflicts will be prioritized and the sequence in which work is to be installed. Installed work of this Subcontractor that blocks or otherwise inhibits the proper work of any other trade shall be removed and relocated by this Subcontractor at no increase in the contract sum. Coordination meetings will be held weekly until all coordination is complete and approved by the Architect.

20. Dimensions shall be field-verified and coordinated prior to procurement or fabrication. Coordinate work with other trades involved. Field modifications such as offsets in piping or ductwork due to obstructions shall be provided at no additional cost. Coordinate work with existing elements such as mechanical equipment and duct,

lighting, pipes, and building structures. If conflict exists, Subcontractor is to request clarification prior to proceeding.

21. **OWNER DIRECT PURCHASE PARTICIPATION:** With respect to Article 22 of this Subcontract Agreement, the Owner will exercise the right to purchase materials directly as part of the Owner Direct Purchase Program. This Subcontractor shall actively participate in the Owner Direct Purchase Program for this Project and shall meet or exceed material purchases as part of this Program. Prior to the Subcontractor's final payment, a final reconciliation of Owner Direct Purchases against this Subcontract will be performed. Should it be determined in such final reconciliation or any other audit that this Subcontractor failed to meet the minimum requirement for Program material purchases, the Contractor shall be entitled to offset against amounts due Subcontractor or, if no amounts are due, recover from Subcontractor the amount of such missed tax savings for Program material purchases below the minimum. As required by the Owner Contract, any material order over $5,000.00 is required to go through the Owner Direct Purchase Program.

22. **FLORIDA PRODUCT APPROVAL**: Furnish Florida Product Approval Installation Instructions for approval. Provide all materials, anchors, consumables and other installation methods in strict accordance with all Florida Product Approval Installation Instructions and Test Procedures.

23. This Subcontractor shall submit an approved Site-Specific Safety Plan to the Wharton Smith Superintendent prior to mobilizing on site. Subcontractor to provide list of onsite Competent Persons responsible for the safe execution of this Scope of Work. List of Competent Persons shall be provided as part of the Site-Specific Safety Manual required for this project. Include any and all applicable Certifications.

24. **FIELD & MANAGEMENT SERVICES:**

    a. Subcontractor shall provide, full time onsite supervision at all times that work is being performed under this Subcontract. In the event, that Subcontractor fails to do so, Contractor will provide supervision and all costs will be back charged to Subcontractor.

    b. Subcontractor Superintendent will be required to attend all requested progress, safety, scheduling, coordination, and quality control meetings. Meetings of other nature may be required as requested by Engineer, Owner, or Contractor.

    c. Subcontractor will coordinate with Contractor and other project subcontractors as necessary to facilitate a proper installation.

    d. Subcontractor must coordinate and obtain approval from Wharton-Smith Superintendent to have and locate a construction trailer onsite, if necessary.

25. **SPECIAL NOTES**:

    a. Subcontractor to provide any storage containers or other temporary facilities required for safe and secure storage of materials provided by this Subcontractor.

    b. Subcontractor is responsible for keeping area orderly and clean.

    c. Contractor and the Owner will make every attempt to provide a secure site, however, Subcontractor is responsible for any financial loss due to theft.

    d. OSHA and Wharton-Smith safety standards are to be followed always. In the event of a conflict between these standards, the more stringent shall apply.

    e. This Subcontractor shall provide adequate OSHA-approved working platforms, walkways, scaffolding, railings, harnesses, and safety rails as required at all times that work is taking place on-site. It is this Subcontractor's responsibility to furnish, erect, brace, and dismantle all scaffolds required to complete this Scope of Work. Inspection and tagging of all scaffolds provided by this Subcontractor are to be completed on a daily basis by their Competent Person prior to work commencing.

    f. Daily clean-up is to be included in this scope package.

    g. All inspection requests are the responsibility of this Subcontractor and must be coordinated with Wharton-Smith Superintendent.

h. The cost of re-inspections of this Scope of Work as a result of failed inspections or testing will be the responsibility of this Subcontractor.

i. Subcontractor shall cooperate and coordinate with the Testing Laboratory to perform field quality control testing during all concrete work as required per the Project Documents. The Testing Laboratory shall make additional tests of in-place concrete when test results indicate concrete does not meet specified characteristics. Subcontractor shall pay for such tests conducted and other additional testing as may be required, when unacceptable concrete is verified. Deficient concrete shall be removed as directed by the Architect and replaced by this Subcontractor without additional cost to the Owner or Wharton-Smith.

26. Provide all **CONCRETE** in strict accordance with the Contract Documents, complete and fully functioning to the designer's intent, specifically including all details sections and notes contained within the Contract Documents, also including but not necessarily limited to the following:

~~a. Substrate examination, testing, and preparation including minor patching as required for a weather tight seal of exterior walls; Fluid applied weather barrier and 3-coat cement plaster system including all casing beads, corner beads, galvanized metal lath, paper backing, vinyl trims, fasteners, spacers, control joints, reveal joints, weep screeds, stucco stops, transitions to adjacent finishes, and miscellaneous accessories for a turn-key plaster and stucco exterior finish.~~

27. This Subcontractor shall provide all mockups required by the Contract Documents, the Contractor, the Designer, and/or the Owner.

28. Subcontractor shall protect adjacent work from splatter and damage.

29. ~~Subcontractor shall provide all fluid applied weather barrier at all CMU receiving stucco in accordance with the Contract Documents.~~

30. This Subcontractor has included all ASTM D4541 testing of substrates for bonding and adhesion

31. This Subcontractor shall inspect, test, and confirm in writing to Wharton-Smith Superintendent that all substrates are acceptable prior to start applying and/or installing any exterior finishes.

Other Items of Note:

A. Wharton-Smith will be utilizing a software called **Team Player** to process monthly pay applications. The fee for this service is $10.00 per Pay Application, regardless on the number of revisions in each month. Please review the Team Player Welcome Letter that has been included in the Bidding Documents which contains embedded links for training documentation and videos. This will be a requirement for all subcontractors on this project.

B. With respect to Article 22 of this Subcontract Agreement, the Owner will exercise the right to purchase materials directly as part of the Owner Direct Purchase Program. This Subcontractor shall actively participate in the Owner Direct Purchase Program for this Project Prior to the Subcontractor's final payment, a final reconciliation of Owner Direct Purchases against this Subcontract will be performed. This does not apply to temporary fence.

C. On-Site Work Hours: Limit work to between 7 a.m. to 5 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.

D. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site. Subcontractor shall maintain list of approved screened personnel with Owner's representative.

6.2 BID PRICING / ALTERNATES

The bid pricing shall be broken out as follows and as indicated on the bid form. The City of Port Orange has the sole discretion to accept any, all, or none of the work items for this scope of work based on the bid pricing received. Subcontractor to price the work accordingly.

6.2.1 This bid does not include any bid alternates.

6.2.2 Retainage will be held at 5% for the duration of the Contract and will be released upon retainage release by the Owner.

6.3 CLARIFICATIONS

6.3.1 The Subcontractor will be responsible for protecting all new and existing work throughout the site from damage that could be caused by performing the Scope of Work. Any damage caused by Subcontractor is the responsibility of Subcontractor and Subcontractor will bear the costs of said damage.

6.3.2 The Subcontractor will be required to attend all project progress and coordination meetings as requested by Wharton-Smith, Inc. or the owner.

6.3.3 All materials must be submitted upon and approved prior to being sent to the jobsite, all non-approved items may be rejected and returned at the Subcontractor's cost.

6.3.4 Subcontractor is responsible to coordinate with the CMAR and all other Subcontractors as necessary.

6.3.5 Subcontractor will be responsible for all general notes indicated on the drawings that pertain to this scope of work.

6.3.6 Subcontractor will obtain all permits, licenses, certificates, and coordination efforts, or any such approvals of plans or specifications as may be required by federal, state and local laws, ordinances, rules and regulations, for the proper execution and completion of the work specified herein.

6.3.7 Subcontractor will be responsible for offloading all equipment deliveries and proper short-term and long-term storage requirements per the manufacturer's requirements. Provide all equipment necessary to offload and set equipment including cranes.

6.4 GENERAL REQUIREMENTS

6.4.1 The Subcontractor will be bound to the CMAR to the same extent the CMAR is bound to the Owner by the terms of the Contract Documents.

6.4.2 The Scope of Work will be in compliance with all Federal, State and Local Codes.

6.4.3 This is a lump sum agreement, including freight, incidental fees, and all applicable taxes. A schedule of values for submittals, materials, checkout, startup and closeout paperwork will be submitted with the return of the signed agreement for review and approval by the CMAR's Project Manager.

6.4.4 If requested by the CMAR, the Subcontractor will assist in cost loading of the project's master schedule. Schedule of Values will follow the cost loaded actives provided by Subcontractor.

6.4.5 No billing will be accepted without an approved Schedule of Values.

6.4.6 A detailed Schedule of Values must be provided within two (2) weeks of a contract being executed should your bid be accepted.

6.4.7 No escalation costs are permitted, pricing will remain firm through the project duration.

6.4.8 The Subcontractor is required to abide by the Wharton-Smith, Inc. safety program and OSHA standards. Excavation, confined space plans, and MSDS sheets will be required for all applicable work.

6.4.9 Subcontractor is responsible to develop and provide a site-specific safety plan for this scope of work.

A. Safety plan will list all potential hazards and competent persons who will be supervising the work.

6.4.10 Subcontractor will maintain an OSHA Certified competent person on site at all times while the work is conducted.

6.4.11 All Subcontractors will be required to follow security protocol of the City of Port Orange and Wharton-Smith at all times.

6.4.12 OSHA and the CMAR's safety standards will be followed at all times.

6.4.13 Proper PPE will be worn by any personnel on the jobsite, including but not limited to delivery drivers, startup and commissioning representatives, manufacturer's representatives, and other personnel.

6.4.14 Materials are to be released as required to maintain Schedule, but Subcontractor is to inform CMAR of material releases and deliveries. No item will be released for production without approval from the Engineer.

6.4.15 All equipment will be labeled and tagged in accordance with the Contract Documents.

6.4.16 Provide all management necessary to adequately support field activities and maintain the Project Schedule.

6.4.17 Fulltime and onsite supervision is required while any work by Subcontractor is being performed. If Subcontractor fails to do so, the CMAR will provide supervision and all costs will be back charged to Subcontractor. The Subcontractor's superintendent will be required to attend all requested progress, safety, scheduling, coordination, and quality control meetings. Meetings of other natures may be required as requested by Engineer, Owner, or the CMAR.

6.4.18 The Subcontractor will be required to coordinate with all other construction trades as required to complete this Scope of Work.

6.4.19 Anticipated (general) sequencing – Your crews may be interfacing with several other trades including mechanical, concrete, piping, and, testing agencies. Reasonable time provisions need to be made for coordination and time for these trades to complete their work.

6.4.20 All deliveries will be made between 7am-3pm M-F; all deliveries will be escorted onto the site by WSI. A 72-hour notice to WSI's Superintendent will be required prior to any deliveries.

6.4.21 The Subcontractor may not utilize any area of the project site for storage without approval from the CMAR. If the Subcontractor plans to utilize storage space, the Subcontractor will submit, to the CMAR, a site plan detailing the areas being requested for storage.

6.4.22 An emergency contact list will be provided by the Subcontractor. This list will include at least one point of contact that is available 24 hours a day.

6.4.23 Furnish appropriate Material Safety & Data Sheets (MSDS) and warranty documentation with shop drawings for approval.

6.4.24 Subcontractor is required to coordinate with all applicable authorities as required

6.4.25 The Subcontractor utilizing an Employee Leasing Company for Workers Compensation Insurance coverage will not be allowed to use any Subcontractor on the project (i.e. no third-party subs)

6.4.26 It is the sole responsibility of the Subcontractor to secure any and all tools, materials, and equipment stored on the site. Wharton-Smith, nor the Owner, will be responsible for any theft, vandalism, or damage to the Subcontractors property. The Subcontractor is responsible for all security measures required to secure their resources.

6.4.27 Subcontractor will provide temporary generators as needed and fresh drinking water for their employees. Subcontractor is only responsible for their work and personnel.

6.4.28 The Subcontractor is responsible to follow all site plan details and to adhere to all specifications applicable to the Scope of Work items above.

6.4.29 All hazardous material will be properly disposed of at an offsite location.

6.4.30 The Subcontractor will be responsible to utilize available dumpsters for debris and daily clean-up. All areas will be left clean at the end of each day.

6.4.31 A representative of the Subcontractor knowledgeable of the work will be present at weekly coordination meetings with the General Contractor.

6.4.32 Subcontractor is to provide Daily Reports.

6.4.33 A Superintendent (not Foreman) must be present at all times the Subcontractor's crews are onsite.

6.4.34 Pre-Mobilization Jobsite QC/QA Conference - Subcontractor to participate in WSI Quality Control Plan as outlined in the Subcontract Agreement. Subcontractor's Project Superintendent and or Foremen will attend Quality Control Meetings as deemed necessary by WSI including a minimum of one (1) pre-mobilization meeting to be held in advance of Subcontractor's mobilization on site.

6.4.35 Subcontractor must have approval for additional work (not included in this Scope) in writing by an authorized W/S representative prior to proceeding with said work.

6.4.36 No claim for extra services rendered or materials furnished will be valid by either party unless agreed to in writing by both parties.

6.5 PROJECT SCHEDULE

6.5.1 The Subcontractor is to provide a detailed schedule for the Scope of Work with the submission of bid. The Subcontractor will coordinate with the CMAR to ensure the detailed schedule conforms to the overall Project Schedule. The Subcontractor will update this Scope of Work Schedule each month and provide a written update to the CMAR.

6.5.2 The Subcontractor will account for not working on holidays and still plan for the Scope of Work to be completed per the overall Project Schedule. Holidays will include those observed by the Owner, the CMAR, and the Subcontractor. The CMAR or Owner observes the following holidays:

A. New Year's Day
B. Martin Luther King Day
C. President's Day
D. Memorial Day
E. Independence Day
F. Labor Day
G. Thanksgiving
H. Day after Thanksgiving
I. Christmas Eve
J. Christmas Day

6.6 SUBMITTAL REQUIREMENTS

6.6.1 The Subcontractor will provide submittal documentation as required within the Contract Documents. Upon execution of this Agreement the Subcontractor will provide a list of anticipated submittals for the Scope of Work. The Subcontractor will provide any additional submittal documentation requested for any materials or services related to the Scope of Work.

6.6.2 All submittals which have any deviation will be supplied with a letter addressing all deviations.

6.6.3 All submittals will be provided with a cover page listing the following information:

A. Project name

B. Submittal title

C. Relevant specification sections

a. Specification sections, with addendum updates included, are to have each paragraph check-marked to indicate specification compliance. Check marks shall denote full compliance with a paragraph as a whole. Any deviation shall be clearly marked by an “X“ and numbered to indicate a requested deviation. If deviations from the specifications are indicated, and therefore requested, each deviation shall be underlined and denoted by a unique number in the margin to the right of the identified paragraph, referenced to a detailed written explanation of the reasons requesting the deviation. The remaining portions of the paragraph not underlined will signify compliance with the specifications. Failure to include a copy of the marked-up specification sections along with justifications for any requested deviations to the specification requirements shall be cause for return of the entire submittal with no further review.

D. Subcontractor’s contact information

E. Manufacturer’s contact information

6.6.4 All submittals will including the following information for each individual piece of equipment or fabrication:

A. Complete model number

B. The tag number of each per the Contract Documents (if applicable)

C. List of major components

D. Specification section (if varied from the submittal prime specification section)

6.6.5 It is the Subcontractor’s sole responsibility to ensure submittals are complete and accurate for the complete scope of this agreement. Coordination of submittal information from others working under the Subcontractor is the sole responsibility of the Subcontractor. Subcontractor will not provide submittals with any items marked out of scope or by others if such items are part of the scope of this agreement.

6.6.6 Revised submittals will include a comment response document, this document will respond to every comment in writing and reference the location of all corrections within the revised submittal. Revised submittals will be at no additional cost to the Purchaser.

6.6.7 The Subcontractor may be responsible for any costs incurred by the CMAR due to excessive submittal revisions.

6.7 RECORD DOCUMENTS

6.7.1 The Subcontractor will maintain accurate and current as-built documents. These documents will meet the requirements within the Contract Documents. All survey information will be certified by a licensed surveyor.

6.7.2 Prior to approval of the Subcontractor's monthly pay application, the CMAR may elect to review the Subcontractor's as-built documents. If these documents are found to be inaccurate or not current, up to the date of the pay application, the CMAR may reject the pay application until the Subcontractor provides accurate and current as-built documents. Subcontractor will not be entitled for any additional costs, fees, or other compensation due to rejected pay applications and delayed payments as a result of Subcontractor's failure to provide accurate and current as-built documents.

6.7.3 After completion of the Scope of Work, the Subcontractor will provide complete and final as-built documents within two (2) weeks. As-built documents will be provided as detailed in the Contract Documents

6.8 INSURANCE

6.8.1 Subcontractor will provide the minimum insurance limits required to meet the requirements in this purchase order and all the requirements detailed within the Contract Documents. A sample insurance document is included within the Contract Documents for additional reference.

6.8.2 The Subcontractor will maintain a worker's compensation insurance policy for the complete scope of services. The Subcontractor will not utilize a Professional Employer Organization (PEO) to provide workers compensation insurance.

Christine Carasas

From: Luis Valle <lvalle@vmgconstructioninc10.com>
Sent: Tuesday, November 12, 2024 1:58 PM
To: James Manyette; Wharton Smith Commercial Estimating
Subject: RE: Port Orange Public Utilities Ops Bldg - Conc Proposal - VMG Construction
Attachments: COPO - Concrete Bid Package - VMG Construction.pdf

Please see attached for SOW Concrete

Best Regards,



Luis Valle | **Estimator**
C 407-676-2384 | **P** 407-347-9536 Ext 1003 | **F** 407-877-7264
LValle@VMGconstructioninc10.com
Check out our web site!
WWW.VMGCONSTRUCTIONINC10.COM

From: Luis Valle
Sent: Tuesday, November 12, 2024 1:55 PM
To: James Manyette <jmanyette@whartonsmith.com>; comest@whartonsmith.com
Cc: Adolfo Galvan <adolfo@vmgconstructioninc10.com>; Chris Hall <chris@vmgconstructioninc10.com>; Larry Sease <larry@vmgconstructioninc10.com>; Jose Zarate <jzarate@vmgconstructioninc10.com>; Eric Martinez <eric@vmgconstructioninc10.com>
Subject: Port Orange Public Utilities Ops Bldg - Conc Proposal - VMG Construction

Good afternoon,

The concrete cost Port Orange Public Utilities Ops Bldg is as follows:

Buildings
Concrete foundations, slab on grade, and CIP $1,022,037.00

Site
Site sidewalks, Site paving, and dumpster $115,904.00

Best Regards,



Luis Valle | **Estimator**
C 407-676-2384 | **P** 407-347-9536 Ext 1003 | **F** 407-877-7264
LValle@VMGconstructioninc10.com
Check out our web site!
WWW.VMGCONSTRUCTIONINC10.COM

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!

November 11, 2024

Enclosed is our quote for the cast stone on the Port Orange Public Utilities Operations Bldg project in Port Orange, Fla. This quote includes labor and material for production of stone. This quote does not include tax, nor the installation of stone, which our company does not perform. Stone will be shipped 'F.O.B. - jobsite' from Macon, Ga.

(1) Mold @ $400 => $400
45’ of 17” Window Sill Assemblies Mix/Labor => $1800
158’ of 14” Granular Storage Coping Assembly Mix/Labor => $4000
35’ of 14” Dumpster Screen Coping Assembly Mix/Labor => $900
52’ of 14” Mech Yard Screen Coping Assembly Mix/Labor => $1400
(1) Load Shipping => $1400
(sales tax not included) Total => $9900

Please note that we do not collect/file Fla sales tax.

Anchors are excluded.

Please note that we only quoted “window sills” in the CMU areas. We did not quote any window sills in the metal panel areas (no section provided for these windows).

This quote is based on drawings dated 9/30/24 – “Issue Date” (Previous Revisions in Revision block)

No Addenda are acknowledged.

We will utilize a “stock” mold for the above 14” coping. Mold may not be the exact dimensions of the architect designed mold, but will be very close. If a custom mold is required, a $400 mold fee will apply.

Please allow 2 weeks lead time for submittal creation.
Then allow 3 weeks lead time for production after submittal approval.

Thanks
Chad Walters

Christine Carasas

From: chad walters <castinstone.inc@gmail.com>
Sent: Friday, November 8, 2024 1:41 PM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Public Utilities Operations Bldg - Port Orange Fla
Attachments: Port Orange Public Utilities Operations Bldg - Port Orange Fla.doc

Hi James,

We have been asked to provide pricing for the precast, on this project.

I will be out of the office on Monday, so I am sending early so that you can review. I will return to the office on Tuesday morning (bid day), if you have any questions.

Attached is our quote for the cast stone on this project. Please review this quote and call me if I can answer any questions.

Please see notes concerning revisions and molds.

Thanks

Chad Walters

Cast In Stone, Inc.
7971 Industrial Hwy
Macon, Ga 31216
478-788-2200 ph
478-788-4002 fax
www.castinstonega.com

"For God So Loved the World.....John 3:16"

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Subcontractor Bid Form-General

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	PYRAMID MASONRY CONTRACTORS
Scope of Work:	MASONRY

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	$ 378,000.00
Amount in Words:	THREE HUNDRED SEVENTY EIGHT THOUSAND DOLLARS. ZERO/100 CENTS.

(1.2) Alternates (Voluntary)

	$ —
	$ —
	$ —

(1.3) Owner Direct Purchase (value of all purchases exceeding $5,000)

Material/Equipment Types:	
Amount:	$ —

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$ —
2		$ —
3		$ —

(1.5) MWBE Participation

MWBE	$ —
LDB	$ —
VBE	$ —

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	@ 13.94 / M

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)
—			
—			
—			

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1-001-2015	Dated:	11-1-24-11-7-24	RFI No.		Dated:	
RFI No.	2-006-2-024	Dated:	11-7-24-11-8-24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	—	Dated:		WSI No.		Dated:	
WSI No.		Dated:		WSI No.		Dated:	
WSI No.		Dated:		WSI No.		Dated:	

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.	—	Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.	—	Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

PYRAMID MASONRY CONTRACTORS, INC.

Company Name

405 ZELL DRIVE, ORLANDO, FL, 32824

Address (Street, City, State, Zip)

407-816-5740 FMANCIA@PYRAMIDMASONRY.NET

Phone Number **Email Address**

Type of Organization (Check One):

(✓) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of GEORGIA.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other —

SIGNATURE OF BIDDER

Bidder Name: FERNANDO MANCIA
By: [signature]
Printed Name: FERNANDO MANCIA
Title: PROJECT MANAGER-ESTIMATOR
Dated: 11/12/24
License No.: CGC 037523

PYRAMID MASONRY CONTRACTORS, INC.
405 ZELL DRIVE, ORLANDO, FLORIDA 32824-7622 (P) 407-816-5740 (F) 407-816-5741

PROPOSAL

To: WHARTON-SMITH, INC.
Attn: JAMES MANYETTE
Project: PORT ORANGE PUBLIC UTIL.
Location: 4505 CLYDE MORRIS BLVD.
PORT ORANGE, FL, 32129
Bid Date: NOVEMBER 4,2024

We are pleased to quote Division IV Masonry of the above-mentioned project. We propose to furnish all materials, labor, and equipment necessary for its completion in accordance with the following exclusions and/or conditions.

ADDENDA ACKNOWLEDGED:

SCOPE: Masonry. Admin. Building, Warehouse Building, Trash Enclosure/Utility wall.

INCLUSIONS: 12" Regular block; 12" Single Side Split Face block; 8" Regular block; 8" Single Bull Nose block; 4" block; 4" Split Face block; Fire rating per FBC; Mortar; Sand; Grout Fill; Rebar; Composite cleanup crew (1) member per work week; (5) Day work week; Natural Gray SF; Single BN at 180 Degree door opening.

EXCLUSIONS: Temporary shoring or bracing; Bond premium (add $13.94/m if req'd); Rubbish removal from site; Cost for deductible(s) on Builders Risk Insurance; UL Certificates; Fire rated caulking and sealants; Precast concrete windowsills; Wall cap at Dumpster & Mechanical wall; Flashing at T.O.W; Steel lintels; Block at Top of Wall per wall detail; Drill & Epoxy; Insulation.

ALTERNATES: _____ Add: _____

CONDITIONS:

1. General to furnish power, water, etc. within 200 ft. of masonry work area.
2. Site to be graded, suitable for scaffold erection.
3. General to furnish adequate lighting to perform masonry installation.
4. General to furnish control points & benchmarks.
5. Bid includes 100% Fall Protection not 100% Tie-off.

The above to be performed in accordance with the drawings and specifications for the sum of Three Hundred Seventy-Eight Thousand Dollars 00/100 Cents ($378,000.00).

Should this proposal be accepted, it shall become part of the contract and any alteration or deviation from above involving extra cost, will be executed only upon a written order, and will become an extra charge over and above our estimate. We appreciate the opportunity to quote on this project.

Respectfully Submitted

Fernando U. Mancia

Fernando U. Mancia, Estimator
PYRAMID MASONRY CONTRACTORS, INC.
This proposal may be withdrawn if not accepted within 30 days.

Accepted:_____

Date:_____

By:_____
Name and Title

Good afternoon Manuel,

We will meet the bid deadline.

Thank you,

From: Bill Parsons <bparsons@pyramidmasonry.net>
Sent: Tuesday, November 5, 2024 2:03 PM
To: Manuel Gonzalez <mdgonzalez@whartonsmith.com>
Cc: Fernando Mancia <fmancia@pyramidmasonry.net>
Subject: RE: [EXTERNAL] Port Orange Public Utilities Field Ops Bldg. - Wharton-Smith, Inc.

Yes, I believe Fernando is working on this.

Thanks, Bill

William J. Parsons
PYRAMID MASONRY CONTRACTORS, INC.
p 407-816-5740 x13
f 407-816-5741

From: Manuel Gonzalez <mdgonzalez@whartonsmith.com>
Sent: Tuesday, November 5, 2024 12:28 PM
To: Bill Parsons <bparsons@pyramidmasonry.net>
Subject: [EXTERNAL] Port Orange Public Utilities Field Ops Bldg. - Wharton-Smith, Inc.

Good afternoon,

I'm assisting our Sanford office with the Port Orange Public Utilities Field Ops building pricing, so I'm checking with you to see if you are still on track to submit your bid before 2 pm ET on November 12th. Please let me know.

Manuel D Gonzalez | Senior Preconstruction Services Manager
Wharton-Smith, Inc. | Construction Group of Choice | https://url.emailprotection.link/?bzLow_SZ8RwaSbBB7Pq0MUUYlwjt_kYtescjY_Dk2Zbsyz7SYMRHpv3m04rJSTzwKXSok8Jerf4CS_0ReulBxtQ~~
49 E Chase St, Pensacola, FL 32502 | Office: (850) 328-4350 | Cell: (850) 287-3242

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STONEWALL MASONRY

#CGC1528624

Date: 11-12-2024

PROPOSAL

Stonewall Masonry LLC
2995 Stonewall Place
Sanford, FL 32773
Office Ph (407) 878-0995 EXT 303
Bidder : CM
Scope : Block Work

Job name: Port Orange Public Operations
Street: 4505 Clyde Morris Blvd
City: Port Orange,FL 32129

		By SWM	By others
#1	Standard ASTM C90 Block, Type II, Grade N, Normal weight and strength.	X	
#2	Split Face block and mortar to be color select.	X	
#3			
#4	Construction Trash dumpster by others.		X
#5			
#6	Cell-fill to be 3000 PSI Pea rock pump mix.	X	
#7			
#8	PRICE INCLUDES : Rebar, sand, mortar, precast lintels, joint reinforcing, scaffold, machine,	X	
#9	stocking, pumping of cell-fill, hoisting, setting of hollow metal door frames in CMU,		
#9	Base flashing, weeps, mortar-net, drip edge, term bar, dry-block.		
#11			
#12	PRICE DOES NOT INCLUDE : Bracing, bolts, angle iron, welding, insulation, damp-proofing,		X
#13	waterproofing, caulking, sealants, backer rods, embeds, testing, permits.		
#14			
#15	Site work based on : Mechanical yard and Dumpster area.	X	
#16			

Base Bid: $ 348,043.20

Accepted: _____ Date:_____

Price Good For 30 Days

Christine Carasas

From: Chuck Morris <cmorris@stonewall-masonry.net>
Sent: Tuesday, November 12, 2024 1:27 PM
To: Wharton Smith Commercial Estimating
Cc: cmorris@stonewall-masonry.net
Subject: Port Orange Public Operations Quote
Attachments: 20241112140417.pdf

Thanks

Chuck Morris Cell : 1-321-365-6436

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Subcontractor Bid Form-General

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Stonewall Masonry LLC
Scope of Work:	0400- Masonry

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	$ 348,043.20
Amount in Words:	Three forty eight thousand forty three dollars twenty cents

(1.2) Alternates (Voluntary)

none	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $50,000)

Material/Equipment Types:	Block,Concrete
Amount:	$ 82,200.00

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1	none	$
2		$
3		$

(1.5) MWBE Participation

MWBE	$ 0
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	1.787%	

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)
Split face block	10 to 12 weeks		
precast cap	8 weeks		

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.		Dated:		WSI No.		Dated:	
WSI No.		Dated:		WSI No.		Dated:	
WSI No.		Dated:		WSI No.		Dated:	

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

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The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

STONEWALL MASONRY
Company Name

2995 Stonewall Place Sanford,FL 32773
Address (Street, City, State, Zip)

cmorris@stonewall-masonry.net
Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: STONEWALL MASONRY
By: chuck morris
Printed Name: Chuck Morris
Title: PM/EST
Dated: 11/12/2024
License No.: CGC1528624

Christine Carasas

From: Manuel Gonzalez
Sent: Thursday, November 14, 2024 8:08 AM
To: Wharton Smith Commercial Estimating
Subject: FW: PORT ORANGE BID FORM
Attachments: 20241114065919.pdf

Manuel D Gonzalez | Senior Preconstruction Services Manager Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
49 E Chase St, Pensacola, FL 32502 | Office: (850) 328-4350 | Cell: (850) 287-3242

-----Original Message-----
From: Chuck Morris <cmorris@stonewall-masonry.net>
Sent: Thursday, November 14, 2024 5:18 AM
To: Manuel Gonzalez <mdgonzalez@whartonsmith.com>
Cc: cmorris@stonewall-masonry.net
Subject: PORT ORANGE BID FORM

Thanks

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!

STONEWALL MASONRY

Date: 11-12-2024

#CGC1528624

PROPOSAL

Stonewall Masonry LLC
2995 Stonewall Place
Sanford, FL 32773
Office Ph (407) 878-0995 EXT 303
Bidder : CM
Scope : Block Work

Job name: Port Orange Public Operations
Street: 4505 Clyde Morris Blvd
City: Port Orange,FL 32129

		By SWM	By others
#1	Standard ASTM C90 Block, Type II, Grade N, Normal weight and strength.	X	
#2	Split Face block and mortar to be color select.	X	
#3			
#4	Construction Trash dumpster by others.		X
#5			
#6	Cell-fill to be 3000 PSI Pea rock pump mix.	X	
#7			
#8	PRICE INCLUDES : Rebar, sand, mortar, precast lintels, joint reinforcing, scaffold, machine,	X	
#9	stocking, pumping of cell-fill, hoisting, setting of hollow metal door frames in CMU,		
#9	Base flashing, weeps, mortar-net, drip edge, term bar, dry-block.		
#11			
#12	PRICE DOES NOT INCLUDE : Bracing, bolts, angle iron, welding, insulation, damp-proofing,		X
#13	waterproofing, caulking, sealants, backer rods, embeds, testing, permits.		
#14			
#15	Site work based on : Mechanical yard and Dumpster area.	X	
#16			

Base Bid: $ 358,587.70

Accepted: _____ Date: _____

Price Good For 30 Days

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Stonewall Masonry LLC
Scope of Work:	0400- Masonry

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	[redacted] $ 358,587.70
Amount in Words:	[redacted]

Three Fifty Eight Thousan Five Hundred Eight Seven Dollar 70 Cents

(1.2) Alternates (Voluntary)

none	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	Block,Concrete
Amount:	$ 82,200.00

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1	none	$
2		$
3		$

(1.5) MWBE Participation

MWBE	$ 0
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	1.787%	

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

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Split face block	10 to 12 weeks		
precast cap	8 weeks		

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1	Dated:	11/7/24	RFI No.		Dated:	
RFI No.	2	Dated:	11/11/24	RFI No.		Dated:	
RFI No.	3	Dated:	11/15/24	RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10/22/24	WSI No.	4	Dated:	10/28/24
WSI No.	2	Dated:	11/24/24	WSI No.	5	Dated:	10/31/24
WSI No.	3	Dated:	10/24/24	WSI No.	6	Dated:	11/4/24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.	7	Dated:	11/6/24	ASI No.	8	Dated:	11/8/24

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

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Continued Next Page

PART 3: BIDDER INFORMATION

STONEWALL MASONRY
Company Name

2995 Stonewall Place Sanford,FL 32773
Address (Street, City, State, Zip)

cmorris@stonewall-masonry.net
Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

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Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: STONEWALL MASONRY
By: chuck morris
Printed Name: Chuck Morris
Title: PM/EST
Dated: 11/12/2024
License No.: CGC1528624

Christine Carasas

From: Manuel Gonzalez
Sent: Friday, November 22, 2024 8:22 AM
To: Wharton Smith Commercial Estimating
Subject: FW: PORT ORANGE Revised bid form and proposal
Attachments: 20241122063354.pdf

Manuel D Gonzalez | Senior Preconstruction Services Manager Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
49 E Chase St, Pensacola, FL 32502 | Office: (850) 328-4350 | Cell: (850) 287-3242

-----Original Message-----
From: Chuck Morris <cmorris@stonewall-masonry.net>
Sent: Friday, November 22, 2024 5:09 AM
To: Manuel Gonzalez <mdgonzalez@whartonsmith.com>
Cc: cmorris@stonewall-masonry.net
Subject: PORT ORANGE Revised bid form and proposal

Thanks

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ADVANCED WELDING FABRICATION AND DESIGN Inc

ADVANCED WELDING, FABRICATION & DESIGN

PHONE: 352.203-4515

EMAIL: neil.awfd@gmail.com

13540 SE 31st AVE
SUMMERFIELD FL,34491

DATE:	**11/12/24 UPTO WSI # 008 & RFI # 2**
JOB NAME:	PORT ORANGE FIELD OPS FACILITY

STEEL PROPOSAL

First let us thank you for the opportunity to quote this project. We respectfully submit the following.

WE PROPOSE TO FURNISH AND INSTALL THE FOLLOWING :

16ct COLUMNS-ANCHOR BOLTS ARE FURNISH ONLY
16ct W BEAMS & 8ct HSS BEAMS-EMBEDS ARE FURNISH ONLY
JOIST -EMBEDS ARE FURNISH ONLY
DECKING -*GALVANIZED*
BRIDGING / BRACING
DECK SUPPORT ANGLES
7ct GALVANIZED EMBED ANGLE AT ROLL UP DOORS -FURNISH ONLY
44ct (+ 5 EXTRA) **GALVANIZED 6" STD PIPE BOLLARDS -**FURNISH ONLY
16ct GALVANIZED XH PIPE BOLLARDS WIT H BASE PLATE AND CAP *(INCLUDES ANCHORS)* **-**FURNISH ONLY
300LF **OF L3x3x1/4 FOR ALLOWANCE -**FURNISH ONLY IF NEEDED
176LF **OF 2 LINE ALUMINUM RAIL AT WASH DOWN PIT**
1 SET OF GALVANIZED DUMPSTER GATES WITH DECKING INFILL PANELS *(TYP DESIGN)*-POSTS ARE FURNISH ONLY

EXCLUSIONS:

COST OF BONDS AND/ OR PERMITS
COST OF ENGINEERING
COST OF TESTING AND / OR INSPECTION.
A.I.S.C. CERTIFICATION- BOTH SHOP AND FIELD
GROUTING AND/OR DRY PACKING
ANY ITEMS NOT SPECIFICALLY MENTIONED ABOVE UNDER "FURNISH ONLY" AND/OR "FURNISH AND INSTALL"
ANY REBAR -UNLESS SPECIFICALLY NOTED IN SCOPE
ANY STEEL OR MATERIAL FOR OUR TRADE NOT SIZED OR SHOWN ON SCOPE OF WORK OR DRAWINGS
DOWNSPOUTS, DOWNSPOUT GUARDS, STANDING SEAM METAL ROOFING, SIDING, TRIM AND FASTENERS
METAL DECK OVER LIGHT GAUGE MATERIALS AND/OR INSTALLATION OF ANY METAL DECK NOT ATTACHING TO STEEL AS QUOTE ABOVE, SCREWING DOWN OF METAL DECK TO STEEL AND/OR CONCRETE (ANYTHING ASSOCIATED WITH L/G FRAMING UNLESS ASKED FOR AND/OR NOTED ABOVE)
COSTS FOR DEMOLITION, TESTS, PERMITS, INSPECTIONS SURVEYS OR BONDS
ANY OTHER ITEMS NOT LISTED IN SCIOPE

PRICE =$257,000.00

PAYMENT DUE UPON COMPLETION OR PER CONTRACT DOCUMENTS.
All material is guaranteed to be as specified. All work to be completed in a workmanlike manner according to standard practices. Any alteration or deviation from above specifications involving extra costs, will be executed only upon written orders, and will become an extra charge over and above the estimate. All agreements contingent upon strikes, accidents or delays beyond our control. This proposal subject to acceptance within 30 days and is void thereafter at the option of the undersigned.

ACCEPTANCE OF PROPOSAL

The above prices, specifications and conditions are hereby accepted. You are authorized to do the work as specified. Payment will be made as outlined above.

ACCEPTED:

Date_____/__ _/_____ Signature_____ Title_____

SECTION 6 – SCOPE OF WORK

The Bidder shall utilize the information within this section of the Bid Manual to assist in development of the Bid Proposal. The outlined scopes herein are not intended to detail the complete scope of the Bid Package. The Bidder is responsible for reviewing the Contract Documents to understand the full scope and requirements.

The Subcontractor Is to furnish all labor, equipment, material, subcontracts, and supervision required to complete the Scope of Work generally described as the **STRUCTURAL STEEL PACKAGE**, detailed herein, for the Public Utilities Field Operations Facility. All work shall be complete and in accordance with the Contract Documents. In the event of conflicts between the Scope of Work and other parts of the Contract Documents, this section shall take precedence.

6.1 WORK OVERVIEW

Provide complete, all required **Structural Steel and Miscellaneous Metals**, for the Project known as **City of Port Orange Public Utilities Field Operations Facility.**

The Work included in this Subcontract is project specific and outlines the general Scope of Work for this Subcontract, all in complete accordance with the Plans and Specifications as defined in Exhibit "C" attached hereto.

Other Specification Sections may form a part of this Subcontract, whether listed or not.

The Scope of this Subcontract includes, but is not necessarily limited to, the furnishing and installation of the following Work by this Subcontractor.

1. Visitors - No one shall be admitted to the jobsite by the Subcontractor, except as necessary to perform the Work hereunder, without, in each instance, first obtaining the approval of the Contractor.
2. Replace Guardrails - This Subcontractor shall install, maintain and replace all required guardrails in accordance with OSHA Standards for the purpose of safety at all openings and suspended work at the locations not protected and where Subcontractor is performing work. Subcontractor is also responsible for all construction fencing, temporary walkways, overhead protection, signage, and/or barricades to perform work outside the boundaries of Contractor furnished construction fencing.
3. Ongoing Operations/Residential Environment/Parking - Without limitation of the foregoing, Subcontractor understands that the Work may be constructed near on-going business or facility operations and may be in and around private residences and neighborhoods. Subcontractor shall use its best efforts, in conformity with the applicable standard of care, to perform the services hereunder in a manner which will not interfere with the on-going business operations and residences. All construction employees are to enter and park in the construction parking area designated by Contractor. Subcontractors are responsible for all off-site parking of employees which may be required and busing to jobsite via route identified by Contractor. Busing of employees, jobsite vehicles or deliveries shall not be routed through surrounding neighborhoods.
4. Jobsite Storage - Subcontractor is aware of the existing site conditions and the limited space availability. On-site storage and staging of materials and equipment will be allowed, only as specifically approved by Contractor's Project Superintendent or Project Manager. All deliveries of Subcontractor will be coordinated through Contractor. If scheduled deliveries are not ready at appointed time, Contractor may refuse acceptance and deliveries will be rescheduled. All cost and/or delays associated with the refusal of deliveries will be the responsibility of the Subcontractor. Subcontractor has included in this Subcontract price, all off-site storage as may be required, including, but not limited to transportation of materials from staging area to site.
5. Phased Turnover - This Subcontractor acknowledges that the Project may have phased turnover in accordance with the Project Schedule and that several mobilizations may be required and are included as part of this Subcontract. Additionally, Subcontractor acknowledges that the Project may have multi-buildings and that concurrent work on each building will be required to complete some phases ahead of the Project Schedule and all costs for doing same are included.

6. Owner's Facilities - All Project employees are subject to the Owner's rules and regulations while employed within their property limits. Use of the Owner's other parking lots and facilities by this Project's workmen are not permitted.
7. Limitation of Noise/Hours of Work - Subcontractor shall comply with all city, county, state and local jurisdictional authorities' Noise and Hours of Work Regulations.
8. This Subcontractor shall preserve all benchmark stakes and other survey marks, regardless of location or purpose. In the event these items are removed or destroyed by the Subcontractor's employees or others working on its behalf, the Subcontractor shall bear the full replacement cost.
9. This Subcontractor shall be responsible for all flagmen and traffic control personnel as necessary to get trucks in and out of the Project site in a safe and effective manner.
10. This Subcontractor shall provide and install a complete **package**. This includes, but is not limited to, all structural steel columns, structural steel beams, bar joists, metal deck, steel pan stairs, handrails, wall rails, guardrails, tube steel framing, base plates, shear studs, channels, anchor bolts, embedded weld plates, gusset plates, seats, bridging, clips, bollards, metal roof deck, closure strips, continuous support angles, miscellaneous support angles, roof access ladders, and all miscellaneous items required by this Scope of Work.
11. This Subcontractor shall provide all structural steel and miscellaneous steel with the appropriate finish in strict accordance with the Contract Documents.
12. Provide an allowance to furnish and install the additional 300 LF of L3"x3"x1/4" steel angle. All unused labor and material shall be credited back via deductive change order upon final contract reconciliation.
13. This Subcontractor shall provide and install all angle support frames for framed floor and/or roof openings for all Mechanical floor and roof penetrations. Subcontractor shall coordinate with Mechanical Subcontractor and the Mechanical Drawings. None
14. Steel Subcontractor to provide and install structural supports for operable partition to include structural support for concentrated load when partition is folded. See note 1 on S102. This Subcontractor shall coordinate requirements with operable partition wall vendor. Note states steel to be BY wall Supplier -
15. This Subcontractor shall provide and install **Dumpster gates**. Gates to be provided with finishes in strict accordance with A1/AS501 and the Contract Documents.
16. This Subcontractor shall provide all continuous embedded angle materials at all Overhead Door Opening locations, in strict accordance with the Contract Documents and detail J15/S201. Installation of angle is by others.
17. This Subcontractor shall provide and install all handrails, wall rails, and guardrails shown on the Contract Documents.
18. This Subcontractor shall provide and inventory all bollards, associated anchor bolts and plates required throughout the building and site. Bollards are to be installed and painted by others. This scope of work includes all welded metal top caps per detail A14/AS501. A13
19. This Subcontractor shall provide and install roof access ladders in strict accordance with the Contract Documents. Subcontractor shall supply caged access ladders when required by code. Subcontractor shall coordinate ladder dimensioning and fastening points with Concrete, Masonry and Roofing Contractors. None Shown on Drawing
20. This Subcontractor shall perform all field engineering and layout for this Scope of Work including, but not limited to, line, level, grade, layout, block outs, niches, and openings.
21. This Subcontractor shall provide all engineering required by the Contract Documents by a Structural Engineer licensed to work in the State of Florida. All associated costs for signing and sealing and resubmittals, if required, are included in this Subcontract amount. — NO engineering Required
22. This Subcontractor shall be responsible for all fire and spark protection relating to this Scope of Work.
23. This Subcontractor shall utilize only gas or diesel operated welding machines. All fuel, oil, and maintenance for this equipment is by this Subcontractor. Welding machines are to be properly protected from leaking fluids and/or fuels onto slabs and/or surrounding dirt.

24. This Subcontractor shall provide all cutting, welding and fitting equipment, and materials required for complete erection.

25. This Subcontractor shall provide all shop **and** onsite welder certifications at the time of material fabrication and erection to the Contractor for record purposes.

26. This Subcontractor shall provide a continuous single source on site individual for supervision during execution of your Scope of Work.

27. This Subcontractor shall provide a Project Hoisting Plan for review and approval by Contractor prior to mobilization. All above ground and hoisting work requires competent persons in fall protection, scaffolding, crane operation, and rigging while work is taking place on site.

28. This Subcontractor shall provide manpower for "Composite Cleanup Crew" on a Weekly basis. Subcontractor shall be required to provide one Composite Crew Member for every ten Subcontractor workers onsite. Participation in the Composite Cleanup Crew is only required while this Subcontractor is mobilized onsite, completing this Scope of Work.

29. This Subcontractor shall provide adequate working platforms, walkways, scaffolding, railings, and safety rails as required at all times work is taking place on site.

30. The following items are provided and installed by others:

    a. Metal Building Systems
    b. Flag Poles
    c. Aluminum Canopy Systems
    d. Scuppers, Downspouts, and Coping
    e. Aluminum Storefront Systems
    f. Hollow Metal Door/Window Assemblies
    g. Mechanical Louvers
    h. Overhead Door Systems

31. The Subcontractor shall provide a list of all intended material and equipment to be purchased under the Owner Direct Material/Equipment Purchase Program no later than 10 days after the issuance of a Notice of Intent or execution of this Agreement, whichever comes first.

32. Scope review clarifications:

    a. This Subcontractor will furnish and install all safety net barrier at railing as prescribed in the Contract Documents.
    b. Subcontractor to furnish:
        i. 6" – Bollards at all locations shown on the Contract Documents.
        ii. 6" Bollards 5 additional for locations TBD by the project team during construction of the project.
    c. Subcontractor will facilitate the cutting of metal deck only if the roof curb is onsite to be immediately installed. If the roof curb is not onsite, Subcontractor providing the roof curb will be responsible for the cutting of the roof curb.
    d. Contractor to provide elevation on one anchor bolt within each column anchor bolt clusters.

33. Subcontractor shall comply with the Contract Documents with specific submittal requirements of all applicable specifications.

    a. Subcontractor will be required to submit on all material which is to be furnished and/or installed under this scope.

b. Submittals are required within two (2) weeks of issuance of Subcontract or Letter of Intent. Any resubmittals will be required within 2 weeks from the return of the previous submittal.

34. Complete redline as-built construction drawings as required by the Contract Documents, for all work performed under this scope.

a. As-Built drawings for this scope of work shall be done in accordance with the Contract Documents.

b. As-Built drawings for this scope of work shall be kept current. Drawings will be reviewed regularly by Wharton-Smith, Owner and Design Team. Current as-built drawings may be a prerequisite for progress payments.

c. Subcontractor shall provide certified as-built survey for this scope of work after execution of work. As-Built survey shall contain all information required and in accordance with the Contract Documents.

35. This Subcontractor shall provide all warranties as required for this Scope of Work per the Contract Documents. This includes any required "Extended" Warranty for any product provided as part of this Scope of Work per the Contract Documents.

Other Items of Note:

A. Wharton-Smith will be utilizing a software called **Team Player** to process monthly pay applications. The fee for this service is $10.00 per Pay Application, regardless on the number of revisions in each month. Please review the Team Player Welcome Letter that has been included in the Bidding Documents which contains embedded links for training documentation and videos. This will be a requirement for all subcontractors on this project.

B. With respect to Article 22 of this Subcontract Agreement, the Owner will exercise the right to purchase materials directly as part of the Owner Direct Purchase Program. This Subcontractor shall actively participate in the Owner Direct Purchase Program for this Project Prior to the Subcontractor's final payment, a final reconciliation of Owner Direct Purchases against this Subcontract will be performed.

C. On-Site Work Hours: Limit work to between 7 a.m. to 5 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.

D. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site. Subcontractor shall maintain list of approved screened personnel with Owner's representative.

6.2 BID PRICING / ALTERNATES

The bid pricing shall be broken out as follows and as indicated on the bid form. The City of Port Orange has the sole discretion to accept any, all, or none of the work items for this scope of work based on the bid pricing received. Subcontractor to price the work accordingly.

6.2.1 This bid does not include any bid alternates.

6.2.2 Retainage will be held at 5% for the duration of the Contract and will be released upon retainage release by the Owner.

6.3 CLARIFICATIONS

6.3.1 The Subcontractor will be responsible for protecting all new and existing work throughout the site from damage that could be caused by performing the Scope of Work. Any damage caused by Subcontractor is the responsibility of Subcontractor and Subcontractor will bear the costs of said damage.

6.3.2 The Subcontractor will be required to attend all project progress and coordination meetings as requested by Wharton-Smith, Inc. or the owner.

6.3.3 All materials must be submitted upon and approved prior to being sent to the jobsite, all non-approved items may be rejected and returned at the Subcontractor's cost.

6.3.4 Subcontractor is responsible to coordinate with the CMAR and all other Subcontractors as necessary.

6.3.5 Subcontractor will be responsible for all general notes indicated on the drawings that pertain to this scope of work.

6.3.6 Subcontractor will obtain all permits, licenses, certificates, and coordination efforts, or any such approvals of plans or specifications as may be required by federal, state and local laws, ordinances, rules and regulations, for the proper execution and completion of the work specified herein.

6.3.7 Subcontractor will be responsible for offloading all equipment deliveries and proper short-term and long-term storage requirements per the manufacturer's requirements. Provide all equipment necessary to offload and set equipment including cranes.

6.4 GENERAL REQUIREMENTS

6.4.1 The Subcontractor will be bound to the CMAR to the same extent the CMAR is bound to the Owner by the terms of the Contract Documents.

6.4.2 The Scope of Work shall comply with all Federal, State and Local Codes.

6.4.3 This is a lump sum agreement, including freight, incidental fees, and all applicable taxes. A schedule of values for submittals, materials, checkout, startup and closeout paperwork will be submitted with the return of the signed agreement for review and approval by the CMAR's Project Manager.

6.4.4 If requested by the CMAR, the Subcontractor will assist in cost loading of the project's master schedule. Schedule of Values will follow the cost loaded actives provided by Subcontractor.

6.4.5 No billing will be accepted without an approved Schedule of Values.

6.4.6 A detailed Schedule of Values must be provided within two (2) weeks of a contract being executed should your bid be accepted.

6.4.7 No escalation costs are permitted, pricing will remain firm through the project duration.

6.4.8 The Subcontractor is required to abide by the Wharton-Smith, Inc. safety program and OSHA standards. Excavation, confined space plans, and MSDS sheets will be required for all applicable work.

6.4.9 Subcontractor is responsible to develop and provide a site-specific safety plan for this scope of work.

A. Safety plan will list all potential hazards and competent persons who will be supervising the work.

6.4.10 Subcontractor will maintain an OSHA Certified competent person on site at all times while the work is conducted.

6.4.11 All Subcontractors will be required to follow security protocol of the City of Port Orange and Wharton-Smith at all times.

6.4.12 OSHA and the CMAR's safety standards will be followed at all times.

6.4.13 Proper PPE will be worn by any personnel on the jobsite, including but not limited to delivery drivers, startup and commissioning representatives, manufacturer's representatives, and other personnel.

6.4.14 Materials are to be released as required to maintain Schedule, but Subcontractor is to inform CMAR of material releases and deliveries. No item will be released for production without approval from the Engineer.

6.4.15 All equipment will be labeled and tagged in accordance with the Contract Documents.

6.4.16 Provide all management necessary to adequately support field activities and maintain the Project Schedule.

6.4.17 Fulltime and onsite supervision is required while any work by Subcontractor is being performed. If Subcontractor fails to do so, the CMAR will provide supervision and all costs will be back charged to Subcontractor. The Subcontractor's superintendent will be required to attend all requested progress, safety, scheduling, coordination, and quality control meetings. Meetings of other natures may be required as requested by Engineer, Owner, or the CMAR.

6.4.18 The Subcontractor will be required to coordinate with all other construction trades as required to complete this Scope of Work.

6.4.19 Anticipated (general) sequencing – Your crews may be interfacing with several other trades including mechanical, concrete, piping, and, testing agencies. Reasonable time provisions need to be made for coordination and time for these trades to complete their work.

6.4.20 All deliveries will be made between 7am-3pm M-F; all deliveries will be escorted onto the site by WSI. A 72-hour notice to WSI's Superintendent will be required prior to any deliveries.

6.4.21 The Subcontractor may not utilize any area of the project site for storage without approval from the CMAR. If the Subcontractor plans to utilize storage space, the Subcontractor will submit, to the CMAR, a site plan detailing the areas being requested for storage.

6.4.22 An emergency contact list will be provided by the Subcontractor. This list will include at least one point of contact that is available 24 hours a day.

6.4.23 Furnish appropriate Material Safety & Data Sheets (MSDS) and warranty documentation with shop drawings for approval.

6.4.24 Subcontractor is required to coordinate with all applicable authorities as required

6.4.25 The Subcontractor utilizing an Employee Leasing Company for Workers Compensation Insurance coverage will not be allowed to use any Subcontractor on the project (i.e. no third-party subs)

6.4.26 It is the sole responsibility of the Subcontractor to secure any and all tools, materials, and equipment stored on the site. Wharton-Smith, nor the Owner, will be responsible for any theft, vandalism, or damage to the Subcontractors property. The Subcontractor is responsible for all security measures required to secure their resources.

6.4.27 Subcontractor will provide temporary generators as needed and fresh drinking water for their employees. Subcontractor is only responsible for their work and personnel.

6.4.28 The Subcontractor is responsible to follow all site plan details and to adhere to all specifications applicable to the Scope of Work items above.

6.4.29 All hazardous material will be properly disposed of at an offsite location.

6.4.30 The Subcontractor will be responsible to utilize available dumpsters for debris and daily clean-up. All areas will be left clean at the end of each day.

6.4.31 A representative of the Subcontractor knowledgeable of the work will be present at weekly coordination meetings with the General Contractor.

6.4.32 Subcontractor is to provide Daily Reports.

6.4.33 A Superintendent (not Foreman) must be present at all times the Subcontractor's crews are onsite.

Christine Carasas

From: Neil Foskey <neil.awfd@gmail.com>
Sent: Tuesday, November 12, 2024 10:59 AM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Public Utilities Feild Ops Bldg-steel proposal
Attachments: PORT ORANGE FIELD OPS FACILITY _STEEL PROPOSAL.pdf

Good morning, attached is our proposals for this project.

Please let me know if you have any questions.

--
Thank you,
Neil Foskey

ADVANCED WELDING, FABRICATION & DESIGN
13540 SE 31st Ave, Summerfield Fl, 34491
PH- 352.203.4515
fax- 352.203.5506

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FABCO METAL PRODUCTS LLC
a "FabSouth Company"
ACTIVE MEMBER
CGC055143
AISC CATEGORY II CERTIFIED

SCOPE OF ESTIMATE TO FURNISH AND ERECT THE FOLLOWING

11/12/24
PROJECT NAME: Port Orange Public Utilities Field Operations Facility
REF: DRAWINGS: See Attachment "B"
SPECIFICATIONS: 051200, 052100, 053100, 055500
ADDENDUM: None

We propose to furnish material and labor to fabricate and erect the following with freight allowed to the job site. All steel to be shop prime painted, U.N.O.

FURNISH AND ERECT:

- Steel joist w/ bridging per SJI
- Metal deck w/ Hilti pins-
- Steel columns w/ related attached items
- Steel beams w/ related attached items
- 8x8x1/4 & 4x4x3/16 steel tubes S102
- Continuous 5x 3 ½ deck angle A15/S301
- Continuous 6x4x5/16 deck angle w/ epoxy anchors J15/S301
- Continuous 5x 3 ½ deck angle N1/S301
- 3x3x1/4 bridging angle clips w/ epoxy anchors N8/S301
- 4x4x5/16 angle between outriggers N8/S301
- Continuous 3x3x1/4 edge angle N8/S301
- 2x2x3/16 angle braces from beam to joist N12/S301

FURNISH ONLY: UNLOADING BY OTHERS

- Anchor bolts for steel columns J8/S401
- 2x2x3/16 embed angle at OHD J15/S201 (Galv)
- Embeds for steel beams E1/S301
- Embeds for tubes E12/S301
- Embeds for joist N4/S301
- Continuous embed angle N8/S301
- (20) 6" interior bollards w/ typical metal cap A13/AS501
- Channel jambs at (8) OHD locations F9/A510
- (43) 6" exterior bollards (Galv)
- (5) additional 6" bollards (Galv. Ext.) per GC scope

MISCELLANEOUS STEEL - FURNISH AND ERECT:

- 2-line rail AS503- 1 ½ sch. 40 pipe core drilled approx. 175ft. (Galv.)
- Dumpster Gate AS501- ¼ x 2 plates w/ 5/32 round cross bar and Aluminum louvers (powder coated typical color) - excludes Ametco brand gate product.

EXCLUSIONS AND QUALIFICATION:

IN ADDITION TO THE FOLLOWING, SEE ATTACHMENT "A" FOR STANDARD EXCLUSIONS AND QUALIFICATIONS. Grates or Trench Frames, Temporary Shoring and Bracing, Steel items not shown or sized on referenced drawings, Field dimensions, Holes or Attachments for other trades, Cost of test or inspections, Attaching to light-gauge material, Fire Proofing, Stair Nosing, ***Touch Up Painting of Metal Deck or Steel***, Cutting holes in Roof or Floor, Standing Seam Metal Roof, Temporary Safety for Other Trades (We Include Temporary Safety for Our Work As It Relates to OSHA Requirements For Steel Erection), ***Metal Deck Over Light Gage***, Clear access to perform our work is required. Any demolition, relocating of existing items, cutting/patching of holes in floors wall, roof, etc. fireproofing and fireproof repair, ***standing seam metal deck, filling voids of metal deck w/ mineral wool J8/G032, coating of steel w/ Bituminous coating J12&E15/S201, wall mounted TV blocking G1&G7/A901***, ***AMETCO brand gate panels (providing one similar in design), Composite Cleanup.***

Base Bid: $ 266,820.00 (Furnish & Erect)

Allowance for 300ft. of 3x3x1/4 angle installed: $6,500.00

THIS QUOTE IS GOOD FOR 30 DAYS.

If a payment and performance bond is required, please add 1% to the numbers above.

SALES TAX INCLUDED- Insurance Coverage as follows; $2,000,000.00 Auto & General Liability.
If there are additional insurance requirements for this project, these need to be agreed upon prior to signing a contract. Fabco does not share our insurance deductibles, self-insured retentions, or our insurance policies.

Sincerely,

Tracy Thomas

ATTACHMENT "A"

STANDARD EXCLUSIONS & QUALIFICATIONS

STANDARD EXCLUSIONS

We exclude the following items on all quotations, unless otherwise noted to be furnished on our inclusion list. These standard exclusions are in addition to the items specifically excluded.

A. Grout and grouting
B. Touch-up or field paint or cleaning of welds
C. Field dimensions or surveys
D. Cost of testing or inspections
E. Demolition or dismantling of existing items or materials and fire proofing removal
F. Fasteners or supports for other trades, or holes in steel for other trades
G. Light gage metals, metal studs, c-joist or channel track
H. Aluminum, stainless, chrome, bronze, cast-iron or nonferrous materials
I. Remedial work necessitated by contact with rebar, pre-stress cables, embedded metals or hollow block while installing expansion anchors
J. Shims. shoring and temporary bracing or leveling of roof frames to compensate for roof slope
K. Nailer holes in embed items
L. Embed items at pre-cast materials
M. Deck accessories not specifically mentioned to be furnished
N. Architectural metals (Unless noted on scope of work)
O. Metal flashing, gutters, downspouts, gravel stops, etc.
P. Establishing elevations
Q. Stair nosing's
R. Materials not shown or sized on structural plans
S. Any item or material not specifically listed herein
T. Responsibility for the integrity of the structural design or stamping / sealing of drawings by Florida Registered Engineer
U. Onsite job trailer or facilities
V. Traffic control
W. Drilling into existing masonry walls
X. Furnishing of a trash dumpster
Y. Shop Applied Attachments for Perimeter Safety Cables
Z. Rebar and the attaching of rebar.
A.A. Fabco must have clear access to perform our work. Any demolition, relocation of existing items, cutting/patching of floors, walls, roof, etc. is specifically excluded from our scope of work.

STANDARD QUALIFICATIONS

A. In the absence of other instructions in the contract documents, the trade practices defined in the American Institute of Steel Construction Code of Standard Practice, as revised to date, govern the fabrication and erection of structural steel.

B. Any contract award based on this proposal will be contingent on mutual approval of the contract terms and Fabco Metal Products, LLC (FMP) exclusive approval of customer's credit and payment terms.

C. This proposal must be incorporated in its entirety and made part of the contract. This document will preside over any conflicting components of contract vs. proposal.

D. The General Contractor (GC) will furnish all necessary dimensions needed for the fabrication and location of roof opening frames prior to the start of steel fabrication. Should said information not be furnished prior to the start of fabrication, the GC will pay FMP all cost associated with out-of-sequence work including but not limited to shop overtime, extra freight, extra field mobilization, installation, and inefficiencies. If the roof frame information is not provided in a timely manner Fabco can install each frame once the roof deck is installed at a minimum cost of $800 per frame. (An executed change order will be required prior to this work being done.) Or erection may be delayed until roof information is received.

E. All unknown or to be verified dimensions will be addressed and provided by the GC or the drawing approver on the approval drawing submittals. Failure to do so will result in delays which FMP will not be held responsible.

F. Written change orders will be issued prior to the start of extra or out-of-scope work Field Superintendents directing extra work must have authority to commit the GC and must be authorized to verify and sign daily time sheets agreeing with extra reports. Mark up for change order work is 15% (10 % OH, 5% profit)

G. Additional drafting detailing work resulting in extra cost brought about either by the owner's directive, contractor's directive or shop drawing approval shall not be incorporated by FMP until formal price acceptance and notice to proceed is received.

K. Changes received at the job site must be negotiated prior to the start of work if possible. If an emergency exits that requires authorized extra work to start prior to negotiating an amount, the change will be negotiated as Soon as possible thereafter. All changes will be negotiated, incorporated in the contract and paid within 30 days of completion of the change.

I. No adjustments will be made to FMP's pay request without the prior approval and concurrence of FMP.

J. This proposal is based on the fabrication process starting after all detail drawings are complete and Approved.

K. This proposal is based on erection starting only after site has progressed to such a stage as to allow for continuous and uninterrupted erection of the entire job. Multiple mobilizations have not been priced into this estimate and will require a change order, if required.

L. Any problems encountered while installing expansion bolts (for instance hitting embedded materials such as rebar, prestress cables, hollow block, etc.) will be reported to the GC for remedial action by others

M. Painting is done in an ambient air facility and schedules may be extended because of high humidity or cold temperatures. FMP will not be held liable due to weather related delays

N. FMP's production schedules are based on a 1 week return of approval drawings. Late approval of drawings will result in rescheduling of fabrication.
O. GC to furnish anchor bolt survey to FMP prior to start of erection. Any errors discovered in the anchor bolt placement will be reported to the GC for remedial action by others.
P. Embedded items and column footings shall be made ready for use by the GC prior to steel placement. They shall be free of concrete, mortar, etc. and shall be clean, straight, oiled and have threads preserved. Anchor bolt nuts shall be set at proper elevation by GC prior to erection start.
Q. GC will make available and continuously maintain roadways necessary for access to the job site and work area. Access to work shall be provided for tractor-trailers, mobile crane, light trucks, welding equipment, etc. in such a manner that rough terrain equipment is not necessary.
R. Adequate site storage and shake out area will be provided by GC
S. This proposal is based on FMP being paid for stored materials on-site and off-site. Bills-of-sale and insurance certificates will be provided.
T. Final retainage is due 30 days after completion of steel work, not after substantial completion of the entire general construction package.
U. Off-loading of furnish and deliver only items is the sole responsibility of the GC
V. This proposal is based on the following erection sequence and crane size: **one move in;**
W. All items will receive a shop coat of Gray Oxide Paint; unless noted otherwise in scope of estimate. Galvanized items will not receive prime painting.
X. Pricing must be confirmed by FMP prior to acceptance of order and material must ship within 90 days of order or order may become subject to escalation.
Y. The joist company will provide signed and sealed calculations in lieu of signed and sealed shop drawings after approval drawings are received.
Z. Delivery dates are predicated upon mill rolling schedules.

FABCO METAL PRODUCTS LLC

a "FabSouth Company"

ACTIVE MEMBER

CGC055143

AISC CATEGORY II CERTIFIED

ATTACHMENT "B"

PROJECT:

DWG. #:	ADD	DATE:	DWG. #:	ADD	DATE:	DWG. #:	ADD	DATE:
G000		9/30/24	A201		9/30/24	A552		9/30/24
G001		9/30/24	A202		9/30/24	A561		9/30/24
G010		9/30/24	A251		9/30/24	A562		9/30/24
G021		9/30/24	A261		9/30/24	A563		9/30/24
G022		9/30/24	A301		9/30/24	A901		9/30/24
G031		9/30/24	A302		9/30/24	AS011		9/30/24
G032		9/30/24	A303		9/30/24	AS501		9/30/24
G033		9/30/24	A351		9/30/24	AS502		9/30/24
G101		9/30/24	A352		9/30/24	AS503		9/30/24
A101		9/30/24	A353		9/30/24	S001		9/30/24
A101A		9/30/24	A354		9/30/24	S002		9/30/24
A101B		9/30/24	A355		9/30/24	S003		9/30/24
A102		9/30/24	A356		9/30/24	S004		9/30/24
A103		9/30/24	A401		9/30/24	S101		9/30/24
A121A		9/30/24	A460		9/30/24	S101A		9/30/24
A121B		9/30/24	A461		9/30/24	S101B		9/30/24
A141		9/30/24	A500		9/30/24	S102		9/30/24
A141A		9/30/24	A501		9/30/24	S201		9/30/24
A141B		9/30/24	A502		9/30/24	S301		9/30/24
A142		9/30/24	A503		9/30/24	S401		9/30/24
A151		9/30/24	A510		9/30/24			
A152		9/30/24	A511		9/30/24			
A160		9/30/24	A512		9/30/24			
A161A		9/30/24	A513		9/30/24			
A161B		9/30/24	A521		9/30/24			
A171A		9/30/24	A522		9/30/24			
A171B		9/30/24	A523		9/30/24			
A190		9/30/24	A524		9/30/24			
A191A		9/30/24	A541		9/30/24			
A191B		9/30/24	A551		9/30/24			

1490 FRANCES DRIVE · DAYTONA BEACH, FLORIDA 32124 · PHONE (386) 252-3730 · FAX (386) 258-3402
WWW.FABCOMETAL.COM

Christine Carasas

From: James Manyette
Sent: Tuesday, November 12, 2024 10:35 AM
To: Wharton Smith Commercial Estimating
Subject: 05_Structural Steel_Fabco Port Orange Public Utilities
Attachments: Port Orange Public Utilities - Proposal 11-12-24.pdf

05_Structural Steel_Fabco

Respectfully,

James R. Manyette | Senior Preconstruction Services Manager
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771 | Cell: (407) 810-9590

From: Tracy Thomas <TThomas@fabcometal.com>
Sent: Tuesday, November 12, 2024 9:39 AM
To: James Manyette <jmanyette@whartonsmith.com>
Subject: Port Orange Public Utilities

James,

Please find attached, our proposal for the **Port Orange Public Utilities**.

Sincerely,

Tracy Thomas
Vice President of Sales and Business Development

Fabco Metal Products LLC
1490 Frances Drive
Daytona Beach, FL 32124
Cell: (407) 448-0033 (Please note that I do not have land line nor VM at the main office)
Main Office: (386)252-3730
Fax: (386)258-3402

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Christine Carasas

From: ConstructConnect <DoNotReply@constructconnectmail.com>
Sent: Tuesday, November 12, 2024 2:00 PM
To: Wharton Smith Commercial Estimating
Subject: Received bid for Port Orange Public Utilities Field Ops Bldg.

A simpler, more effective bid process

You've received a bid from FEMA CONSTRUCTION via ConstructConnect

Port Orange Public Utilities Field Ops Bldg.

Project Details

Project Name	Port Orange Public Utilities Field Ops Bldg.
Bid Date	Nov 12, 2024 @ 02:00 PM ET
Project ID	6613997

View Project

Bid Details

Company	FEMA CONSTRUCTION
Bid Amount	$222,500
Submission Date	Nov 12, 2024 @ 01:59 PM ET
Description	STRUCTURAL STEEL AND MISCELLANEOUS STEEL (PEMB NOT INCLUDED)

Contact Details

Primary Contact	JESUS GUZMAN

Email fema.engineer@gmail.com
Phone
Website



Support Number: (877) 4CC-TOOL (422-8665)

Email: customerservice@constructconnect.com

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INDUSTRIAL STEEL SOUTH
4080 Pines Industrial Ave.
Rockledge, FL 32955

Phone: 321-636-6511

Date: 11/12/2024 Estimate: #24104

To: Wharton-Smith
Attn: James Manyette

Re: Port Orange Public Utilities Field Ops Building

Industrial Steel South is pleased to offer its quote for material and labor to fabricate, deliver and install steel on the above referenced project per the scopes of work listed below. Our scope and pricing is based on the bid docs.
Drawings Dated: 09/30/2024
Specifications: 051200, 052100, 053100, 055000
All Interior Materials to be Tnemec Series 10, All Exterior Materials to be Tnemec "90-97 Tneme-Zinc" u.no.

Structural Steel Furnish and Install:

- **Structural Steel**
  Columns
  W Beams
  HSS Beams
  Perimeter Angle
  Bottom Chord Bracing
  Deck Bridging (See J15/301)
- **Miscellaneous Steel**
  Qty. 1 Double Swing Dumpster Gate (Exclude Aluminum Louvers)
  ± 180 LF 2-Line Railing at Street Sweeper Ramp
- **Joist**
- **Metal Deck**

Furnish Only Items:

- Anchor Bolts
- Embeds for Structural Steel Only
- 300 LF L3x3x1/4 Allowance
- Angle at Coiling Overhead Doors
- Steel Channel at Overhead Doors
- Qty. 6 6" Sch40 Pipe Bollards at Dumpster Gate
- Qty. 6 6" Sch40 Pipe Bollards at Mechanical Yard Enclosure
- Qty. 20 6" Sch40 Pipe Bollards w/ Base Plate at Overhead Doors (Hilti Kwik Bolt 3 Stainless Steel Expansion Bolts) (Contractor may allow alternative for lower Pricing)
- Qty. 24 6" Pipe Bollards at PEMB Building Exterior
- Qty. 4 6" Pipe Bollards at Street Sweeper Ramp
- Qty. 2 6" Pipe Bollards at Granular Storage

Industrial Steel South is pleased to offer its lump sum price of **$304,950.00**
7 % tax has been included

Specific job exclusions:

- Payment and Performance Bond (Bond Rate ±1% if Required)
- Owner Direct Purchase (ODP ±1% if Required)
- Third Party Testing and/or Inspections
- Design and/or Engineering Calculations
- Surveys and/or Surveying
- Permits and/or Permitting
- Grout and/or Grouting
- Light Gauge Metal Framing, Metal Deck, and/or Attachments
- Any Finish Other Than Standard One Coat Shop Prime – u.n.o.
- Photo Luminescent, Intumescent, Bituminous, and/or Cold Tar Coatings
- Fireproofing
- Holes in Steel for Other Trades
- Anchors and/or Hardware for Materials Supplied by Others
- Tilt Panel Embeds (panel to footer/panel to panel) – u.n.o.
- Safety Cable and/or Temporary Barriers
- Aluminum and/or Stainless Steel – u.n.o.
- Cutting of Deck Openings and/or Deck Closure Strips
- Vierendeel Openings in Beams and/or Joist Webbing
- Trench Drain Grates
- Details and/or Sections Not Shown on Drawings
- Materials Not Shown and/or Sized on Drawings
- Any Item Not Listed

Qualifications:

- The price quoted is valid for (30) calendar days.
- Changes to availability in supply that affect the project schedule are subject to review/approval of additional cost to utilize alternatives to maintain project schedule.
- Joist / Deck: Based on SJI/SDI standards. Upon procurement of joist /deck, delivery will dictate dates to be coordinated with the project schedule. Any changes to the project schedule may result in additional costs, and/or delays for any of the following: additional mobilizations to unload, off-site unloading and reloading, off-site storage, and/or additional freight/delivery fees.
- ISI South lump sum price is based on all work to be accomplished during a normal (40) forty-hour workweek, without the necessity of overtime, shift or weekend work.
- ISI South is not responsible for acts of nature and/or associated delays of such to the schedule.
- ISI South will not work overtime due to weather related delays without written authority prior to start.
- Pricing assumes clear and unobstructed access to work area.
- Quote based on access to perimeter as well as interior of the building footprint as needed for erection.
- Crane paths, roads, and related site work to be by others and maintained during erection.
- Pricing assumes adequate lay-down area and in close proximity throughout entire duration of project.
- Welding per AWS D 1.1
- All connections (u.n.o). Shall be snug tight using A325 bolts.
- Adequate dumpsters and toilet facilities to be provided by the GC.
- Temporary water (as required) to be provided by GC.
- Sufficient control lines and elevation benchmarks to be provided by the GC.

Please contact Billy Pope if you have any questions or comments regarding this correspondence.

Respectfully,

Christian Barbour

Estimator

Christine Carasas

From: billypope@Industrial-Steel.com
Sent: Tuesday, November 19, 2024 3:14 PM
To: Wharton Smith Commercial Estimating
Subject: FW: #24104 - Port Orange Public Utilities Field Ops Building
Attachments: #24104 - Port Orange Public Utilites Field Ops Bldg.pdf

Please see attached.

BILLY POPE
GENERAL MANAGER
INDUSTRIAL STEEL SOUTH
Office: 321-636-6511
Cell: 321-263-6605
www.industrial-steel.com

From: southsales@industrial-steel.com <southsales@industrial-steel.com>
Sent: Tuesday, November 12, 2024 1:55 PM
To: 'James Manyette' <jmanyette@whartonsmith.com>
Cc: billypope@Industrial-Steel.com
Subject: #24104 - Port Orange Public Utilities Field Ops Building

Good Afternoon,
Attached is our proposal for the Port Orange Public Utilities Field Ops Building project. Please do not hesitate to call with any questions or concerns.

Thank you,

Christian Barbour
Estimator
INDUSTRIAL STEEL SOUTH
Office: 321-636-6511
www.industrial-steel.com

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Subcontractor Bid Form-General

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Cabinetmakers of Central Florida, LLC
Scope of Work:	Millwork

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	$ 90,268.00
Amount in Words:	NINETY THOUSAND, TWO HUNDRED SIXTY EIGHT DOLLARS

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $50,000)

Material/Equipment Types:	N/A
Amount:	$

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	2%

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1	Dated:	11-7-2024	RFI No.		Dated:	
RFI No.	2	Dated:	11-11-2024	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10-2-2024	WSI No.	5	Dated:	10-31-2024
WSI No.	2 & 3	Dated:	10-24-2024	WSI No.	6 & 7	Dated:	11-6-2024
WSI No.	4	Dated:	10-28-2024	WSI No.	8	Dated:	11-8-2024

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Cabinetmakers of Central Florida, LLC

Company Name

3203 General electric Rd #9, Apopka, FL 32703

Address (Street, City, State, Zip)

407-886-4538 cabinetmakersllc@gmail.com

Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Cabinetmakers of Central Florida, LLC
By:
Printed Name: Donna Arnold
Title: Manager
Dated: 11-12-2024
License No.:

CABINETMAKERS OF CENTRAL FLORIDA, LLC
3203 GENERAL ELECTRIC ROAD, UNIT 9
APOPKA, FL 32703
407-886-4538
cabinetmakersllc@gmail.com

Proposal Submitted to: Wharton-Smith, Inc.
Job Name: Port Orange Public Utilities
Date: November 12, 2024

We propose to furnish and install melamine with solid surface cabinetry for the following:

L1-Corridor 151-quartz top-bench 8'
L1-Lockers-161-162-163 53'-8'' lockers
F1-Crew Breakroom-South- main foyer ***Walls to be done by others***
A1-Copy room- South 112- 16' base, top cabinets, 12'-5'' wall cabinets
A5-Laundry Room-Janitor-N- 7'-5'' wall cabinets, 5'-5'' base and top cabinets
A9-Laundry Room-S- 5' wall, 4' base and top cabinets
A14-Laundry Room-N- 5' wall, 4' base and top cabinets
N1-Break Area-"L" shape 9'-8'' base and top cabinets, 7' wall cabinets
H1-Break Area-12'-1/4'' wall cabinets, microwave shelf, 8'-3'' base and top cabinets, tall storage
H7-Break Area (Island)-6' base and top cabinets, (3) drawer bases, P-Lam wall
A14-Break Area-(103A) – 10' base and top cabinets, 13' ¼'' wall cabinet, ADA sink base

Price does not include any demolition, plumbing or electrical work.

Price includes delivery and installation.

Total for above: Ninety-Thousand- Two-Hundred-Sixty-Eight-Dollars ($90,268.00)

Payment to be made as follows: PER CONTRACT AGREEMENT

Proposal submitted by: Jessica Acevedo

Proposal accepted by:
Date:

Christine Carasas

From: Donna Arnold <cabinetmakersllc@gmail.com>
Sent: Tuesday, November 12, 2024 11:28 AM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Public Utilities Field Operations Facility Proposal
Attachments: CCF_000366.pdf; Wharton-Smith-Port Orange Public Utilities Field Ops Bldg-Proposal.pdf

Good Morning,

Attached proposal documents.

Thank you,
Jessica Acevedo

--
Cabinetmakers of Central Florida, LLC
3203 General Electric Road #9
Apopka, FL 32703
407-886-4538

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CABINETMAKERS OF CENTRAL FLORIDA, LLC
3203 GENERAL ELECTRIC ROAD, UNIT 9
APOPKA, FL 32703
407-886-4538
cabinetmakersllc@gmail.com

Proposal Submitted to: Wharton-Smith, Inc.
Job Name: Port Orange Public Utilities
Date: November 12, 2024

We propose to furnish and install melamine with solid surface cabinetry for the following:

L1-Corridor 151-quartz top-bench 8'
L1-Lockers-161-162-163 53'-8'' lockers
F1-Crew Breakroom-South- main foyer ***Walls to be done by others***
A1-Copy room- South 112- 16' base, top cabinets, 12'-5'' wall cabinets
A5-Laundry Room-Janitor-N- 7'-5'' wall cabinets, 5'-5'' base and top cabinets
A9-Laundry Room-S- 5' wall, 4' base and top cabinets
A14-Laundry Room-N- 5' wall, 4' base and top cabinets
N1-Break Area-"L" shape 9'-8'' base and top cabinets, 7' wall cabinets
H1-Break Area-12'-1/4'' wall cabinets, microwave shelf, 8'-3'' base and top cabinets, tall storage
H7-Break Area (Island)-6' base and top cabinets, (3) drawer bases, P-Lam wall
A14-Break Area-(103A) – 10' base and top cabinets, 13' ¼'' wall cabinet, ADA sink base
SF-5 3' window sills-(9) total
SF-6-8' ½'' window sill- (1) total

Price does not include any demolition, plumbing or electrical work.

Price includes delivery and installation.

Total for above: **Ninety-Three-Thousand-Nine-Hundred-Eighty-Eight-Dollars ($93,988.00)**

Payment to be made as follows: PER CONTRACT AGREEMENT

Proposal submitted by: Jessica Acevedo

Proposal accepted by:

Date:

Christine Carasas

From: Jeff Bridges
Sent: Thursday, November 14, 2024 4:23 PM
To: Wharton Smith Commercial Estimating
Subject: FW: Wharton-Smith-Port Orange Public Utilities Field Ops Bldg-Proposal.pdf
Attachments: Wharton-Smith-Port Orange Public Utilities Field Ops Bldg-Proposal.pdf

06_Milwork_Cabinetmakers of Central Florida LLC_R1

Jeff Bridges | Preconstruction Services Manager – Commercial
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771
Office: (407) 321-8410 | Cell: (407) 408-5660

From: Donna Arnold <cabinetmakersllc@gmail.com>
Sent: Thursday, November 14, 2024 1:37 PM
To: Jeff Bridges <jbridges@whartonsmith.com>
Subject: Re: Wharton-Smith-Port Orange Public Utilities Field Ops Bldg-Proposal.pdf

I apologize for the delay, attached proposal, including window sills.

Thank you,
Jessica Acevedo

On Tue, Nov 12, 2024 at 4:21 PM Jeff Bridges <jbridges@whartonsmith.com> wrote:

> That works and thank you for the update, Donna.

Jeff Bridges | Preconstruction Services Manager – Commercial

Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com

750 Monroe Road, Sanford, FL 32771

Office: (407) 321-8410 | Cell: (407) 408-5660

From: Donna Arnold <cabinetmakersllc@gmail.com>
Sent: Tuesday, November 12, 2024 3:05 PM
To: Jeff Bridges <jbridges@whartonsmith.com>
Subject: Re: Wharton-Smith-Port Orange Public Utilities Field Ops Bldg-Proposal.pdf

I will have some numbers for you tomorrow, by the end of the day, if this works for you?

Thank you

On Tue, Nov 12, 2024 at 2:17 PM Donna Arnold <cabinetmakersllc@gmail.com> wrote:

> Will do.
>
> On Tue, Nov 12, 2024 at 2:16 PM Jeff Bridges <jbridges@whartonsmith.com> wrote:
>
> > If you don't do marble give me an add for quartz or Silestone, or something similar to that.

Jeff Bridges | Preconstruction Services Manager – Commercial

Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com

750 Monroe Road, Sanford, FL 32771

Office: (407) 321-8410 | Cell: (407) 408-5660

From: Jeff Bridges
Sent: Tuesday, November 12, 2024 2:11 PM
To: cabinetmakersllc@gmail.com
Subject: RE: Wharton-Smith-Port Orange Public Utilities Field Ops Bldg-Proposal.pdf

Jessica,

Do you all have the marble windowsills that show up on detail A1 on sheet A512?

I am coming up with about 100lf

Jeff Bridges | Preconstruction Services Manager – Commercial

Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com

750 Monroe Road, Sanford, FL 32771

Office: (407) 321-8410 | Cell: (407) 408-5660

From: Jeff Bridges
Sent: Tuesday, November 12, 2024 1:48 PM
To: cabinetmakersllc@gmail.com
Subject: Wharton-Smith-Port Orange Public Utilities Field Ops Bldg-Proposal.pdf

See my notes / comments

--

Cabinetmakers of Central Florida, LLC

3203 General Electric Road #9

Apopka, FL 32703

407-886-4538

--

Cabinetmakers of Central Florida, LLC

3203 General Electric Road #9

Apopka, FL 32703

407-886-4538

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--
Cabinetmakers of Central Florida, LLC
3203 General Electric Road #9
Apopka, FL 32703
407-886-4538

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C B C I

Custom Built Contracting, Inc.

d.b.a. Cabinets Plus & Design

250 S Courtenay Pkwy
Merritt Island, FL 32952
Phone # 321-267-8336 Fax # 321-607-6119 License # CBC1251782

11/12/2024

Wharton Smith
750 Monroe Rd.
Sanford, FL 32771
Tray Shaw 689-258-3878
tshaw@whartonsmith.com

Project: Port Orange Public Utilities
Field Operations Facility
4505 Clyde Morris Blvd.
Port Orange, FL 32129

RE : Millwork

Fabricate and install plastic laminate cabinetry and quartz countertops in:
Break area #103A
Break area #135
Copy/ files #112
Laundry/ janitor #117
Corridor #154 lockers
Crew breakroom #134 TV wall
Corridor #154 built-in bench

Cabinets: ¾" plywood construction
White cabinet liner interiors
Full extension drawer glides
4" wire pulls
Wilsonart- Walnut Heights #7965k-12

Countertops: 3cm Cambria Quartz- Ivybridge with eased edge

Total $198,640.00

Note: Anything unforeseen may result in additional costs
Price based on plans dated 6/22/2023
Plan issue date 9/30/2024
Price does not include original cabinet removal

Christine Carasas

From: Roger Shover <roger@cabinetsplusanddesign.com>
Sent: Tuesday, November 12, 2024 9:11 AM
To: Wharton Smith Commercial Estimating; Trey Shaw
Subject: Port Orange Public Utilities Millwork Proposal
Attachments: Wharton Smith Port Orange Public Utilities 11-12-24.pdf

Good morning,

Please see attached millwork proposal.

Thank you,

Roger Shover, President
Custom Built Contracting Inc.
250 S. Courtenay Pkwy.
Merritt Island, FL. 32952
321.267.8336 Office
321.607.6119 Fax

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C B C I

Custom Built Contracting, Inc.

d.b.a. Cabinets Plus & Design

250 S Courtenay Pkwy
Merritt Island, FL 32952
Phone # 321-267-8336 Fax # 321-607-6119 License # CBC1251782

11/12/2024

Wharton Smith
750 Monroe Rd.
Sanford, FL 32771
Tray Shaw 689-258-3878
tshaw@whartonsmith.com

Project: Port Orange Public Utilities
Field Operations Facility
4505 Clyde Morris Blvd.
Port Orange, FL 32129

RE : Millwork (Revised w/ windowsills)

Fabricate and install plastic laminate cabinetry and quartz countertops in:
Break area #103A
Break area #135
Copy/ files #112
Laundry/ janitor #117
Corridor #154 lockers
Crew breakroom #134 TV wall
Corridor #154 built-in bench

Cabinets: ¾" plywood construction
White cabinet liner interiors
Full extension drawer glides
4" wire pulls
Wilsonart- Walnut Heights #7965k-12

Countertops: 3cm Cambria Quartz- Ivybridge with eased edge

*Fabricate and install Marble or Quartz window sills:
(8) 3'-4" x 9"
(1) 22'-4 x 9"
(6) 8'-4 x 6"

Total $210,760.00

Note: Anything unforeseen may result in additional costs
Price based on plans dated 6/22/2023
Plan issue date 9/30/2024
Price does not include original cabinet removal

Christine Carasas

From: Jeff Bridges
Sent: Friday, November 15, 2024 11:24 AM
To: Wharton Smith Commercial Estimating
Cc: James Manyette
Subject: 06_Milwork_Custom Built Contracting Inc.
Attachments: Wharton_Smith_Port_Orange_Public_Utilities_Revised_Millwork_Proposal_11-12-24.pdf

06_Milwork_Custom Built Contracting Inc._R1

Jeff Bridges | Preconstruction Services Manager – Commercial
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771
Office: (407) 321-8410 | Cell: (407) 408-5660

D & R CABINETRY & MILLWORK, INC.

6544 PINECASTLE BLVD
ORLANDO, FL. 32809

PHONE 407-854-4008
FAX 407-854-0708

PROPOSAL

PROPOSAL TO: Wharton-Smith, Inc
Project: Port Orange Public Utilities
Project location: Port Orange, FL Date: 11/15/24

TOTAL PRICE: $ See Breakdown

We are pleased to offer the following proposal on the above project based on the plans and specifications received and the attached scope of work.

All work to be completed in a workmanlike manner according to standard practices. Any alteration or deviation from the plans or specifications involving extra costs, will be executed only upon written orders and will become an extra cost over and above the original proposal.

This proposal is subject to acceptance within 30 days and is void thereafter at the option of the undersigned.

Authorized RYAN GOPAUL Date: 11/15/24

ACCEPTANCE OF PROPOSAL

The above pricing, specifications and conditions are hereby accepted. You are authorized to do the work as specified. Payment terms to be negotiated.

ACCEPTED _____ DATE _____

ACCEPTED _____ DATE _____

This proposal is for the following:
Plywood Cabinetry, Quartz Countertops.
All Lockers, wall paneling by others.

Rm 103A	Wall cabinets, base cabinets, quartz countertop
Rm 112	Wall cabinets, base cabinets, quartz countertop
Rm 117	Wall cabinets, base cabinets, quartz countertop
Rm 134	Laminate Wall with TV Niche and equipment Niche
Rm 154	Laminate Bench with quartz Top
Rm 135	Wall cabinets, base cabinets, quartz countertop. Cabinet island. WDS panels by others
Corridor 151	WD-1 Trim

Total price for Cabinetry: $ 95,533.00

Add for AWI custom: $12,400.00

Christine Carasas

From: ConstructConnect <DoNotReply@constructconnectmail.com>
Sent: Friday, November 15, 2024 9:43 AM
To: Wharton Smith Commercial Estimating
Subject: Received bid for Port Orange Public Utilities Field Ops Bldg.

A simpler, more effective bid process

You've received a bid from D & R Cabinetry and Millwork Inc. via ConstructConnect

Port Orange Public Utilities Field Ops Bldg.

Project Details

Project Name	Port Orange Public Utilities Field Ops Bldg.
Bid Date	Nov 12, 2024 @ 02:00 PM ET
Project ID	6613997

View Project

Bid Details

Company	D & R Cabinetry and Millwork Inc.
Bid Amount	$95,533
Submission Date	Nov 15, 2024 @ 09:42 AM ET
Description	See proposal
Bid Attachments	Port Orange Public Utilities.pdf

Contact Details

Primary Contact	Ryan Gopaul
Email	rgopaul01@gmail.com
Phone	(407) 854-4008 ext. 101
Website	



Support Number: (877) 4CC-TOOL (422-8665)

Email: customerservice@constructconnect.com

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D & R CABINETRY & MILLWORK, INC.

6544 PINECASTLE BLVD PHONE 407-854-4008
ORLANDO, FL. 32809 FAX 407-854-0708

PROPOSAL

PROPOSAL TO: Wharton-Smith, Inc
Project: Port Orange Public Utilities
Project location: Port Orange, FL Date: 11/15/24

TOTAL PRICE: $ See Breakdown

We are pleased to offer the following proposal on the above project based on the plans and specifications received and the attached scope of work.

All work to be completed in a workmanlike manner according to standard practices. Any alteration or deviation from the plans or specifications involving extra costs, will be executed only upon written orders and will become an extra cost over and above the original proposal.

This proposal is subject to acceptance within 30 days and is void thereafter at the option of the undersigned.

Authorized RYAN GOPAUL Date: 11/15/24

ACCEPTANCE OF PROPOSAL

The above pricing, specifications and conditions are hereby accepted. You are authorized to do the work as specified. Payment terms to be negotiated.

ACCEPTED _____ DATE _____

ACCEPTED _____ DATE _____

This proposal is for the following:
Plywood Cabinetry, Quartz Countertops.
All Lockers, wall paneling by others.

Rm 103A	Wall cabinets, base cabinets, quartz countertop
Rm 112	Wall cabinets, base cabinets, quartz countertop
Rm 117	Wall cabinets, base cabinets, quartz countertop
Rm 134	Laminate Wall with TV Niche and equipment Niche
Rm 154	Laminate Bench with quartz Top
Rm 135	Wall cabinets, base cabinets, quartz countertop. Cabinet island. WDS panels by others
Corridor 151	WD-1 Trim

Total price for Cabinetry: $ 95,533.00

Add for AWI custom: $12,400.00

Add for (50) Lockers with cabinet lock $ 93,750.00

Add for Quartz Window Sills: $7,850.00

Christine Carasas

From: Jeff Bridges
Sent: Monday, November 18, 2024 11:30 AM
To: Wharton Smith Commercial Estimating
Cc: James Manyette
Subject: FW: Port Orange Public Works
Attachments: Port Orange Public Utilities.pdf

Christine,

Here is the revised number for the millwork for this on.

06_Milwork_D&R Cabinetry & Milwork_R1

Jeff Bridges | Preconstruction Services Manager – Commercial
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771
Office: (407) 321-8410 | Cell: (407) 408-5660

From: Ryan Gopaul/ D&R Cabinetry and Millwork, Inc <rgopaul01@gmail.com>
Sent: Monday, November 18, 2024 11:27 AM
To: Jeff Bridges <jbridges@whartonsmith.com>
Subject: Re: Port Orange Public Works

Jeff,
Attached is the updated proposal including the lockers and window sills. Let me know if you have any questions. Thanks.

Ryan Gopaul

D&R Cabinetry and Millwork Inc.

6544 Pinecastle Blvd. Orlando, FL 32809

407-854-4008 Ext. 1001

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this message or any attachments by an individual or entity other than the intended recipient is prohibited."

On Mon, Nov 18, 2024 at 10:56 AM Jeff Bridges <jbridges@whartonsmith.com> wrote:

Hey Ryan,

Your competition quoted the Cambria Quartz. I'll qualify it to the owner that we are NOT including the marble.

Jeff Bridges | Preconstruction Services Manager – Commercial

Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com

750 Monroe Road, Sanford, FL 32771

Office: (407) 321-8410 | Cell: (407) 408-5660

From: Ryan Gopaul/ D&R Cabinetry and Millwork, Inc <rgopaul01@gmail.com>
Sent: Monday, November 18, 2024 10:25 AM
To: Jeff Bridges <jbridges@whartonsmith.com>
Subject: Re: Port Orange Public Works

Jeff,

Are the sills the same Cambria Quartz as the tops? I didn't see any other product listed in the finish schedule for the sills. The plans call for marble, but it says to refer to spec.

Ryan Gopaul

D&R Cabinetry and Millwork Inc.

6544 Pinecastle Blvd. Orlando, FL 32809

407-854-4008 Ext. 1001

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this message or any attachments by an individual or entity other than the intended recipient is prohibited."

On Mon, Nov 18, 2024 at 9:29 AM Jeff Bridges <jbridges@whartonsmith.com> wrote:

> Thank you. I appreciate it.

Jeff Bridges | Preconstruction Services Manager – Commercial

Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com

750 Monroe Road, Sanford, FL 32771

Office: (407) 321-8410 | Cell: (407) 408-5660

From: Ryan Gopaul/ D&R Cabinetry and Millwork, Inc <rgopaul01@gmail.com>
Sent: Monday, November 18, 2024 9:27 AM
To: Jeff Bridges <jbridges@whartonsmith.com>
Subject: Re: Port Orange Public Works

Jeff, Yes, I'll work on it and get it back to you today.

Ryan Gopaul

D&R Cabinetry and Millwork Inc.

6544 Pinecastle Blvd. Orlando, FL 32809

407-854-4008 Ext. 1001

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this message or any attachments by an individual or entity other than the intended recipient is prohibited."

On Mon, Nov 18, 2024 at 9:25 AM Jeff Bridges <jbridges@whartonsmith.com> wrote:

Hey Ryan,

Were you able to add the lockers to your scope of work?

All of your competition is including it.

Jeff Bridges | Preconstruction Services Manager – Commercial

Wharton-Smith, Inc. | Construction Group of Choice |
www.whartonsmith.com

750 Monroe Road, Sanford, FL 32771

Office: (407) 321-8410 | Cell: (407) 408-5660

From: Jeff Bridges
Sent: Friday, November 15, 2024 10:55 AM
To: Ryan Gopaul/ D&R Cabinetry and Millwork, Inc <rgopaul01@gmail.com>
Subject: RE: Port Orange Public Works

They also included the lockers in corridor 154. Can you include those, too?

Jeff Bridges | Preconstruction Services Manager – Commercial

Wharton-Smith, Inc. | Construction Group of Choice |
www.whartonsmith.com

750 Monroe Road, Sanford, FL 32771

Office: (407) 321-8410 | Cell: (407) 408-5660

From: Jeff Bridges
Sent: Friday, November 15, 2024 10:51 AM
To: Ryan Gopaul/ D&R Cabinetry and Millwork, Inc <rgopaul01@gmail.com>
Subject: RE: Port Orange Public Works

You can just email the add instead of revising the proposal and resubmitting.

Jeff Bridges | Preconstruction Services Manager – Commercial

Wharton-Smith, Inc. | Construction Group of Choice |
www.whartonsmith.com

750 Monroe Road, Sanford, FL 32771

Office: (407) 321-8410 | Cell: (407) 408-5660

From: Jeff Bridges
Sent: Friday, November 15, 2024 10:50 AM
To: Ryan Gopaul/ D&R Cabinetry and Millwork, Inc <rgopaul01@gmail.com>
Subject: Port Orange Public Works

Ryan,

Thanks for the bid. Can you add the solid surface windowsills to your scope?

The other bidders have added it so I am trying to keep it all apples to apples.



Jeff Bridges | Preconstruction Services Manager – Commercial

Wharton-Smith, Inc. | Construction Group of Choice |
www.whartonsmith.com

750 Monroe Road, Sanford, FL 32771

Office: (407) 321-8410 | Cell: (407) 408-5660

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Quality Metals, Inc.
Architectural Metal Products
Serving Central Florida Since 1986
www.qualitymetals.net
201 Gordon Street, Aero Industrial Park, Sanford, FL, 32771 Phone 407.321.3181 FAX 407.330.0403

November 20, 2024

To: Estimating **From: Dan Russ**

Bid Proposal – Metal Wall Panels **Project: Port Orange Public Utilities**
Port Orange, FL

WE PROPOSE TO FURNISH AND INSTALL THE FOLLOWING:

Specification Sections
074213.13 Formed Metal Wall Panels (Flush Type Only 300-35)
None Provided for HWP Precision Series (300-02)

Work Locations
Pac-Clad Flush Panel and HWP Precision Panel per elevation sheets A201 & A202
NOTE- Metal Wall Panel Scope on the Administration Building Only. No scope is included for PEMB

Scope of Work:

Furnish and install Metal Wall Panel 300-35

- Pac-Clad- 12” Wide Flush Panel
- Panel Dimensions- 1” x 12”
- Concealed Fastener System
- Vertical Installation
- .040 Aluminum (per specs)
- Color: Stone White
- Color matching aluminum trims at windows and finish floor
- 16g Hat Channel Furring 1-1/2”

Furnish and install Metal Wall Panel 300-02

- Pac-Clad Precision Series HWP 12” Wide
- Panel Dimension- 7/8” x 12”
- Concealed Fastener System
- Vertical Installation
- 24g
- Color: Graphite
- Color matching 24g trims at windows and CMU Sill detail
- 16g Hat Channel Furring 1-1/2”

Furnish and install associated flashings, trims, clips, sealants, etc…for a complete metal panel installation.

Lead Times:

1. Shop Drawings 4-5 weeks
2. Submittals 3-4 weeks
3. PAC-CLAD material 5-6 weeks

Job Specific Exclusions:

- Custom colors
- Any waterproofing, vapor barrier, underlayment, etc…
- Exterior sheathing
- Metal framing
- Insulation
- Any flashing required for curtainwall, doors, cement plaster, EIFS, etc..
- Interior finishes
- Canopy Framing
- Wall Panels at PEMB
- Metal Soffit
- Metal Fascia

The following assumptions have been made:

- Standard 7:00 AM – 5:00 PM work hours, 4-day week, 40-hours per week
- Open shop
- Job-site storage for at least one full pallet of panels
- Adequate ground access for lifts to all four sides during construction

BID PROPOSAL $134,850.00

Break-Out

Pac-Clad Flush Panel (300-35)……$67,650.00

Pac-Clad Precision HWP Panel (300-02)…….$67,200.00

PLEASE NOTE:

1) The construction industry is currently experiencing price volatility with steel, concrete and roofing products. Due to market fluctuations, the costs of these products are subject to sudden, significant changes and firm prices cannot be obtained from suppliers. In the event of an increase in the price of these products, subsequent to making this Proposal/Contract, the price set forth in this Proposal/Contract shall be increased to reflect all additional costs.

2) Commercial general liability – defect products/completed operations coverage, including bodily injury and property damage liability, does not apply to work that is included within the products/completed operations hazard; arises out of defective construction of all or any part of a **residential structure** and is reported to us more than 11 months after our work is deemed completed on the project. This limitation of coverage extends to all **habitational buildings**, as well as, common areas and appurtenant structures.

ADDENDUM TO BID PROPOSAL – TERMS & CONDITIONS

i. MEP trades, permitting, bonding, additional testing, liquidated damages, overtime, multiple mobilizations, and all other work, materials and conditions not defined above are specifically excluded from this Proposal/Contract.

ii. Enrollment cost or any additional cost related to participation in the "***Textura Construction Payment Management***" program or any similar construction payment management program is not included in this proposal/contract.

iii. The cost for any Job site specific drug testing is not included in this proposal/contract. This includes all hourly wages and transportation cost for each employee required to test. All cost for testing provided upon request. **Quality Metals, Inc. is a DFWP/EOE.**

iv. Job Specific Safety Orientation is included in this proposal for a period not to exceed one (1) hour of class time on the first day of mobilization. Any additional time required is not included.

v. This Proposal/Contract does **not** include labor for composite clean-up crews.

vi. This Proposal/Contract is based upon manufacturer's recommendations and industry standards.

vii. This Proposal/Contract is based upon the issuance and acceptance of a modified AIA Document A401 – 2007 or similar agreement.

viii. We acknowledge having reviewed **0** addenda associated with this project and scope of work quoted.

ix. Field measurements are required prior to ordering metal roofing and wall systems.

x. No materials will be ordered prior to our receiving approved submittals, shop drawings, color selection and executed contract agreement.

xi. This Proposal/Contract will be void ten (10) days after its original date.

xii. This Proposal/Contract is based upon standard work hours, Monday – Friday, 7:00 am - 3:30 pm with one (1) continuous mobilization. For after hours work, weekend work, or multiple mobilizations please inquire as these costs are not included in this offer.

xiii. All cost associated with an accelerated schedule for any reason other than delays directly related and caused by Quality Metals, Inc. are not included in this proposal. Should your project require an accelerated schedule including but not limited to overtime, weekends, second or third shifts, etc. please inquire.

xiv. General Contractor/Owner to provide the following, unless otherwise noted under scope of work:
   a. Solid, level site for use of standard handling equipment.
   b. Clear access to area of work.
   c. Trash receptacle.
   d. Electrical power.
   e. Permits

xv. Our standard one-year workmanship warranty applies to this Proposal/Contract.

xvi. Acceptance and/or use of this Proposal/Contract includes acceptance of all terms and conditions stated herein. Upon award of this project, this Proposal/Contract along with the Terms & Conditions shall be incorporated into the contract language for the project.

xvii. This Bid Proposal includes all Florida sales and use taxes on materials manufactured and incorporated into this project.

xviii. Our standard insurance coverages apply to this Proposal/Contract. Copy provided upon request.

Christine Carasas

From: Jeff Bridges
Sent: Wednesday, November 20, 2024 1:28 PM
To: Christine Carasas
Cc: James Manyette
Subject: FW: Port Orange Public Utilities OPS Building
Attachments: PORT ORANGE PUBLIC UTILITIES.doc

CC,

This is for: 07_ACM Panels_Quality Metals

Jeff Bridges | Preconstruction Services Manager – Commercial
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771
Office: (407) 321-8410 | Cell: (407) 408-5660

From: Dan Russ <druss@qualitymetals.net>
Sent: Wednesday, November 20, 2024 12:20 PM
To: Jeff Bridges <jbridges@whartonsmith.com>
Subject: FW: Port Orange Public Utilities OPS Building

Jeff,

Please find attached proposal for the Metal Wall Panel Systems.

Couple of notes:

1. The HWP Precision Series (Keynote 300-02) is only available in 24g steel in the “Graphite” color.
2. I’ve included furnish/installation of 16g Hat Channel behind both systems
3. I’ve included matching trims to adjacent finishes

Feel free to contact me with ant questions.

Dan Russ
Quality Metals Inc.

From: Blake Bassett <blake@qualitymetals.net>
Sent: Tuesday, November 19, 2024 8:33 AM
To: Dan Russ <druss@qualitymetals.net>
Subject: Fw: Port Orange Public Utilities OPS Building

Regards,

Blake Bassett

Quality Metals, Inc.
Architectural Metal Products

201 Gordon Street

Sanford, FL 32771

P: 407.321.3181

www.qualitymetals.net

From: Jeff Bridges <jbridges@whartonsmith.com>
Sent: Monday, November 18, 2024 3:04 PM
To: Blake Bassett <blake@qualitymetals.net>
Subject: RE: Port Orange Public Utilities OPS Building

Awesome! Make sure you don't pick up the soffit material that falls under the roofer's scope.

I believe it is labeled M1 and M2 finish.
Panels / locations are called out by keynote 300-35 on the elevations.

Wharton-Smith, Inc
CONSTRUCTION GROUP
40 CELEBRATING years
1984 2024

Jeff Bridges | Preconstruction Services Manager – Commercial
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771
Office: (407) 321-8410 | Cell: (407) 408-5660

From: Blake Bassett <blake@qualitymetals.net>
Sent: Monday, November 18, 2024 3:02 PM
To: Jeff Bridges <jbridges@whartonsmith.com>
Subject: Re: Port Orange Public Utilities OPS Building

Looking at it now, shouldn't be a problem. Thanks.

Regards,

Blake Bassett

Quality Metals, Inc.
Architectural Metal Products

201 Gordon Street

Sanford, FL 32771

P: 407.321.3181

www.qualitymetals.net

From: Jeff Bridges <jbridges@whartonsmith.com>
Sent: Monday, November 18, 2024 2:58 PM
To: Blake Bassett <blake@qualitymetals.net>
Subject: FW: Port Orange Public Utilities OPS Building

Hi Blake,

I see where we solicited this one to you, but I never saw a response and don't see any indication from iSqft.
Any chance you can get me something for the ACM? We turn in our GMP to the owner on Friday, so I'd need it back by Thursday at the latest.

Currently I only have 1 number. Specs are attached as well.

Jeff Bridges | Preconstruction Services Manager – Commercial
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771
Office: (407) 321-8410 | Cell: (407) 408-5660

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November 11, 2024

Submitting a proposal for: **City of Port Orange Public Utilities Field Operations Facility - Port Orange, FL**

Foam Insulation

SOUTHERN FOAM INSULATION, INC. proposes to furnish and install FOAM INSULATION at the above referenced jobsite for the following lump sum: **Labor and Material Complete**

8" CMU AP Tag Wall Insulation:

Injected Masonry Foam Insulation (R-4.63 per inch/STC-52) applied to the ungrouted cells of the 8.0 inch exterior CMU walls to the conditioned space from finished floor to truss bearing as detailed in Specs 07 21 20 - 2.1, plan sheet G031 as wall type XA, F in rooms with the AP tag as shown on plan sheet A121A….....$4,180.00

Option/Add Exterior Wall CMU Insulation:

Specification 07 21 20.3.2.A.1 calls for all exterior CMU walls to be filled. Wall types F and XA only state in walls with AP tags. If all exterior walls need to be included in the above application, add….....$4,350.00

NOTE: Pricing is reflective of most recent material pricing from the manufacturer.

NOTE: All lifts and hoisting of material has been factored into the scope of this proposal.

NOTE: Penetrations to be foam sealed by respective trades.

NOTE: Includes protection of adjacent surfaces in sequence.

NOTE: Protection of any pipe, conduit, ducts, etc (any other MEP or framing work, including fire pipe) is not included in the scope of this proposal.

NOTE: A sequencing meeting will be required at time of contract.

NOTE: Permit Set of plans dated 9.30.2024 Reviewed.

NOTE: WSI #1 - #7 Reviewed.

NOTE: Pricing includes up to one (1) mobilization(s) to complete entire scope. Pricing excludes payment and performance bonds and any OCIP/CCIP costs.

Initial: _____



NOTE: Pricing is based on this document becoming an Exhibit, Attachment or being incorporated into the Contract Documents, including but not limited to the attached Terms and Conditions.

NOTE: Clips, supports, hangars, sleeves and other attachments to the substrates to receive spray applied foam, fiber or thermal insulation coatings may be placed by other trades prior to the application of insulating materials, however, the installation of ducts, piping, conduit or other suspended equipment must not take place until the application of the insulating materials is complete in that area. Alterations to this sequencing / scheduling will result in additional charges for reduced production rates of up to $1,000/day.

This price is lump sum for all labor and materials. This price is good for thirty - (30) days from date of quote.

Acceptance authorizes Southern Foam Insulation, Inc. to purchase materials to prepare for work.

PLEASE SIGN AND RETURN A COPY OF ALL PAGES OF THIS PROPOSAL

If you have any questions, please feel free to call.

Respectfully submitted by:

George Helmer

George Helmer, Senior Estimator
SOUTHERN FOAM INSULATION, INC.
estimating@southernfoaminsulation.com
Office 407-654-1251

Proposal Accepted by: Date: _____

Signature: _____

Print Name/Title: _____

Company Name: _____



Estimators:
SOUTHERN FOAM INSULATION, INC. proposes to furnish and install INSULATION at the project listed with the scopes bid on page 1 of this proposal as per the following qualifications:

A. Scope of work:
1. SPRAY FOAM INSULATION and/or BATT INSULATION is installed after all FRAMING INSPECTIONS COMPLETED. SPRAY FOAM INSULATION is applied at a nominal thickness.
2. MASONRY FOAMED-IN-PLACE INSULATION is installed after all masonry and structural concrete is in place and any holes that may allow foam to escape are sealed up.
3. RETROFOAM WALL FOAM is installed in existing frame walls when scheduled between SFI and the general contractor.
4. VERMICULITE INSULATION is installed after all structural filled cells are poured including the beams. All wires and pipes that penetrate the block wall should be completed prior to our arrival with their entry holes being sealed to avoid perlite loss.
5. RIGID INSULATION is installed when appropriate to job schedule per plans and specs.

B. Applications:
1. SPRAY FOAM INSULATION/MASONRY FOAMED-IN-PLACE INSULATION/RETROFOAM WALL INSULATION/ RIGID INSULATION are all Thermal / Sound insulations and may be used in interior or exterior walls.
2. BATT INSULATION is a thermal insulation and may be used in interior or exterior walls.
3. PERLITE INSULATION is typically used to increase the fire rating of a wall system., as well as being Thermal Barrier.
4. Some of our applications of foam require us to drill holes in block walls or thru drywall. We will patch our injection sites through the concrete but are not responsible for finish work (painting, sanding drywall, etc) or drywall patch and/or repair (painting, sanding drywall, etc).
5. Our installer will take adequate measures to protect surrounding. Express any special concerns you may have when job scheduled.

C. Jobsite Requirements:
1. The project must have all roof/wall/subfloor areas to be insulated structurally complete.
2. A dumpster must be provided by others for our use. The concrete slab or wood floor with joists must be in place.
3. There must be sufficient space for our rolling scaffolding, scissor lift to be moved along the inside perimeter of the building.
4. The exterior of the building must be graded sufficiently so that our vehicles can drive to within twenty feet (20') of the building.
5. SOUTHERN FOAM INSULATION, INC. is not liable for damage to equipment or building finishes due to wall/roof /subfloor penetrations made by others.
6. During SPRAY FOAM installation, other workers and building/home occupants should vacate the premises. Re-entry should be restricted until the product has finished curing, our manufacturers recommend 24 hours of air exchanges after application for the two-component high pressure professional SPF system for worker re-entry without the use of PPE and for re-occupancy by residents and other building occupants.

D. Conditions
1. All agreements are conditional to access the job during normal business working hours Monday – Friday 7am – 5pm, upon strikes, accidents, and proper working conditions, acts of government, acts of god, availability of specified materials, or other delays or conditions beyond our control. All work to be completes with 1 (one) mobilization unless more are specifically listed on quote.
2. No back charges, extras, pro-rated expenses or deduction charges are to be made against SFI unless specifically agreed to in writing prior to incurring such expense.
3. Any areas that may require a second trip to complete for any reason out of control of SFI may be billed and added to the contract. Owner/ Builder/ Owner Rep. must inspect and notify SFI Inc. Prior to completion of work and while on site to any requested punch-out, return trips will be charged on a time and material bases and added to the original contract.
4. Title to the material shall remain with SFI Inc. whether installed or not until 100% paid.
5. Where applicable purchaser will receive or (permit us to receive) near the site of work and properly protect from damage the material and equipment required to complete contract.
6. Any reference to thermal values or other product data reflects test done by manufacture.
7. SFI Inc. shall not be held responsible for foam installed in cells to have concrete.
8. Owners authorize SFI Inc. to drill walls in from inside or outside (SFI to decide for best access to install wall foam) to complete work.
9. Adding or changing the insulation may require adjusting the AC system such as adding a dehumidifier or a variable speed motor.
10. SFI Inc. has not completed a through inspection of the home or the AC system. Our inspection is to verify proper access and confirm what type of insulation may already be in the building.

Initial: _____



E. Payment:

1. Full payment is due per terms on proposal or invoice or via contract with General Contractor**.** We accept payment by cash, check, credit card (3.5% convenience fee applies), bank wire or ACH.
2. Deposit will be non-refundable unless job is cancelled prior to mobilization. If job isn't cancelled prior to mobilization, a mobilization fee may be assessed.
3. The party owing money hereunder agrees to pay SOUTHERN FOAM INSULATION, INC.'S reasonable attorneys fees and costs incurred to collect amounts due hereunder.
4. Interest at the rate of twelve percent (12%) per annum will be charged on all amounts unpaid after said thirty -(30) day period from the due date until paid.

F. Additional Charges:

1. If specified, an infrared thermograph inspection can be performed at an additional charge.
2. If colored mortar is required, it shall be supplied and mixed by others. SOUTHERN FOAM INSULATION, INC. does not assume responsibility for improperly mixed/matched mortar.
3. Thermal and Ignition coating are not included unless specifically listed.

G. Contracts and Commencement of Work:

1. The terms and conditions of this proposal will become a part of this or any agreement. Any additional costs incurred for special coverage on insurance certificates will be passed along to company/personal requiring such. Cost of Bond is not included unless otherwise noted.
2. Any variations of this proposal must be expressed in writing and agreed upon by mutual parties.
3. This proposal guarantees the quoted price for a period of thirty - (30) days from the above date.
4. Acceptance of all pages of this proposal must be received by SOUTHERN FOAM INSULATION, INC. prior to its commencement of work.
5. SOUTHERN FOAM INSULATION, INC. requires a minimum of five (5) days lead-time prior to its commencement of work.
6. Scheduling adjustments may have to be made due to inclement weather.
7. The above-mentioned requirements are subject to SOUTHERN FOAM INSULATION INC.'S discretion.

H. Personal Guaranty:

By signing this Personal Guaranty, the Property/Project Owner(s) fully, unconditionally, and irrevocably personally guarantees and thereby agrees be absolutely personally responsible for the full and prompt payment of all amounts due or recoverable under the Subcontract Agreement between the General Contractor and Subcontractor including, but not limited to, interest, late fees, attorneys' fees, and costs. A copy of the Subcontract Agreement has been provided to or is otherwise available upon request to the Project/Property Owner. The Property/Project Owner(s)' guarantee herein represents a full recourse personal guaranty by the Guarantor of the General Contractor's payment obligations under the Subcontract Agreement. Property/Project Owner(s) expressly waive notice of nonpayment, protest, and notice of protest with respect to the indebtedness covered by this guaranty. Further, if the General Contractor defaults on the payment of amounts due under the Subcontract Agreement, it shall not be necessary to enforce this Guaranty against and enforce payment by Property/Project Owner(s) for the Subcontractor to first pursue or exhaust any other remedies it may have. I further agree to pay any costs of collection, including attorney's fees incurred by the Subcontractor in connection with the enforcement of this Guaranty.

Signature: _____ Date: _____ Additional Pages

Christine Carasas

From: Estimating <Estimating@southernfoaminsulation.com>
Sent: Monday, November 11, 2024 1:07 PM
To: Wharton Smith Commercial Estimating; James Manyette
Subject: City of Port Orange Public Utilities Field Operations Facility - Port Orange, FL - Proposal 11-11-24
Attachments: City of Port Orange Public Utilities Field Operations Facility - Port Orange, FL - Proposal 11-11-24.pdf

Good Morning Wharton team,

Thank you for allowing Southern Foam Insulation the opportunity to provide a proposal for City of Port Orange Public Utilities Field Operations Facility - Port Orange, FL.

Please let us know if you have any questions.

Have a great day,

Ivan Khvan
Southern Foam Insulation, Inc.
3882 Center Loop
Orlando, FL 32808
Phone: 407-654-1251
www.southernfoaminsulation.com

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November 15, 2024
REVISED

Submitting a proposal for: **City of Port Orange Public Utilities Field Operations Facility - Port Orange, FL**

Foam Insulation

SOUTHERN FOAM INSULATION, INC. proposes to furnish and install FOAM INSULATION at the above referenced jobsite for the following lump sum: **Labor and Material Complete**

8" CMU AP Tag Wall Insulation:
Injected Masonry Foam Insulation (R-4.63 per inch/STC-52) applied to the ungrouted cells of the 8.0-inch CMU walls to the conditioned space from finished floor to truss bearing as detailed in Specs 07 21 20 - 2.1, plan sheet G031 as wall type XA, F in rooms with the AP tag as shown on plan sheet A121A…..$ 4,180.00

Option/Add Exterior Wall CMU Insulation:
Specification 07 21 20.3.2.A.1 calls for all exterior CMU walls to be filled. Wall types F and XA only state in walls with AP tags. If all exterior walls need to be included in the above application, add….$ 4,350.00

Option/Add Open Cell Insulation - Mtl. Roof Deck:
Spray Polyurethane Open Cell Spray Foam applied at an average thickness to achieve an R-30 rating to ensure a comprehensive thermal and air barrier to the interior of the metal roof framing of the PEMB building as detailed Specs 072119 - 2.2, plan sheet A353 and dimensioned on plan sheet A151; includes the code required Intumescent Thermal Barrier applied over the foam.

Total Open Cell Spray Foam in above applications….$ 39,250.00

NOTE: Excludes spray foam in the exterior wall assembly of the PEMB building in framed cavities.

NOTE: Pricing is reflective of most recent material pricing from the manufacturer.

NOTE: All lifts and hoisting of material has been factored into the scope of this proposal.

NOTE: Penetrations to be foam sealed by respective trades.

NOTE: Includes protection of adjacent surfaces in sequence.

Initial: _____



NOTE: Protection of any pipe, conduit, ducts, etc (any other MEP or framing work, including fire pipe) is not included in the scope of this proposal.

NOTE: A sequencing meeting will be required at time of contract.

NOTE: Permit Set of plans dated 9.30.2024 Reviewed.

NOTE: WSI #1 - #7 Reviewed.

NOTE: Pricing includes up to one (1) mobilization(s) to complete entire scope. Pricing excludes payment and performance bonds and any OCIP/CCIP costs.

NOTE: Pricing is based on this document becoming an Exhibit, Attachment or being incorporated into the Contract Documents, including but not limited to the attached Terms and Conditions.

NOTE: Clips, supports, hangars, sleeves and other attachments to the substrates to receive spray applied foam, fiber or thermal insulation coatings may be placed by other trades prior to the application of insulating materials, however, the installation of ducts, piping, conduit or other suspended equipment must not take place until the application of the insulating materials is complete in that area. Alterations to this sequencing / scheduling will result in additional charges for reduced production rates of up to $1,000/day.

Initial: _____



This price is lump sum for all labor and materials. This price is good for thirty - (30) days from date of quote.

Acceptance authorizes Southern Foam Insulation, Inc. to purchase materials to prepare for work.

PLEASE SIGN AND RETURN A COPY OF ALL PAGES OF THIS PROPOSAL

If you have any questions, please feel free to call.

Respectfully submitted by:

George Helmer

George Helmer, Senior Estimator
SOUTHERN FOAM INSULATION, INC.
estimating@southernfoaminsulation.com
Office 407-654-1251

Proposal Accepted by: Date: _____

Signature: _____

Print Name/Title: _____

Company Name: _____



Estimators:
SOUTHERN FOAM INSULATION, INC. proposes to furnish and install INSULATION at the project listed with the scopes bid on page 1 of this proposal as per the following qualifications:

A. Scope of work:
1. SPRAY FOAM INSULATION and/or BATT INSULATION is installed after all FRAMING INSPECTIONS COMPLETED. SPRAY FOAM INSULATION is applied at a nominal thickness.
2. MASONRY FOAMED-IN-PLACE INSULATION is installed after all masonry and structural concrete is in place and any holes that may allow foam to escape are sealed up.
3. RETROFOAM WALL FOAM is installed in existing frame walls when scheduled between SFI and the general contractor.
4. VERMICULITE INSULATION is installed after all structural filled cells are poured including the beams. All wires and pipes that penetrate the block wall should be completed prior to our arrival with their entry holes being sealed to avoid perlite loss.
5. RIGID INSULATION is installed when appropriate to job schedule per plans and specs.

B. Applications:
1. SPRAY FOAM INSULATION/MASONRY FOAMED-IN-PLACE INSULATION/RETROFOAM WALL INSULATION/ RIGID INSULATION are all Thermal / Sound insulations and may be used in interior or exterior walls.
2. BATT INSULATION is a thermal insulation and may be used in interior or exterior walls.
3. PERLITE INSULATION is typically used to increase the fire rating of a wall system., as well as being Thermal Barrier.
4. Some of our applications of foam require us to drill holes in block walls or thru drywall. We will patch our injection sites through the concrete but are not responsible for finish work (painting, sanding drywall, etc) or drywall patch and/or repair (painting, sanding drywall, etc).
5. Our installer will take adequate measures to protect surrounding. Express any special concerns you may have when job scheduled.

C. Jobsite Requirements:
1. The project must have all roof/wall/subfloor areas to be insulated structurally complete.
2. A dumpster must be provided by others for our use. The concrete slab or wood floor with joists must be in place.
3. There must be sufficient space for our rolling scaffolding, scissor lift to be moved along the inside perimeter of the building.
4. The exterior of the building must be graded sufficiently so that our vehicles can drive to within twenty feet (20') of the building.
5. SOUTHERN FOAM INSULATION, INC. is not liable for damage to equipment or building finishes due to wall/roof /subfloor penetrations made by others.
6. During SPRAY FOAM installation, other workers and building/home occupants should vacate the premises. Re-entry should be restricted until the product has finished curing, our manufacturers recommend 24 hours of air exchanges after application for the two-component high pressure professional SPF system for worker re-entry without the use of PPE and for re-occupancy by residents and other building occupants.

D. Conditions
1. All agreements are conditional to access the job during normal business working hours Monday – Friday 7am – 5pm, upon strikes, accidents, and proper working conditions, acts of government, acts of god, availability of specified materials, or other delays or conditions beyond our control. All work to be completes with 1 (one) mobilization unless more are specifically listed on quote.
2. No back charges, extras, pro-rated expenses or deduction charges are to be made against SFI unless specifically agreed to in writing prior to incurring such expense.
3. Any areas that may require a second trip to complete for any reason out of control of SFI may be billed and added to the contract. Owner/ Builder/ Owner Rep. must inspect and notify SFI Inc. Prior to completion of work and while on site to any requested punch-out, return trips will be charged on a time and material bases and added to the original contract.
4. Title to the material shall remain with SFI Inc. whether installed or not until 100% paid.
5. Where applicable purchaser will receive or (permit us to receive) near the site of work and properly protect from damage the material and equipment required to complete contract.
6. Any reference to thermal values or other product data reflects test done by manufacture.
7. SFI Inc. shall not be held responsible for foam installed in cells to have concrete.
8. Owners authorize SFI Inc. to drill walls in from inside or outside (SFI to decide for best access to install wall foam) to complete work.
9. Adding or changing the insulation may require adjusting the AC system such as adding a dehumidifier or a variable speed motor.
10. SFI Inc. has not completed a through inspection of the home or the AC system. Our inspection is to verify proper access and confirm what type of insulation may already be in the building.

Initial: _____



E. Payment:

1. Full payment is due per terms on proposal or invoice or via contract with General Contractor. We accept payment by cash, check, credit card (3.5% convenience fee applies), bank wire or ACH.
2. Deposit will be non-refundable unless job is cancelled prior to mobilization. If job isn't cancelled prior to mobilization, a mobilization fee may be assessed.
3. The party owing money hereunder agrees to pay SOUTHERN FOAM INSULATION, INC.'S reasonable attorneys fees and costs incurred to collect amounts due hereunder.
4. ~~Interest at the rate of twelve percent (12%) per annum will be charged on all amounts unpaid after said thirty (30) day period from the due date until paid.~~

F. Additional Charges:

1. If specified, an infrared thermograph inspection can be performed at an additional charge.
2. If colored mortar is required, it shall be supplied and mixed by others. SOUTHERN FOAM INSULATION, INC. does not assume responsibility for improperly mixed/matched mortar.
3. Thermal and Ignition coating are not included unless specifically listed.

G. Contracts and Commencement of Work:

1. The terms and conditions of this proposal will become a part of this or any agreement. Any additional costs incurred for special coverage on insurance certificates will be passed along to company/personal requiring such. Cost of Bond is not included unless otherwise noted.
2. Any variations of this proposal must be expressed in writing and agreed upon by mutual parties.
3. This proposal guarantees the quoted price for a period of thirty - (30) days from the above date.
4. Acceptance of all pages of this proposal must be received by SOUTHERN FOAM INSULATION, INC. prior to its commencement of work.
5. SOUTHERN FOAM INSULATION, INC. requires a minimum of five (5) days lead-time prior to its commencement of work.
6. Scheduling adjustments may have to be made due to inclement weather.
7. The above-mentioned requirements are subject to SOUTHERN FOAM INSULATION INC.'S discretion.

H. Personal Guaranty:

By signing this Personal Guaranty, the Property/Project Owner(s) fully, unconditionally, and irrevocably personally guarantees and thereby agrees be absolutely personally responsible for the full and prompt payment of all amounts due or recoverable under the Subcontract Agreement between the General Contractor and Subcontractor including, but not limited to, interest, late fees, attorneys' fees, and costs. A copy of the Subcontract Agreement has been provided to or is otherwise available upon request to the Project/Property Owner. The Property/Project Owner(s)' guarantee herein represents a full recourse personal guaranty by the Guarantor of the General Contractor's payment obligations under the Subcontract Agreement. Property/Project Owner(s) expressly waive notice of nonpayment, protest, and notice of protest with respect to the indebtedness covered by this guaranty. Further, if the General Contractor defaults on the payment of amounts due under the Subcontract Agreement, it shall not be necessary to enforce this Guaranty against and enforce payment by Property/Project Owner(s) for the Subcontractor to first pursue or exhaust any other remedies it may have. I further agree to pay any costs of collection, including attorney's fees incurred by the Subcontractor in connection with the enforcement of this Guaranty.

Signature: _____ Date: _____ Additional Pages

Christine Carasas

From: Estimating <Estimating@southernfoaminsulation.com>
Sent: Friday, November 15, 2024 3:28 PM
To: James Manyette; Wharton Smith Commercial Estimating
Subject: City of Port Orange Public Utilities Field Operations Facility - Port Orange, FL - Revised Proposal 11-15-24
Attachments: City of Port Orange Public Utilities Field Operations Facility - Port Orange, FL - Revised Proposal 11-15-24.pdf

Good Afternoon,

Thank you for allowing Southern Foam Insulation the opportunity to provide a revised proposal for City of Port Orange Public Utilities Field Operations Facility - Port Orange, FL.

Please let us know if you have any questions.

Have a great day,

Adam Barrick
Southern Foam Insulation, Inc.
3882 Center Loop
Orlando, FL 32808
Phone: 407-654-1251
www.southernfoaminsulation.com

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!

3900 St. Johns Pkwy
Sanford, FL 32771

TAILORED FOAM OF FLORIDA, LLC
COMMERCIAL & RESIDENTIAL

Phone: (407) 332-0333
Fax: (407) 830-9174

OFFERING MASONRY AND SPRAY FOAM INSULATIONS

DATE: 11-21-2024

RE: Public Utilities Field Operations Facility - Port Orange, FL
TO: Wharton Smith, Inc.
ATTN: Jeff Bridges

PROPOSAL

****

Tailored Foam is "Florida's *Original* Foam Insulation Contractor" - Since 1986

TAILORED FOAM OF FLORIDA, LLC. (TFOF) proposes to furnish and install the following insulations at the above-mentioned project.

A. GERNAL NOTES:

1. Spray Foam Insulation is installed at a nominal (+/- ½") as required to meet the specified thermal requirements. If SPF is applied in a metal stud cavity, each stud must be attached to the substrate every 2' vertically (with 2lb closed cell SPF), and every 5' vertically (with .5lb open cell SPF). A temporary horizontal brace must be placed every 5' vertically to the face of the metal stud, to keep the studs plumb and square. The temporary bracing & fasteners are not included in TFOF's scope. No prescriptive barriers (ignition or thermal) are included unless noted below.

2. CORE-FILL 500 Masonry Insulation will be installed in all masonry cells as listed per pricing/scope section F after all structural concrete is in place thru a 7/8" hole. **TFOF** will then patch our holes or strike the mortar joints to match existing conditions (not responsible for matching colored mortar). CORE-FILL 500 Masonry Insulation is an acoustical and thermal foam insulation product. It should not be used for increasing the fire resistance rating of concrete masonry units

B. JOBSITE REQUIREMENTS:

A dumpster must be provided by others for our use. **TFOF** will not be held liable for damage to equipment, stock or building finishes due to roof penetrations that are not properly sealed.

C. PAYMENT:

Payment in full is due within thirty (30) days from the invoice date. A processing fee of 3% will be charged for credit card payments.

D. CONTRACTS AND COMMENCEMENT OF WORK:

The items listed in this proposal will become a part of any future agreement. This proposal guarantees the quoted price for fourteen (14) days from the above date. TFOF requires a minimum of fourteen (14) days lead time prior to its commencement of work. *Any insurance requirements in excess of "additional insured" are subject to an extra fee*. Cost of bond or permit is not included unless otherwise noted.

E. Terms and Conditions:

1. The General Contractor is to provide clear access to the work area, and accessibility for our trucks.
2. Unless equipped with proper respiratory protection, no one may enter the work area during and immediately after spraying SPF.
3. Foam repairs due to damage by other trades will be fixed at an additional cost to contractor.
4. Mechanical engineer must properly size equipment when using SPF.
5. **Pricing based on working 7:00am - 5:00pm, Mon - Fri. $500.00 additional per day otherwise.**
6. **Pricing is based on installing from the inside face of the exterior wall unless otherwise noted; it is assumed the work is to be done from a completed concrete floor slab.**
7. **If, during the performance of this contract, the price of material significantly increases prior to commencement of work, through no fault of Tailored Foam of Florida, LLC., the price of material shall be equitably adjusted by an amount reasonably necessary to cover any such significant price increases. As used herein, a significant price increase shall mean any increase in price exceeding 3% experienced by Tailored Foam of Florida, LLC, from the date of the original proposal.**

3900 St. Johns Pkwy
Sanford, FL 32771

TAILORED FOAM OF FLORIDA, LLC
COMMERCIAL & RESIDENTIAL

Phone: (407) 332-0333
Fax: (407) 830-9174

OFFERING MASONRY AND SPRAY FOAM INSULATIONS

F. PRICING: Port Orange Public Utilities Field Operations Facility

Base Bid			
Area Insulated	**Type of Insulation**	**Nominal (+/-1/2") Thickness**	**Price**
Option 1) All Ext CMU			
Mobilization(s) One (1)			**Included**
Exterior Block Walls	**Core-Fill 500**	**8" CMU**	**$4,677.00**
Option 2) AP Tagged Block Walls			
Mobilization(s) Two (2)			**Included**
AP Tagged Block Walls	**Core-Fill 500**	**8" CMU**	**$8,377.00**
Roof Deck @ PEMB column lines 9-14 & J-M	**Open Cell**	**R-30 8.25"**	**$31,577.00**
Thermal Barrier			**$10,127.00**
Lift Equipment			**Included**
Mobilization – One (1)			**Included**
Base Bid Total			**$54,758.00**

G. **JOB NOTES:**

- *The items listed in this proposal will become a part of any future agreement*. **This proposal guarantees the quoted price for** fourteen (14) **days from the above date**. TFOF requires a minimum of fourteen (14) days lead time prior to its commencement of work. *Any insurance requirements in excess of "additional insured" are subject to an extra fee*. Cost of bond or permit is not included unless otherwise noted. Tailored Foam of Florida, LLC. is not responsible for any third-party testing or inspections. Any tinting of thermal barrier is at an additional cost; any painting to be provided by others.

Above Price is based off drawings dated 9-30-2024.

- Spray Foam must be an integral part of the schedule timeline. It cannot be treated as standard insulation.
- **Additional** mobilizations will be at a cost of **$500.00** for CORE-FILL 500 and **$1,800.00** for Spray Foam Insulation.
- For Spray Foam Insulation - GC is to insure that sprinkler heads are installed with proper clearance based on the thickness of the spray foam insulation to be applied.
  - The interior surface of the spray foam insulation will become the surface for sprinkler head placement and code requirements to be measured from.
- Pricing listed above is budgetary and TFOF must review final drawings before entering a contract.
- Additional protection of PEMB structural components and finishes are not included and are to be provided by GC if required. If a level of protection must be provided this will be at an additional negotiated cost.

Sincerely,

Bob Egbers Commercial Sales
Tailored Foam of Florida, LLC.

Accepted:

Wharton Smith, Inc.

Jeff Bridges **Date**

Christine Carasas

From: Jeff Bridges
Sent: Thursday, November 21, 2024 12:34 PM
To: Christine Carasas
Cc: James Manyette
Subject: FW: Project Port Orange Public Utilities Field Operations Facility
Attachments: Core-Fill 500 and Spray Foam Insulation.pdf

07_Insulation_Tailored Foam Inc

Jeff Bridges | Preconstruction Services Manager – Commercial
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771
Office: (407) 321-8410 | Cell: (407) 408-5660

From: Robert Egbers <REgbers@tailoredfoaminc.com>
Sent: Thursday, November 21, 2024 12:26 PM
To: Jeff Bridges <jbridges@whartonsmith.com>
Subject: Re: Project Port Orange Public Utilities Field Operations Facility

Jeff,
Attached is dour proposal for this project. We would like to get signed up to do this work for you,
Please call with any questions.

Thank you,

Bob Egbers
Commercial Sales
REgbers@TailoredFoamInc.com
Tailored Foam of Florida, LLC.
3900 St. Johns Pkwy
Sanford, FL 32771
407-332-0333 ext. 207
Fax: 407-830-9174
Cell: 321-303-5819
www.tailoredfoaminc.com

Core Fill Scheduling: Concetta Bogart
scheduling@tailored□oaminc.com
Concetta Varrecchia
Admin@tailored□oaminc.com
scheduling@tailored□oaminc.com
Estimating: Marcus Turner,
MTurner@TailoredFoamInc.com
Invitations to Bid: Darla Zylstra/Colton Sander, Estimates@TailoredFoamInc.com
AR, Lien Waivers, Pay Apps, Contracts, Submittals, Insurance: Commercial:
Rhonda Ryan, AR@TailoredFoamInc.com
Residential Sales: Chris Glemser,
CGlemser@TailoredFoamInc.com
Residential Sales: Gary Tolle□son,
Gary@TailoredFoamInc.com
Commercial Sheduling: Brian Villavicencio
SPF@tailored□oaminc.com

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Subcontractor Bid Form-General

Wharton-Smith, Inc. CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Architectural Sheet Metal, Inc
Scope of Work:	Standing Seam Metal Roofing

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	$ $1,131,750.00
Amount in Words:	One Million One Hundred Thirty-One Thousand Seven Hundred Fifty and 00/100

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $50,000)

Material/Equipment Types:	Equipment Rental/Roofing & Trim Material
Amount:	$ 761,696.35

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	2.00%

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)
Roofing Mat.	8-10 wks		
Trim Mat.	8-10 wks		

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	001	Dated:	11/07/24	RFI No.		Dated:	
RFI No.	002	Dated:	11/11/24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No. 1	Dated: 10/22/24	WSI No. 5	Dated: 10/31/24		
WSI No. 2 & 3	Dated: 10/24/24	WSI No. 6	Dated: 11/4/24		
WSI No. 4	Dated: 10/28/24	WSI No. 7	Dated: 11/6/24		
		8	11/8/24		

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.	Dated:	ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Architectural Sheet Metal, Inc.

Company Name

1801 Premier Row Orland, Florida 32809

Address (Street, City, State, Zip)

407-855-7183 mgulla@asmfl.com

Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

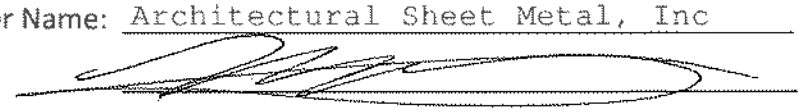
If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Architectural Sheet Metal, Inc

By: 

Printed Name: Michael Gulla

Title: Estimator

Dated: 11/12/2024

License No.: CCC1330237

Architectural Sheet Metal, Inc.

1801 PREMIER ROW - ORLANDO, FL 32809 / PH 407-855-7183 / FAX 407-855-0632

PROPOSAL

November 12, 2024

Wharton-Smith, Inc.
Ph: 407-321-8410
comest@whartonsmith.com

PROJECT: Port Orange Public Utilities Field Operations Facility
ARCHITECT: Schenkel-Shultz
DRAWINGS: Architectural Drawings
SPEC SECTIONS: See below
ADDENDA: None

ALL MATERIAL, LABOR, EQUIPMENT & SUPERVISION TO INSTALL THE FOLLOWING:

- **Standing Seam Metal Roof System:** Berridge MFG., Double-Lock Zee-Lock panel system, 24 gauge, Kynar finish – standard color.
- Flashing, trim, gutters, and downspouts to match roof panel material, finish, and color.
- Fasteners, sealants, and continuous clips.
- Soffit panel to match roof panel material, finish, and color.
- Rigid PolyISO insulation per plans.
- 5/8” coverboard per plans.
- Underlayment; 40 mils., self-adhesive, modified Bitumen.
- Finish Warranty twenty (20) years Berridge MFG.
- Weathertightness twenty (20) years Berridge MFG.
- Weathertightness two (2) years Installer/ASM.

NOT INCLUDED: Pre-Engineered metal building structure / framing / assembly / wall panels, roof deck, trusses/joist, wall/siding panels, lightning protection, hatches, heavy gauge framing, Payment & Performance bond (2%), Item(s) not listed above, Davis Bacon Wage Rates unless otherwise noted above.

BASE BID One (1) Unit **$1,131,750.00**
For the sum of: One Million One Hundred Thirty-One Thousand Seven Hundred Fifty and no/100

THIS PROPOSAL WILL REMAIN IN EFFECT FOR A PERIOD OF 30 DAYS. THIS BID PROPOSAL WILL BE SUBJECT TO AND CONDITIONED UPON EITHER USAGE OF THE AIA OR AGC SUBCONTRACT OR A SUBCONTRACT FORM OTHER WISE ACCEPTABLE TO ARCHITECTURAL SHEET METAL, INC. SUBJECT TO TERMS AND CONDITIONS, SEE ATTACHED.

Michael Gulla
Estimator

Architectural Sheet Metal, Inc.
SAFETY.QUALITY.TIMELY

ASM, INC. COMMERCIAL TERMS AND CONDITIONS (REV 10/2021)

1. Entire Agreement: This Proposal and Contract shall be the entire agreement between the OWNER AND/OR GENERAL CONTRACTOR and ARCHITECTURAL SHEET METAL, notwithstanding any previous communications and negotiations, whether oral or written, there being no covenants or agreements, inducements, guarantees, warranties or considerations, other than as set out herein. Each provision of this Agreement shall be construed as if both parties mutually drafted this Agreement. If a provision of this Agreement (or the application of it) is held by a court or arbitrator to be invalid or unenforceable, that provision will be deemed separable from the remaining provisions of the Agreement, will be reformed/enforced to the extent that it is valid and enforceable, and will not affect the validity or interpretation of the other provisions or the application of that provision to a person or circumstance to which it is valid and enforceable. Headings are for convenience only and do not affect interpretation. Acceptance shall be complete and the contract binding when signed by the OWNER AND/OR GENERAL CONTRACTOR or his representative and an authorized representative of ARCHITECTURAL SHEET METAL. Any changes in this Proposal and Contract must be approved in writing by an officer of ARCHITECTURAL SHEET METAL. If OWNER AND/OR GENERAL CONTRACTOR cancels this Agreement prior to the start of work, but not within the timeframe allowed by any/all applicable statutes or laws pertaining to cancellation, OWNER AND/OR GENERAL CONTRACTOR is liable for 15% of the total Agreement price as liquidated damages because ARCHITECTURAL SHEET METAL is unable to accurately measure its damages for the cancellation of this Agreement. By executing this Agreement, OWNER AND/OR GENERAL CONTRACTOR and ARCHITECTURAL SHEET METAL agree that the liquidated damages amount is fair and is not a penalty.

2. Payment: All sums not paid when due shall bear interest at the rate of one and a half percent (1 ½%) per month (or the maximum legal rate permitted by law if less). If OWNER AND/OR GENERAL CONTRACTOR does not make payment when due, OWNER AND/OR GENERAL CONTRACTOR agrees to pay all costs and expenses incurred in the collection of any unpaid sums, including reasonable attorney's fees. Punch items shall not be cause to delay the OWNER AND/OR GENERAL CONTRACTOR's payment to ARCHITECTURAL SHEET METAL. In addition, if a punch list exists, OWNER AND/OR GENERAL CONTRACTOR should pay 95% and withhold 5% until punch work is completed. If at any time OWNER AND/OR GENERAL CONTRACTOR fails to pay ARCHITECTURAL SHEET METAL in accordance with this Agreement, then ARCHITECTURAL SHEET METAL may, at its sole discretion, suspend shipments, performance of work, and/or warranties until full payment is made, and/or terminate this Agreement. If a suspension occurs that is not caused solely by ARCHITECTURAL SHEET METAL, the Agreement sum shall be increased by the amount of ARCHITECTURAL SHEET METAL'S costs of shut-down, delay, and start-up. If there is an increase in the actual cost of the labor, materials, fuel charges, or manufacturer's warranty charged to the ARCHITECTURAL SHEET METAL in excess of 5% subsequent to making this Agreement, the price set forth in this Agreement shall be increased without the need for a written change order or amendment to the contract to reflect the price increase and additional direct cost to the ARCHITECTURAL SHEET METAL. ARCHITECTURAL SHEET METAL will submit written documentation of the increased charges to the OWNER AND/OR GENERAL CONTRACTOR upon request. As an additional remedy, if the actual cost of any line item increases more than 10% subsequent to the making of this Agreement, ARCHITECTURAL SHEET METAL, at its sole discretion, may terminate the contract for convenience.

3. Delays: Neither ARCHITECTURAL SHEET METAL nor OWNER AND/OR GENERAL CONTRACTOR shall be responsible for loss or damage, whether actual or consequential or delays caused by circumstances beyond its control, including, without limitation, weather conditions, labor disputes and unavailability of materials, acts of God, accidents, pandemic, COVID-19 or viruses/illnesses, fire, vandalism, federal, state or local law, regulation or order, civil unrest, strikes, riots, protests, jurisdictional disputes, failure or delay of transportation, shortage of or inability to obtain materials, equipment or labor, changes in the work . However, if OWNER AND/OR GENERAL CONTRACTOR or anyone performing work at their direction interferes with or interrupts ARCHITECTURAL SHEET METAL in the performance of its work during work hours, it is agreed that the OWNER AND/OR GENERAL CONTRACTOR shall pay all extra expenses involved in making up the time lost, including, but not limited to, overtime and/or idle time and/or extra traveling expenses caused thereby.

4. Extra Work: Any work which is performed with OWNER AND/OR GENERAL CONTRACTOR's knowledge or consent and which is not included on the reverse side or attached shall be deemed as extra and shall be paid for accordingly. Unless specifically included any work to repair or replace the structural deck by reason of rotten wood, or other conditions making it unsuitable for supporting the roofing materials, shall be extra work.

5. Pre-Existing Conditions, Mold, Lead Based Paint and Asbestos: ARCHITECTURAL SHEET METAL shall not be responsible or liable for damages resulting from pre-existing conditions; to include mold, lead-based paint, asbestos and other conditions such as deteriorated roofing or rotten wood, which existed prior to ARCHITECTURAL SHEET METAL's commencement of work. While ARCHITECTURAL SHEET METAL shall seek to minimize any such damage, it is understood where such deteriorated conditions exist, the normal performance of work may result in damage. This Proposal and Contract is based upon the assumption by ARCHITECTURAL SHEET METAL that materials to be removed by ARCHITECTURAL SHEET METAL do not include or contain asbestos, lead based paint or other toxic materials and that asbestos-containing, lead containing, or other toxic materials will not be encountered or disturbed during the course of performing the work. If materials containing asbestos are encountered or mold, lead-based paint or other such conditions are present when performing the work, ARCHITECTURAL SHEET METAL shall not be responsible or liable for any claims associated with such lead-based paint, asbestos, mold or other pre-existing conditions whether those claims arise in law, equity, contract, warranty, tort, or federal or state statutory claims and OWNER AND/OR GENERAL CONTRACTOR agrees to hold harmless and indemnify ARCHITECTURAL SHEET METAL against any such claims or losses resulting from lead-based paint, asbestos, mold or other pre-existing conditions found on OWNER AND/OR GENERAL CONTRACTOR's premises or should mold appear at any time after work is completed.

6. Warranty: Unless otherwise provided: **THERE ARE NO EXPRESS OR IMPLIED WARRANTIES WHATSOEVER INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.** ARCHITECTURAL SHEET METAL's work will be warranted by ARCHITECTURAL SHEET METAL in accordance with its standard LIMITED WORKMANSHIP WARRANTY FOR COMMERCIAL ROOFING, which is made a part of this Proposal and Contract and incorporated by reference. A copy of ARCHITECTURAL SHEET METAL's LIMITED WORKMANSHIP WARRANTY FOR COMMERCIAL ROOFING, is attached or, if not, will be furnished upon request. ARCHITECTURAL SHEET METAL SHALL NOT BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES. The acceptance of the Proposal and Contract by the OWNER AND/OR GENERAL CONTRACTOR signifies his/her agreement that this warranty shall be and is the exclusive remedy against ARCHITECTURAL SHEET METAL. A manufacturer's warranty shall be furnished to OWNER AND/OR GENERAL CONTRACTOR is a manufacturer's warranty is called for on the face of this Proposal and Contract. It is expressly agreed that in the event of any defects in the materials furnished pursuant to this Proposal and Contract, OWNER AND/OR GENERAL CONTRACTOR shall have recourse only against the manufacturer of such material. . If there is a breach in the applicable manufacturer's warranty according to the stated terms and conditions of said warranty, ARCHITECTURAL SHEET METAL'S warranty is simultaneously void and all of ARCHITECTURAL SHEET METAL'S responsibility/liability to correct, supplement, rectify, fix, etc. any/all issue(s) as a result of such breach. All warranties/guarantees provided by ARCHITECTURAL SHEET METAL, if any, shall be deemed null and void if OWNER AND/OR GENERAL CONTRACTOR fails to strictly adhere to the Agreement's payment terms; warranties only issued upon payment in full.

7. Access to Work and Working Hours: OWNER AND/OR GENERAL CONTRACTOR shall grant free and open access to work areas for workmen and vehicles and shall allow areas for storage of materials and debris. OWNER AND/OR GENERAL CONTRACTOR agrees to keep driveways, parking lots, and other work sites, clean and available for movement and parking of trucks during normal work hours. ARCHITECTURAL SHEET METAL shall not be responsible for reasonable wear and movement of trucks, men, equipment, materials, debris, etc. ARCHITECTURAL SHEET METAL disclaims any and all liability for the grading, leveling, slope or construction of the roof deck, the roofing system, structure and/or appurtenances This Proposal and Contract is based upon the performance of all work during ARCHITECTURAL SHEET METAL's regular working hours, and extra charges will be made for all work performed other than during ARCHITECTURAL SHEET METAL's regular working hours, if required by OWNER AND/OR GENERAL CONTRACTOR.

8. Working Conditions: ARCHITECTURAL SHEET METAL shall not be required to install its material either (a) under conditions contrary to manufacturer's instructions; (b) under adverse weather conditions; (c) under conditions which are generally unacceptable in the trade; and (d) where jobsite conditions are not suitable for proper installation of materials. ARCHITECTURAL SHEET METAL shall not be required to provide or be responsible for the installation erection of temporary weather protection facilities.

9. Labor and Materials: ARCHITECTURAL SHEET METAL agrees to furnish labor and materials either directly or through subcontractors retained by ARCHITECTURAL SHEET METAL to complete the work as specified on face of Proposal and Contract attached.

10. Insurance: Worker's Compensation, General Liability and such other insurance as is required by law, will be carried by ARCHITECTURAL SHEET METAL to complete the work as specified, on the Proposal and Contract attached. OWNER AND/OR GENERAL CONTRACTOR shall purchase and maintain builder's risk and property insurance, including the labor and materials furnished by ARCHITECTURAL SHEET METAL, covering fire, wind storm, extended coverage, malicious mischief, vandalism and theft on the premises to protect against loss or damage to material and in-place work until the job is completed and accepted by the OWNER and/or GENERAL CONTRACTOR.

11. Utilities: OWNER AND/OR GENERAL CONTRACTOR shall furnish at no cost to ARCHITECTURAL SHEET METAL all required electric and/or water service.

12. Title to Property: Title of this property is recorded in the name(s) of the OWNER AND/OR GENERAL CONTRACTOR stated on the Proposal and Contract attached unless otherwise noted OWNER AND/OR GENERAL CONTRACTOR agrees inasmuch as the equity in this property is a consideration for ARCHITECTURAL SHEET METAL performing work to improve the property, said property will not be sold or transferred until full payment is made to ARCHITECTURAL SHEET METAL.

13. Variances and Zoning: OWNER AND/OR GENERAL CONTRACTOR shall be responsible for variances and zoning changes required in connection with the work provided for hereunder, to include but not be limited to associations, covenants, local building codes, ordinances and any other restrictions effecting ARCHITECTURAL SHEET METAL's ability to perform its work. In the event that state, county, or municipal codes or regulations require work not expressly set forth in this Agreement or that differs materially from that generally recognized as inherent in work of the character provided for in this Agreement, all extra costs for ARCHITECTURAL SHEET METAL'S labor and materials shall be the sole obligation of the OWNER AND/OR GENERAL CONTRACTOR. ARCHITECTURAL SHEET METAL shall not be responsible for work performed that does not comply with or conform to the property restrictions or covenants and OWNER AND/OR GENERAL CONTRACTOR agrees to indemnify and hold ARCHITECTURAL SHEET METAL harmless for same.

14. Final Acceptance of Work Upon Completion: OWNER AND/OR GENERAL CONTRACTOR shall have the opportunity to inspect ARCHITECTURAL SHEET METAL's work. If OWNER AND/OR GENERAL CONTRACTOR believes that ARCHITECTURAL SHEET METAL's work is incomplete or unsatisfactory, OWNER AND/OR GENERAL CONTRACTOR shall so inform ARCHITECTURAL SHEET METAL in writing at that time, otherwise, ARCHITECTURAL SHEET METAL's work shall be deemed accepted.

15. Disputes: At the discretion and sole election of ARCHITECTURAL SHEET METAL, ARCHITECTURAL SHEET METAL may require that all disputes, claims or demands, of whatever kind, be resolved by arbitration, administered by and in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association (the "AAA"). This Proposal and Contract, and all rights, responsibilities, and liabilities arising therefrom, shall be governed and construed in accordance with the laws of the State of Florida, and any litigation or arbitration with the laws of the State of Florida, and any litigation or arbitration arising out of this proposal and Contract shall be brought, maintained and Administered in Orange County, Florida.. Should either party employ an attorney to institute litigation or arbitration to enforce any of the provisions hereof to protect its interest in any matter arising under, arising out of, or related to this Agreement, the prevailing party shall be entitled to recover from the non-prevailing party, all of its attorney's fees, costs, and expenses incurred through arbitration, litigation, appeals, administrative and/or bankruptcy proceedings.

16. Insurance Claims: In the event work is being paid through an insurance claim, it is understood that all costs not covered and paid by the insurance company remains the responsibility of the OWNER AND/OR GENERAL CONTRACTOR, regardless what the work is for, (i.e.: roof, deck replacement for rotted wood, windows, siding, or any other) and that payment to ARCHITCTURAL SHEET METAL shall not be contingent upon OWNER AND/OR GENERAL CONTRACTOR 'S receipt of payment from any third party, specifically including, but not limited to, payment from OWNER AND/OR GENERAL CONTRACTOR'S insurer.

17. Acceptance of Deck: ARCHITECTURAL SHEET METAL'S commencement of roof installation indicates only that ARCHITCTURAL SHEET METAL has visually inspected the surface of the roof deck for visible defects. ARCHITCTURAL SHEET METAL is not responsible for the structural sufficiency, quality of construction, undulations, fastening, or moisture content of the roof deck or other trades' work or design and their effect on the roof roofing materials. OWNER AND/OR GENERAL CONTRACTOR warrants that structures on which ARCHITCTURAL SHEET METAL is to work are in sound condition and capable of withstanding roof construction, equipment, and operations.

18. Indemnification: To the fullest extent permitted by law, OWNER AND/OR GENERAL CONTRACTOR shall defend, indemnify and hold ARCHITECTURAL SHEET METAL harmless and its officers, directors, employees and agents (collectively, "Indemnitees") harmless from any claims, demands, liabilities, damages, costs, suits by any person or persons, losses, and expenses, including attorney's fees arising out of or resulting from the execution of or in connection with the work including, without limitation: (1) claims or demands of the tenants or individual owners' of the buildings located on the Property, (2) personal injury, (3) wrongful death, or (4) property damages. The OWNER AND/OR GENERAL CONTRACTOR'S obligation to indemnify under this provision shall not include the obligation to indemnify the Indemnitees for their own negligence.

19. Controlling Document: Any issuance of a Notice to Proceed, Work Order, Contract based on this proposal constitutes unequivocal acceptance of these Terms and Conditions. Where any provision in subsequent contract documents pertaining to this proposal is inconsistent with the provisions of these Terms and Conditions the provisions presented here shall govern.

20. Latent Conditions: ARCHITECTURAL SHEET METAL shall not be responsible for additional costs due to the existence of utilities, wet insulation, deteriorated deck or rotten deck, furnace or HVAC lines or other subsurface or latent conditions that are not disclosed in writing to ARCHITECTURAL SHEET METAL prior to the start of the work. The disconnection or reconnection of any mechanical equipment that may be necessary for ARCHITECTURAL SHEET METAL to perform the work shall be performed by others and treated as an additional cost, an extra cost. ARCHITECTURAL SHEET METAL is not responsible for leaks or other damages due to the condition of the existing roof. ARCHITECTURAL SHEET METAL shall notify OWNER AND/OR GENERAL CONTRACTOR if subsurface or latent conditions are discovered requiring additional work and shall not be obligated to proceed with the additional work until authorized by the OWNER AND/OR GENERAL CONTRACTOR and the Agreement amount shall be equitably adjusted. ARCHITECTURAL SHEET METAL disclaims liability for such discovered conditions.

21. Not Design Professionals: ARCHITECTURAL SHEET METAL does not provide engineering, consulting, or architectural services. It is the OWNER AND/OR GENERAL CONTRACTOR's responsibility to retain a licensed architect or engineer to determine the design and code compliance. ARCHITECTURAL SHEET METAL assumes no responsibility for structural integrity, compliance with building codes, or design of OWNER AND/OR GENERAL CONTRACTOR's structure. ARCHITECTURAL SHEET METAL will install roofing per code and manufacturer's specifications. If plans, specifications, or other design documents have been furnished to ARCHITECTURAL SHEET METAL, OWNER AND/OR GENERAL CONTRACTOR warrants all structures to be sound condition capable of withstanding normal roofing construction equipment and operations. ARCHITECTURAL SHEET METAL is not responsible for location of roof drains, adequacy of drainage or ponding on the roof.

22. Credit Information: ARCHITECTURAL SHEET METAL reserves the right to obtain credit information on OWNER AND/OR GENERAL CONTRACTOR. If ARCHITECTURAL SHEET METAL finds in its opinion the OWNER AND/OR GENERAL CONTRACTOR's credit is unsatisfactory, ARCHITECTURAL SHEET METAL shall have the right to terminate this Agreement for its convenience, without penalty upon written notice to OWNER AND/OR GENERAL CONTRACTOR. .

23. Material References: ARCHITECTURAL SHEET METAL is not responsible for the actual verification of technical specifications of product manufacturers; (i.e.: R Value, ASTM or UL compliance), but rather the materials used are represented as such by the material manufacturer. Metal roofing and especially lengthy flat span sheet metal panels will often exhibit waviness, commonly referred to as "oil-canning." ARCHITECTURAL SHEET METAL is not responsible for oil-canning. ARCHITECTURAL SHEET METAL is not responsible for defective products if ARCHITECTURAL SHEET METAL did not know such products were defective prior to the installation of same.

24. Fumes and Emissions: ARCHITECTURAL SHEET METAL and OWNER AND/OR GENERAL CONTRACTOR acknowledge that asphalt will be heated by ARCHITECTURAL SHEET METAL, odors and emissions from roofing products will be released and noise will be generated as part of the roofing operations to be performed by ARCHITECTURAL SHEET METAL. OWNER AND/OR GENERAL CONTRACTOR shall be responsible for interior air quality including controlling mechanical equipment, HVAC units, intake vents, wall vents, windows, doors and other openings to prevent fumes and odors from entering the building. OWNER AND/OR GENERAL CONTRACTOR is aware that roofing products emit fumes, vapors and odors during the application process. OWNER AND/OR GENERAL CONTRACTOR shall hold ARCHITECTURAL SHEET METAL harmless from claims from third parties relating to fumes and odors that are emitted during the normal roofing process.

25. Interior Protection: OWNER AND/OR GENERAL CONTRACTOR acknowledges that re-roofing of an existing structure may cause disturbance, dust, or debris to fall into the interior and possible, if hot asphalt or pitch is used, drippage may occur depending upon deck conditions. OWNER AND/OR GENERAL CONTRACTOR agrees to remove or protect property directly below the roof in order to minimize potential interior damage. ARCHITECTURAL SHEET METAL shall not be responsible for disturbance, damage, clean-up, or loss to interior property that ARCHITECTURAL SHEET METAL did not remove or protect prior to commencement of roofing operations.

26. Leaks: ARCHITECTURAL SHEET METAL and OWNER AND/OR GENERAL CONTRACTOR are committed to acting promptly so that roof leaks are not a source of potential interior mold growth. OWNER AND/OR GENERAL CONTRACTOR will make periodic inspections for signs of water intrusion and will provide written notice to ARCHITECTURAL SHEET METAL within 24 hours of the discovery of such leak if OWNER AND/OR GENERAL CONTRACTOR believes there are roof leaks, to correct the condition. Failure of OWNER AND/OR CONTRACTOR to provide written notice to ARCHITECTURAL SHEET METAL within this time will result in the OWNER AND/OR GENERAL CONTRACTOR waiving all claims that may be brought against ARCHITECTURAL SHEET METAL because of or relating to the roof leak, including claims arising in law, equity, contract, warranty, tort, or federal or state statutory claims. If ARCHITECTURAL SHEET METAL determines there is a roof leak related to its scope of work, ARCHITECTURAL SHEET METAL will make repairs promptly. Notwithstanding anything to the contrary, ARCHITECTURAL SHEET METAL disclaims all liability for all claims pertaining to or related to mildew, algae, fungus, mold, and/or other indoor air allergens ("Mold"), including claims arising out or relating to the detection, removal, disposal, or remediation of Mold, whether those claims arise in law, equity, contract, warranty, tort, or federal or state statutory claims, and whether those claims are based on the acts or omissions of ARCHITECTURAL SHEET METAL or individuals or entities under ARCHITECTURAL SHEET METAL's control. The OWNER AND/OR GENERAL CONTRACTOR is solely liable and responsible for all damages, whether actual or consequential, caused by Mold and incurred by OWNER AND/OR GENERAL CONTRACTOR, ARCHITECTURAL SHEET METAL or third parties, and agrees to indemnify, defend, and hold ARCHITECTURAL SHEET METAL harmless from any and all claims arising out of or relating to Mold.

27. Material Shortage/Substitution: In the event that any specified material or equipment becomes unavailable either temporarily or permanently after the Project Specific Agreement is executed, provided that such availability is a result of factors beyond ARCHITECTURAL SHEET METAL control, then in the event of temporary unavailability, the contract time shall be extended to reflect the duration of time that ARCHITECTURAL SHEET METAL is delayed by the unavailability, and in the case of permanent unavailability, ARCHITECTURAL SHEET METAL shall be excused from providing said material or equipment and allowed to provide an available substitute. To the extent an available substitute is provided by ARCHITECTURAL SHEET METAL under this provision, any increase in the cost between the originally specified material or equipment and its substitute shall be paid by the OWNER AND/OR GENERAL CONTRACTOR to ARCHITECTURAL SHEET METAL. Due to material shortages, OWNER AND/OR GENERAL CONTRACTOR may experience delays related to the inability to timely obtain materials for this project. In the event of such a delay, ARCHITECTURAL SHEET METAL shall notify OWNER AND/OR GENERAL CONTRACTOR and OWNER AND/OR GENERAL CONTRACTOR agrees to provide ARCHITECTURAL SHEET METAL with an extension of time for any delay attributable to the temporary inability to obtain materials.

28. **Damage Limitation.** In no event, whether based on contract, warranty (express or implied), tort, negligence, federal or state statute or otherwise arising from or relating to the work and services performed under the Agreement, shall ARCHITECTURAL SHEET METAL be liable for special, consequential, punitive, or indirect damages, including, without limitation, loss of use or loss of profits. OWNER AND/OR GENERAL CONTRACTOR waive any/all subrogation claims or rights against ARCHITECTURAL SHEET METAL to the extent such claim is covered by insurance. OWNER AND/OR GENERAL CONTRACTOR shall hold harmless, defend, and indemnify ARCHITECTURAL SHEET METAL for/from all claims that relate to or arise out of any responsibility/liability which is expressly disclaimed by ARCHITECTURAL SHEET METAL in these Terms and Conditions.

29. **Unforeseen Decking Lines.** Installation of a new roof to the deck area of the building requires nails and/or screws to be inserted into the deck area. By code, electrical, plumbing, telephone and security wiring, and air conditioning wiring and lines should not be installed directly beneath the roof deck. If Customer is aware of these or any other such lines, Customer must notify Contractor immediately as the Contractor will not be responsible for the puncture of improperly installed lines or lines within three inches of the roof deck. Customer accepts full responsibility for any repair or replacement that may be necessary.

30. **ARCHITECTURAL SHEET METAL'S DEFAULT.** OWNER AND/OR GENERAL CONTRACTOR shall give ARCHITECTURAL SHEET METAL at least **seven (7) days** written notice and the opportunity to cure, or such additional time as is reasonably necessary to cure the alleged breach, before declaring ARCHITECTURAL SHEET METAL in default of this Agreement. It is OWNER AND/OR GENERAL CONTRACTOR'S responsibility to notify ARCHITECTURAL SHEET METAL in writing within **three (3) days** (unless otherwise provided for in the Agreement) of the occurrence of any claim, defect, or deficiency arising out of work performed, services supplied, or materials provided by ARCHITECTURAL SHEET METAL under this Agreement ("Occurrence"). Failure of the OWNER AND/OR GENERAL CONTRACTOR to provide written notice of the Occurrence will result in the OWNER AND/OR GENERAL CONTRACTOR waiving all claims that may be brought against ARCHITECTURAL SHEET METAL because of or relating to the Occurrence, including claims arising in law, equity, contract, warranty, tort, or federal or state statutory claims.

31. **Jury Trial Waiver.** In the event of litigation between the parties to this Agreement, the parties KNOWINGLY, VOLUNTARILY, IRREVOCABLY AND INTENTIONALLY WAIVE THE RIGHT TO A TRIAL BY JURY IN RESPECT TO ANY LITIGATION ARISING OUT OF OR PERTAINING TO THE AGREEMENT, OR ANY COURSE OF CONDUCT, COURSE OF DEALINGS, STATEMENTS (WHETHER VERBAL OR WRITTEN) OR ACTIONS OF ANY PERSON OR PARTY RELATED TO THIS AGREEMENT; THIS IRREVOCABLE WAIVER OF THE RIGHT TO A JURY TRIAL IS A MATERIAL INDUCEMENT FOR THE PARTIES TO ENTER THIS AGREEMENT.

Christine Carasas

From: Jada Oliver <Jada@asmfl.com>
Sent: Tuesday, November 12, 2024 10:02 AM
To: Wharton Smith Commercial Estimating
Cc: Mike Gulla
Subject: PROPOSAL_Port Orange Public Utilities 11/12/2024
Attachments: Bid Form_General_Rev.10-25_ASM EXEC 11-12-2024.pdf; PROPOSAL_Port Orange Public Utilities_11122024.pdf

Good morning,

Attached please find our proposal for the above-referenced project.

If you have any questions, please contact Michael Gulla

On Behalf of Michael Gulla, Estimator

Thank you,

Jada Oliver
Preconstruction Coordinator

Architectural Sheet Metal, Inc.
1801 Premier Row
Orlando, FL 32809
P: (407) 855-7183
F: (407) 855-0632

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Subcontractor Bid Form-General

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Architectural Sheet Metal, Inc
Scope of Work:	Standing Seam Metal Roofing

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	**$** $630,150.00
Amount in Words:	Six Hundred Thirty Thousand One Hundred Fifty & 00/100

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	Equipment Rental/Roofing & Trim Material
Amount:	$ 418,892.44

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	2.00%

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)
Roofing Mat.	8-10 wks		
Trim Mat.	8-10 wks		

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	001	Dated:	11/07/24	RFI No.		Dated:	
RFI No.	002	Dated:	11/11/24	RFI No.		Dated:	
RFI No.	003	Dated:	11/15/24	RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10/22/24	WSI No.	5	Dated:	10/31/24
WSI No.	2 & 3	Dated:	10/24/24	WSI No.	6	Dated:	11/4/24
WSI No.	4	Dated:	10/28/24	WSI No.	7	Dated:	11/6/24
					8		11/8/24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Architectural Sheet Metal, Inc.

Company Name

1801 Premier Row Orland, Florida 32809

Address (Street, City, State, Zip)

407-855-7183 mgulla@asmfl.com

Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Architectural Sheet Metal, Inc

By: 

Printed Name: Michael Gulla

Title: Estimator

Dated: 11/12/2024

License No.: CCC 1330237

Architectural Sheet Metal, Inc.

1801 PREMIER ROW - ORLANDO, FL 32809 / PH 407-855-7183 / FAX 407-855-0632

REVISED PROPOSAL

November 18, 2024
~~November 12, 2024~~

Wharton-Smith, Inc.
Ph: 407-321-8410
comest@whartonsmith.com

PROJECT: Port Orange Public Utilities Field Operations Facility
ARCHITECT: Schenkel-Shultz
DRAWINGS: Architectural Drawings
SPEC SECTIONS: See below
ADDENDA: None

ALL MATERIAL, LABOR, EQUIPMENT & SUPERVISION TO INSTALL THE FOLLOWING:

- **Standing Seam Metal Roof System:** Berridge MFG., Double-Lock Zee-Lock panel system, 24 gauge, Kynar finish – standard color.
- Flashing, trim, gutters, and downspouts to match roof panel material, finish, and color.
- Fasteners, sealants, and continuous clips.
- Soffit panel to match roof panel material, finish, and color.
- Rigid PolyISO insulation per plans.
- 5/8” coverboard per plans.
- Flush metal panel on Administration Building, PAC-CLAD .040mil aluminum – standard color.
- Underlayment; 40 mils., self-adhesive, modified Bitumen.
- Finish Warranty twenty (20) years Berridge MFG.
- Weathertightness twenty (20) years Berridge MFG.
- Weathertightness two (2) years Installer/ASM.

NOT INCLUDED: Pre-engineered metal building structure/framing/assembly/wall panels, roof deck, trusses/joist, wall/siding panels, aluminum composite metal panels, lightning protection, hatches, heavy gauge framing, Payment & Performance bond (2%), Item(s) not listed above, Davis Bacon Wage Rates unless otherwise noted above.

BASE BID One (1) Unit **$630,150.00**
For the sum of: Six Hundred Thirty Thousand One Hundred Fifty and no/100

THIS PROPOSAL WILL REMAIN IN EFFECT FOR A PERIOD OF 30 DAYS. THIS BID PROPOSAL WILL BE SUBJECT TO AND CONDITIONED UPON EITHER USAGE OF THE AIA OR AGC SUBCONTRACT OR A SUBCONTRACT FORM OTHER WISE ACCEPTABLE TO ARCHITECTURAL SHEET METAL, INC. SUBJECT TO TERMS AND CONDITIONS, SEE ATTACHED.

Michael Gulla
Estimator

Architectural Sheet Metal, Inc.
SAFETY.QUALITY.TIMELY

ASM, INC. COMMERCIAL TERMS AND CONDITIONS (REV 10/2021)

1. Entire Agreement: This Proposal and Contract shall be the entire agreement between the OWNER AND/OR GENERAL CONTRACTOR and ARCHITECTURAL SHEET METAL, notwithstanding any previous communications and negotiations, whether oral or written, there being no covenants or agreements, inducements, guarantees, warranties or considerations, other than as set out herein. Each provision of this Agreement shall be construed as if both parties mutually drafted this Agreement. If a provision of this Agreement (or the application of it) is held by a court or arbitrator to be invalid or unenforceable, that provision will be deemed separable from the remaining provisions of the Agreement, will be reformed/enforced to the extent that it is valid and enforceable, and will not affect the validity or interpretation of the other provisions or the application of that provision to a person or circumstance to which it is valid and enforceable. Headings are for convenience only and do not affect interpretation. Acceptance shall be complete and the contract binding when signed by the OWNER AND/OR GENERAL CONTRACTOR or his representative and an authorized representative of ARCHITECTURAL SHEET METAL. Any changes in this Proposal and Contract must be approved in writing by an officer of ARCHITECTURAL SHEET METAL. If OWNER AND/OR GENERAL CONTRACTOR cancels this Agreement prior to the start of work, but not within the timeframe allowed by any/all applicable statutes or laws pertaining to cancellation, OWNER AND/OR GENERAL CONTRACTOR is liable for 15% of the total Agreement price as liquidated damages because ARCHITECTURAL SHEET METAL is unable to accurately measure its damages for the cancellation of this Agreement. By executing this Agreement, OWNER AND/OR GENERAL CONTRACTOR and ARCHITECTURAL SHEET METAL agree that the liquidated damages amount is fair and is not a penalty.

2. Payment: All sums not paid when due shall bear interest at the rate of one and a half percent (1 ½%) per month (or the maximum legal rate permitted by law if less). If OWNER AND/OR GENERAL CONTRACTOR does not make payment when due, OWNER AND/OR GENERAL CONTRACTOR agrees to pay all costs and expenses incurred in the collection of any unpaid sums, including reasonable attorney's fees. Punch items shall not be cause to delay the OWNER AND/OR GENERAL CONTRACTOR's payment to ARCHITECTURAL SHEET METAL. In addition, if a punch list exists, OWNER AND/OR GENERAL CONTRACTOR should pay 95% and withhold 5% until punch work is completed. If at any time OWNER AND/OR GENERAL CONTRACTOR fails to pay ARCHITECTURAL SHEET METAL in accordance with this Agreement, then ARCHITECTURAL SHEET METAL may, at its sole discretion, suspend shipments, performance of work, and/or warranties until full payment is made, and/or terminate this Agreement. If a suspension occurs that is not caused solely by ARCHITECTURAL SHEET METAL, the Agreement sum shall be increased by the amount of ARCHITECTURAL SHEET METAL'S costs of shut-down, delay, and start-up. If there is an increase in the actual cost of the labor, materials, fuel charges, or manufacturer's warranty charged to the ARCHITECTURAL SHEET METAL in excess of 5% subsequent to making this Agreement, the price set forth in this Agreement shall be increased without the need for a written change order or amendment to the contract to reflect the price increase and additional direct cost to the ARCHITECTURAL SHEET METAL. ARCHITECTURAL SHEET METAL will submit written documentation of the increased charges to the OWNER AND/OR GENERAL CONTRACTOR upon request. As an additional remedy, if the actual cost of any line item increases more than 10% subsequent to the making of this Agreement, ARCHITECTURAL SHEET METAL, at its sole discretion, may terminate the contract for convenience.

3. Delays: Neither ARCHITECTURAL SHEET METAL nor OWNER AND/OR GENERAL CONTRACTOR shall be responsible for loss or damage, whether actual or consequential or delays caused by circumstances beyond its control, including, without limitation, weather conditions, labor disputes and unavailability of materials, acts of God, accidents, pandemic, COVID-19 or viruses/illnesses, fire, vandalism, federal, state or local law, regulation or order, civil unrest, strikes, riots, protests, jurisdictional disputes, failure or delay of transportation, shortage of or inability to obtain materials, equipment or labor, changes in the work . However, if OWNER AND/OR GENERAL CONTRACTOR or anyone performing work at their direction interferes with or interrupts ARCHITECTURAL SHEET METAL in the performance of its work during work hours, it is agreed that the OWNER AND/OR GENERAL CONTRACTOR shall pay all extra expenses involved in making up the time lost, including, but not limited to, overtime and/or idle time and/or extra traveling expenses caused thereby.

4. Extra Work: Any work which is performed with OWNER AND/OR GENERAL CONTRACTOR's knowledge or consent and which is not included on the reverse side or attached shall be deemed as extra and shall be paid for accordingly. Unless specifically included any work to repair or replace the structural deck by reason of rotten wood, or other conditions making it unsuitable for supporting the roofing materials, shall be extra work.

5. Pre-Existing Conditions, Mold, Lead Based Paint and Asbestos: ARCHITECTURAL SHEET METAL shall not be responsible or liable for damages resulting from pre-existing conditions; to include mold, lead-based paint, asbestos and other conditions such as deteriorated roofing or rotten wood, which existed prior to ARCHITECTURAL SHEET METAL's commencement of work. While ARCHITECTURAL SHEET METAL shall seek to minimize any such damage, it is understood where such deteriorated conditions exist, the normal performance of work may result in damage. This Proposal and Contract is based upon the assumption by ARCHITECTURAL SHEET METAL that materials to be removed by ARCHITECTURAL SHEET METAL do not include or contain asbestos, lead based paint or other toxic materials and that asbestos-containing, lead containing, or other toxic materials will not be encountered or disturbed during the course of performing the work. If materials containing asbestos are encountered or mold, lead-based paint or other such conditions are present when performing the work, ARCHITECTURAL SHEET METAL shall not be responsible or liable for any claims associated with such lead-based paint, asbestos, mold or other pre-existing conditions whether those claims arise in law, equity, contract, warranty, tort, or federal or state statutory claims and OWNER AND/OR GENERAL CONTRACTOR agrees to hold harmless and indemnify ARCHITECTURAL SHEET METAL against any such claims or losses resulting from lead-based paint, asbestos, mold or other pre-existing conditions found on OWNER AND/OR GENERAL CONTRACTOR's premises or should mold appear at any time after work is completed.

6. Warranty: Unless otherwise provided: **THERE ARE NO EXPRESS OR IMPLIED WARRANTIES WHATSOEVER INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.** ARCHITECTURAL SHEET METAL's work will be warranted by ARCHITECTURAL SHEET METAL in accordance with its standard LIMITED WORKMANSHIP WARRANTY FOR COMMERCIAL ROOFING, which is made a part of this Proposal and Contract and incorporated by reference. A copy of ARCHITECTURAL SHEET METAL's LIMITED WORKMANSHIP WARRANTY FOR COMMERCIAL ROOFING, is attached or, if not, will be furnished upon request. ARCHITECTURAL SHEET METAL SHALL NOT BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES. The acceptance of the Proposal and Contract by the OWNER AND/OR GENERAL CONTRACTOR signifies his/her agreement that this warranty shall be and is the exclusive remedy against ARCHITECTURAL SHEET METAL. A manufacturer's warranty shall be furnished to OWNER AND/OR GENERAL CONTRACTOR is a manufacturer's warranty is called for on the face of this Proposal and Contract. It is expressly agreed that in the event of any defects in the materials furnished pursuant to this Proposal and Contract, OWNER AND/OR GENERAL CONTRACTOR shall have recourse only against the manufacturer of such material. . If there is a breach in the applicable manufacturer's warranty according to the stated terms and conditions of said warranty, ARCHITECTURAL SHEET METAL'S warranty is simultaneously void and all of ARCHITECTURAL SHEET METAL'S responsibility/liability to correct, supplement, rectify, fix, etc. any/all issue(s) as a result of such breach. All warranties/guarantees provided by ARCHITECTURAL SHEET METAL, if any, shall be deemed null and void if OWNER AND/OR GENERAL CONTRACTOR fails to strictly adhere to the Agreement's payment terms; warranties only issued upon payment in full.

7. Access to Work and Working Hours: OWNER AND/OR GENERAL CONTRACTOR shall grant free and open access to work areas for workmen and vehicles and shall allow areas for storage of materials and debris. OWNER AND/OR GENERAL CONTRACTOR agrees to keep driveways, parking lots, and other work sites, clean and available for movement and parking of trucks during normal work hours. ARCHITECTURAL SHEET METAL shall not be responsible for reasonable wear and movement of trucks, men, equipment, materials, debris, etc. ARCHITECTURAL SHEET METAL disclaims any and all liability for the grading, leveling, slope or construction of the roof deck, the roofing system, structure and/or appurtenances This Proposal and Contract is based upon the performance of all work during ARCHITECTURAL SHEET METAL's regular working hours, and extra charges will be made for all work performed other than during ARCHITECTURAL SHEET METAL's regular working hours, if required by OWNER AND/OR GENERAL CONTRACTOR.

8. Working Conditions: ARCHITECTURAL SHEET METAL shall not be required to install its material either (a) under conditions contrary to manufacturer's instructions; (b) under adverse weather conditions; (c) under conditions which are generally unacceptable in the trade; and (d) where jobsite conditions are not suitable for proper installation of materials. ARCHITECTURAL SHEET METAL shall not be required to provide or be responsible for the installation erection of temporary weather protection facilities.

9. Labor and Materials: ARCHITECTURAL SHEET METAL agrees to furnish labor and materials either directly or through subcontractors retained by ARCHITECTURAL SHEET METAL to complete the work as specified on face of Proposal and Contract attached.

10. Insurance: Worker's Compensation, General Liability and such other insurance as is required by law, will be carried by ARCHITECTURAL SHEET METAL to complete the work as specified, on the Proposal and Contract attached. OWNER AND/OR GENERAL CONTRACTOR shall purchase and maintain builder's risk and property insurance, including the labor and materials furnished by ARCHITECTURAL SHEET METAL, covering fire, wind storm, extended coverage, malicious mischief, vandalism and theft on the premises to protect against loss or damage to material and in-place work until the job is completed and accepted by the OWNER and/or GENERAL CONTRACTOR.

11. Utilities: OWNER AND/OR GENERAL CONTRACTOR shall furnish at no cost to ARCHITECTURAL SHEET METAL all required electric and/or water service.

12. Title to Property: Title of this property is recorded in the name(s) of the OWNER AND/OR GENERAL CONTRACTOR stated on the Proposal and Contract attached unless otherwise noted OWNER AND/OR GENERAL CONTRACTOR agrees inasmuch as the equity in this property is a consideration for ARCHITECTURAL SHEET METAL performing work to improve the property, said property will not be sold or transferred until full payment is made to ARCHITECTURAL SHEET METAL.

13. Variances and Zoning: OWNER AND/OR GENERAL CONTRACTOR shall be responsible for variances and zoning changes required in connection with the work provided for hereunder, to include but not be limited to associations, covenants, local building codes, ordinances and any other restrictions effecting ARCHITECTURAL SHEET METAL's ability to perform its work. In the event that state, county, or municipal codes or regulations require work not expressly set forth in this Agreement or that differs materially from that generally recognized as inherent in work of the character provided for in this Agreement, all extra costs for ARCHITECTURAL SHEET METAL'S labor and materials shall be the sole obligation of the OWNER AND/OR GENERAL CONTRACTOR. ARCHITECTURAL SHEET METAL shall not be responsible for work performed that does not comply with or conform to the property restrictions or covenants and OWNER AND/OR GENERAL CONTRACTOR agrees to indemnify and hold ARCHITECTURAL SHEET METAL harmless for same.

14. Final Acceptance of Work Upon Completion: OWNER AND/OR GENERAL CONTRACTOR shall have the opportunity to inspect ARCHITECTURAL SHEET METAL's work. If OWNER AND/OR GENERAL CONTRACTOR believes that ARCHITECTURAL SHEET METAL's work is incomplete or unsatisfactory, OWNER AND/OR GENERAL CONTRACTOR shall so inform ARCHITECTURAL SHEET METAL in writing at that time, otherwise, ARCHITECTURAL SHEET METAL's work shall be deemed accepted.

15. Disputes: At the discretion and sole election of ARCHITECTURAL SHEET METAL, ARCHITECTURAL SHEET METAL may require that all disputes, claims or demands, of whatever kind, be resolved by arbitration, administered by and in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association (the "AAA"). This Proposal and Contract, and all rights, responsibilities, and liabilities arising therefrom, shall be governed and construed in accordance with the laws of the State of Florida, and any litigation or arbitration with the laws of the State of Florida, and any litigation or arbitration arising out of this proposal and Contract shall be brought, maintained and Administered in Orange County, Florida.. Should either party employ an attorney to institute litigation or arbitration to enforce any of the provisions hereof to protect its interest in any matter arising under, arising out of, or related to this Agreement, the prevailing party shall be entitled to recover from the non-prevailing party, all of its attorney's fees, costs, and expenses incurred through arbitration, litigation, appeals, administrative and/or bankruptcy proceedings.

16. Insurance Claims: In the event work is being paid through an insurance claim, it is understood that all costs not covered and paid by the insurance company remains the responsibility of the OWNER AND/OR GENERAL CONTRACTOR, regardless what the work is for, (i.e.: roof, deck replacement for rotted wood, windows, siding, or any other) and that payment to ARCHITCTURAL SHEET METAL shall not be contingent upon OWNER AND/OR GENERAL CONTRACTOR 'S receipt of payment from any third party, specifically including, but not limited to, payment from OWNER AND/OR GENERAL CONTRACTOR'S insurer.

17. Acceptance of Deck: ARCHITECTURAL SHEET METAL'S commencement of roof installation indicates only that ARCHITCTURAL SHEET METAL has visually inspected the surface of the roof deck for visible defects. ARCHITCTURAL SHEET METAL is not responsible for the structural sufficiency, quality of construction, undulations, fastening, or moisture content of the roof deck or other trades' work or design and their effect on the roof roofing materials. OWNER AND/OR GENERAL CONTRACTOR warrants that structures on which ARCHITCTURAL SHEET METAL is to work are in sound condition and capable of withstanding roof construction, equipment, and operations.

18. Indemnification: To the fullest extent permitted by law, OWNER AND/OR GENERAL CONTRACTOR shall defend, indemnify and hold ARCHITECTURAL SHEET METAL harmless and its officers, directors, employees and agents (collectively, "Indemnitees") harmless from any claims, demands, liabilities, damages, costs, suits by any person or persons, losses, and expenses, including attorney's fees arising out of or resulting from the execution of or in connection with the work including, without limitation: (1) claims or demands of the tenants or individual owners' of the buildings located on the Property, (2) personal injury, (3) wrongful death, or (4) property damages. The OWNER AND/OR GENERAL CONTRACTOR'S obligation to indemnify under this provision shall not include the obligation to indemnify the Indemnitees for their own negligence.

19. Controlling Document: Any issuance of a Notice to Proceed, Work Order, Contract based on this proposal constitutes unequivocal acceptance of these Terms and Conditions. Where any provision in subsequent contract documents pertaining to this proposal is inconsistent with the provisions of these Terms and Conditions the provisions presented here shall govern.

20. Latent Conditions: ARCHITECTURAL SHEET METAL shall not be responsible for additional costs due to the existence of utilities, wet insulation, deteriorated deck or rotten deck, furnace or HVAC lines or other subsurface or latent conditions that are not disclosed in writing to ARCHITECTURAL SHEET METAL prior to the start of the work. The disconnection or reconnection of any mechanical equipment that may be necessary for ARCHITECTURAL SHEET METAL to perform the work shall be performed by others and treated as an additional cost, an extra cost. ARCHITECTURAL SHEET METAL is not responsible for leaks or other damages due to the condition of the existing roof. ARCHITECTURAL SHEET METAL shall notify OWNER AND/OR GENERAL CONTRACTOR if subsurface or latent conditions are discovered requiring additional work and shall not be obligated to proceed with the additional work until authorized by the OWNER AND/OR GENERAL CONTRACTOR and the Agreement amount shall be equitably adjusted. ARCHITECTURAL SHEET METAL disclaims liability for such discovered conditions.

21. Not Design Professionals: ARCHITECTURAL SHEET METAL does not provide engineering, consulting, or architectural services. It is the OWNER AND/OR GENERAL CONTRACTOR's responsibility to retain a licensed architect or engineer to determine the design and code compliance. ARCHITECTURAL SHEET METAL assumes no responsibility for structural integrity, compliance with building codes, or design of OWNER AND/OR GENERAL CONTRACTOR's structure. ARCHITECTURAL SHEET METAL will install roofing per code and manufacturer's specifications. If plans, specifications, or other design documents have been furnished to ARCHITECTURAL SHEET METAL, OWNER AND/OR GENERAL CONTRACTOR warrants all structures to be sound condition capable of withstanding normal roofing construction equipment and operations. ARCHITECTURAL SHEET METAL is not responsible for location of roof drains, adequacy of drainage or ponding on the roof.

22. Credit Information: ARCHITECTURAL SHEET METAL reserves the right to obtain credit information on OWNER AND/OR GENERAL CONTRACTOR. If ARCHITECTURAL SHEET METAL finds in its opinion the OWNER AND/OR GENERAL CONTRACTOR's credit is unsatisfactory, ARCHITECTURAL SHEET METAL shall have the right to terminate this Agreement for its convenience, without penalty upon written notice to OWNER AND/OR GENERAL CONTRACTOR. .

23. Material References: ARCHITECTURAL SHEET METAL is not responsible for the actual verification of technical specifications of product manufacturers; (i.e.: R Value, ASTM or UL compliance), but rather the materials used are represented as such by the material manufacturer. Metal roofing and especially lengthy flat span sheet metal panels will often exhibit waviness, commonly referred to as "oil-canning." ARCHITECTURAL SHEET METAL is not responsible for oil-canning. ARCHITECTURAL SHEET METAL is not responsible for defective products if ARCHITECTURAL SHEET METAL did not know such products were defective prior to the installation of same.

24. Fumes and Emissions: ARCHITECTURAL SHEET METAL and OWNER AND/OR GENERAL CONTRACTOR acknowledge that asphalt will be heated by ARCHITECTURAL SHEET METAL, odors and emissions from roofing products will be released and noise will be generated as part of the roofing operations to be performed by ARCHITECTURAL SHEET METAL. OWNER AND/OR GENERAL CONTRACTOR shall be responsible for interior air quality including controlling mechanical equipment, HVAC units, intake vents, wall vents, windows, doors and other openings to prevent fumes and odors from entering the building. OWNER AND/OR GENERAL CONTRACTOR is aware that roofing products emit fumes, vapors and odors during the application process. OWNER AND/OR GENERAL CONTRACTOR shall hold ARCHITECTURAL SHEET METAL harmless from claims from third parties relating to fumes and odors that are emitted during the normal roofing process.

25. Interior Protection: OWNER AND/OR GENERAL CONTRACTOR acknowledges that re-roofing of an existing structure may cause disturbance, dust, or debris to fall into the interior and possible, if hot asphalt or pitch is used, drippage may occur depending upon deck conditions. OWNER AND/OR GENERAL CONTRACTOR agrees to remove or protect property directly below the roof in order to minimize potential interior damage. ARCHITECTURAL SHEET METAL shall not be responsible for disturbance, damage, clean-up, or loss to interior property that ARCHITECTURAL SHEET METAL did not remove or protect prior to commencement of roofing operations.

26. Leaks: ARCHITECTURAL SHEET METAL and OWNER AND/OR GENERAL CONTRACTOR are committed to acting promptly so that roof leaks are not a source of potential interior mold growth. OWNER AND/OR GENERAL CONTRACTOR will make periodic inspections for signs of water intrusion and will provide written notice to ARCHITECTURAL SHEET METAL within 24 hours of the discovery of such leak if OWNER AND/OR GENERAL CONTRACTOR believes there are roof leaks, to correct the condition. Failure of OWNER AND/OR CONTRACTOR to provide written notice to ARCHITECTURAL SHEET METAL within this time will result in the OWNER AND/OR GENERAL CONTRACTOR waiving all claims that may be brought against ARCHITECTURAL SHEET METAL because of or relating to the roof leak, including claims arising in law, equity, contract, warranty, tort, or federal or state statutory claims. If ARCHITECTURAL SHEET METAL determines there is a roof leak related to its scope of work, ARCHITECTURAL SHEET METAL will make repairs promptly. Notwithstanding anything to the contrary, ARCHITECTURAL SHEET METAL disclaims all liability for all claims pertaining to or related to mildew, algae, fungus, mold, and/or other indoor air allergens ("Mold"), including claims arising out or relating to the detection, removal, disposal, or remediation of Mold, whether those claims arise in law, equity, contract, warranty, tort, or federal or state statutory claims, and whether those claims are based on the acts or omissions of ARCHITECTURAL SHEET METAL or individuals or entities under ARCHITECTURAL SHEET METAL's control. The OWNER AND/OR GENERAL CONTRACTOR is solely liable and responsible for all damages, whether actual or consequential, caused by Mold and incurred by OWNER AND/OR GENERAL CONTRACTOR, ARCHITECTURAL SHEET METAL or third parties, and agrees to indemnify, defend, and hold ARCHITECTURAL SHEET METAL harmless from any and all claims arising out of or relating to Mold.

27. Material Shortage/Substitution: In the event that any specified material or equipment becomes unavailable either temporarily or permanently after the Project Specific Agreement is executed, provided that such availability is a result of factors beyond ARCHITECTURAL SHEET METAL control, then in the event of temporary unavailability, the contract time shall be extended to reflect the duration of time that ARCHITECTURAL SHEET METAL is delayed by the unavailability, and in the case of permanent unavailability, ARCHITECTURAL SHEET METAL shall be excused from providing said material or equipment and allowed to provide an available substitute. To the extent an available substitute is provided by ARCHITECTURAL SHEET METAL under this provision, any increase in the cost between the originally specified material or equipment and its substitute shall be paid by the OWNER AND/OR GENERAL CONTRACTOR to ARCHITECTURAL SHEET METAL. Due to material shortages, OWNER AND/OR GENERAL CONTRACTOR may experience delays related to the inability to timely obtain materials for this project. In the event of such a delay, ARCHITECTURAL SHEET METAL shall notify OWNER AND/OR GENERAL CONTRACTOR and OWNER AND/OR GENERAL CONTRACTOR agrees to provide ARCHITECTURAL SHEET METAL with an extension of time for any delay attributable to the temporary inability to obtain materials.

28. **Damage Limitation.** In no event, whether based on contract, warranty (express or implied), tort, negligence, federal or state statute or otherwise arising from or relating to the work and services performed under the Agreement, shall ARCHITECTURAL SHEET METAL be liable for special, consequential, punitive, or indirect damages, including, without limitation, loss of use or loss of profits. OWNER AND/OR GENERAL CONTRACTOR waive any/all subrogation claims or rights against ARCHITECTURAL SHEET METAL to the extent such claim is covered by insurance. OWNER AND/OR GENERAL CONTRACTOR shall hold harmless, defend, and indemnify ARCHITECTURAL SHEET METAL for/from all claims that relate to or arise out of any responsibility/liability which is expressly disclaimed by ARCHITECTURAL SHEET METAL in these Terms and Conditions.

29. **Unforeseen Decking Lines.** Installation of a new roof to the deck area of the building requires nails and/or screws to be inserted into the deck area. By code, electrical, plumbing, telephone and security wiring, and air conditioning wiring and lines should not be installed directly beneath the roof deck. If Customer is aware of these or any other such lines, Customer must notify Contractor immediately as the Contractor will not be responsible for the puncture of improperly installed lines or lines within three inches of the roof deck. Customer accepts full responsibility for any repair or replacement that may be necessary.

30. **ARCHITECTURAL SHEET METAL'S DEFAULT.** OWNER AND/OR GENERAL CONTRACTOR shall give ARCHITECTURAL SHEET METAL at least **seven (7) days** written notice and the opportunity to cure, or such additional time as is reasonably necessary to cure the alleged breach, before declaring ARCHITECTURAL SHEET METAL in default of this Agreement. It is OWNER AND/OR GENERAL CONTRACTOR'S responsibility to notify ARCHITECTURAL SHEET METAL in writing within **three (3) days** (unless otherwise provided for in the Agreement) of the occurrence of any claim, defect, or deficiency arising out of work performed, services supplied, or materials provided by ARCHITECTURAL SHEET METAL under this Agreement ("Occurrence"). Failure of the OWNER AND/OR GENERAL CONTRACTOR to provide written notice of the Occurrence will result in the OWNER AND/OR GENERAL CONTRACTOR waiving all claims that may be brought against ARCHITECTURAL SHEET METAL because of or relating to the Occurrence, including claims arising in law, equity, contract, warranty, tort, or federal or state statutory claims.

31. **Jury Trial Waiver.** In the event of litigation between the parties to this Agreement, the parties KNOWINGLY, VOLUNTARILY, IRREVOCABLY AND INTENTIONALLY WAIVE THE RIGHT TO A TRIAL BY JURY IN RESPECT TO ANY LITIGATION ARISING OUT OF OR PERTAINING TO THE AGREEMENT, OR ANY COURSE OF CONDUCT, COURSE OF DEALINGS, STATEMENTS (WHETHER VERBAL OR WRITTEN) OR ACTIONS OF ANY PERSON OR PARTY RELATED TO THIS AGREEMENT; THIS IRREVOCABLE WAIVER OF THE RIGHT TO A JURY TRIAL IS A MATERIAL INDUCEMENT FOR THE PARTIES TO ENTER THIS AGREEMENT.

Christine Carasas

From: Jada Oliver <Jada@asmfl.com>
Sent: Monday, November 18, 2024 8:53 AM
To: Jeff Bridges
Cc: Wharton Smith Commercial Estimating; Josh Blubaugh; Mike Gulla
Subject: REVISED PROPOSAL_Port Orange Public Utilities 11/18/2024
Attachments: REVISED PROPOSAL_Port Orange Public Utilities_11182024.pdf; Revised Bid Form_General_Rev.10-25_ASM EXEC 11-18-2024.pdf

Good morning,

Attached please find our revised proposal for the above-referenced project.

If you have any questions, please contact Michael Gulla

On Behalf of Michael Gulla, Estimator

Thank you,

Jada Oliver
Preconstruction Coordinator

Architectural Sheet Metal, Inc.
1801 Premier Row
Orlando, FL 32809
P: (407) 855-7183
F: (407) 855-0632

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ROOFING AND SHEET METAL

MIAMI • ORLANDO • TAMPA

Roof Proposal for:

Wharton-Smith, Inc

Attn: James Manyette

Phone: (407)-321-8410

Fax: N/A

Bid Date: November 12, 2024

Project**: Port Orange Public Utilities**

Project Address: 4505 Clyde Morris Blvd

City/State: Port Orange, Florida 32809

We hereby submit this contract for the above-referenced project. Our proposal based on plans dated 01/05/2023, includes the costs to furnish and install a Standing seam roof system, along with the specified roof system components and accessories, as required to provide a watertight roofing system. Our proposed roof system includes a 20-year Weather Tightness Warranty.

SPECIFICATION

We hereby propose and offer contract to perform all work, as follows:

JOB START

- Prior to starting of work owner shall receive a certificate of insurance from P&A Roofing & Sheet Metal
- An inspection of the existing conditions shall be performed, to record and report prior damages and detrimental conditions.
- A pre-roofing conference shall be held with the Owner's representative to coordinate this project.

Twenty Year No Dollar Limit Warranty

STANDING SEAM METAL ROOFING

- Furnish and install Min R-30 polyisocyanurate over structural steel decking per plans and specifications.
- Furnish and install 5/8" gypsum sheathing over installed insulation per plans and specifications.
- Furnish and install High-Temperature self-adhered underlayment per manufacturer's specifications.
- Furnish and install 24 ga Kynar coated 16" wide double folded standing seam roof systems per plans and specifications.
- Fabricate and install 24 ga Kynar coated hips, ridges, eave, and peak metal per the manufacturer's specifications.
- Fabricate and install 24ga Kynar gutter system with downspouts at eaves per drawings and specifications.
- Furnish and install all counter flashings, and terminations required for a watertight roof system.

ROOFING AND SHEET METAL

MIAMI • ORLANDO • TAMPA

WARRANTY

- Owner shall receive a 20-year warranty from the standing seam roof system manufacturer.
- Owner shall receive a 2-year workmanship warranty from P&A Roofing and Sheet Metal.

We hereby propose to furnish labor and materials - complete in accordance with the above roofing specifications, for the sum of:

$389,000.00

(Three Hundred Eighty-Nine Thousand Dollars)

EXCLUSIONS:

- All M.E.P.
- All PEMB
- All liquid waterproofing systems.
- All soffit.
- All pre-engineered canopies and associated trim.
- All composite wall panels.
- All premium color selections.
- All louvers and access doors.
- All Fixed ladders.
- All signage and associated trim.
- All metal flashing not directly related to the roof system.
- All EIFS, stucco, brick or stone and associated trim.
- All Saw cutting of all CMU and tilt walls.
- All caulking at coping face and vertical wall transitions.
- Providing or installation of all roof access ladders.
- All insulation or cover board at the vertical walls.
- All wind rider warranties.
- All Textura Construction Payment Management fees.

NOTES:

- Payment terms are to be negotiated.
- Add 1.5% for payment and performance bond if required.

ROOFING AND SHEET METAL

MIAMI • ORLANDO • TAMPA

ACCEPTANCE OF PROPOSAL

The above prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payment will be made as outlined above.

Date: _____ Signature: _____

Date: _____ Signature: _____

Sincerely,

Ryan Upchurch

Project Estimator
P&A Roofing and Sheet Metal

Christine Carasas

From: ConstructConnect <DoNotReply@constructconnectmail.com>
Sent: Tuesday, November 12, 2024 1:35 PM
To: Wharton Smith Commercial Estimating
Subject: Received bid for Port Orange Public Utilities Field Ops Bldg.

A simpler, more effective bid process

You've received a bid from P & A Roofing and Sheet Metal via ConstructConnect

Port Orange Public Utilities Field Ops Bldg.

Project Details

Project Name	Port Orange Public Utilities Field Ops Bldg.
Bid Date	Nov 12, 2024 @ 02:00 PM ET
Project ID	6613997

View Project

Bid Details

Company	P & A Roofing and Sheet Metal
Bid Amount	$389,000
Submission Date	Nov 12, 2024 @ 01:34 PM ET
Description	
Bid Attachments	Port Orange Utilities Building Proposal.pdf

Contact Details

Primary Contact	Ryan Upchurch

Email rupchurch@pa-roofing.com
Phone
Website



Support Number: (877) 4CC-TOOL (422-8665)

Email: customerservice@constructconnect.com

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To learn more about the use of personal information by ConstructConnect, please read our Privacy Policy.

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ROOFING AND SHEET METAL

MIAMI • ORLANDO • TAMPA

Roof Proposal for:

Wharton-Smith, Inc

Attn: Jeff Bridges

Phone: (407)-408-5660

Fax: N/A

Bid Date: November 15, 2024

Project**: Port Orange Public Utilities**

Project Address: 4505 Clyde Morris Blvd

City/State: Port Orange, Florida 32809

We hereby submit this contract for the above-referenced project. Our proposal based on plans dated 01/05/2023, includes the costs to furnish and install a Standing seam roof system, along with the specified roof system components and accessories, as required to provide a watertight roofing system. Our proposed roof system includes a 20-year Weather Tightness Warranty.

SPECIFICATION

We hereby propose and offer contract to perform all work, as follows:

JOB START

- Prior to starting of work owner shall receive a certificate of insurance from P&A Roofing & Sheet Metal
- An inspection of the existing conditions shall be performed, to record and report prior damages and detrimental conditions.
- A pre-roofing conference shall be held with the Owner's representative to coordinate this project.

Twenty Year No Dollar Limit Warranty

STANDING SEAM METAL ROOFING

- Furnish and install Min R-30 polyisocyanurate over structural steel decking per plans and specifications.
- Furnish and install 5/8" gypsum sheathing over installed insulation per plans and specifications.
- Furnish and install High-Temperature self-adhered underlayment per manufacturer's specifications.
- Furnish and install 24 ga Kynar coated 16" wide double folded standing seam roof systems per plans and specifications.
- Fabricate and install 24 ga Kynar coated hips, ridges, eave, and peak metal per the manufacturer's specifications.
- Fabricate and install 24ga Kynar gutter system with downspouts at eaves per drawings and specifications.
- Furnish and install all counter flashings, and terminations required for a watertight roof system.

ROOFING AND SHEET METAL

MIAMI • ORLANDO • TAMPA

WARRANTY

- Owner shall receive a 20-year warranty from the standing seam roof system manufacturer.
- Owner shall receive a 2-year workmanship warranty from P&A Roofing and Sheet Metal.

We hereby propose to furnish labor and materials - complete in accordance with the above roofing specifications, for the sum of:

$389,000.00

(Three Hundred Eighty-Nine Thousand Dollars)

Add Alternate #1: Furnish and Install Pac-Clad, Pac-850 Aluminum Soffit. **ADD = $153,000.00**

EXCLUSIONS:

- All M.E.P.
- All PEMB
- All liquid waterproofing systems.
- All soffit.
- All pre-engineered canopies and associated trim.
- All composite wall panels.
- All premium color selections.
- All louvers and access doors.
- All Fixed ladders.
- All signage and associated trim.
- All metal flashing not directly related to the roof system.
- All EIFS, stucco, brick or stone and associated trim.
- All Saw cutting of all CMU and tilt walls.
- All caulking at coping face and vertical wall transitions.
- Providing or installation of all roof access ladders.
- All insulation or cover board at the vertical walls.
- All wind rider warranties.
- All Textura Construction Payment Management fees.

NOTES:

- Payment terms are to be negotiated.
- Add 1.5% for payment and performance bond if required.

ROOFING AND SHEET METAL

MIAMI • ORLANDO • TAMPA

ACCEPTANCE OF PROPOSAL

The above prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payment will be made as outlined above.

Date: _____ Signature: _____

Date: _____ Signature: _____

Sincerely,

Ryan Upchurch

Project Estimator
P&A Roofing and Sheet Metal

Christine Carasas

From: Jeff Bridges
Sent: Friday, November 15, 2024 7:48 AM
To: Wharton Smith Commercial Estimating
Cc: James Manyette
Subject: FW: 07_Roofing_P & A Roofing and Sheet Metal.pdf
Attachments: Port Orange Utilities Building Proposal with ALT.pdf

07_Roofing_P & A Roofing and Sheet Metal_R1

Jeff Bridges | Preconstruction Services Manager – Commercial
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771
Office: (407) 321-8410 | Cell: (407) 408-5660

From: Ryan Upchurch <rupchurch@pa-roofing.com>
Sent: Friday, November 15, 2024 7:20 AM
To: Jeff Bridges <jbridges@whartonsmith.com>
Subject: Re: 07_Roofing_P & A Roofing and Sheet Metal.pdf

Jeff,
Please see proposal with add for metal soffit system. The includes hat channel and "J".

Thank you,
Ryan

Ryan M. Upchurch

Project Estimator

4495 35th Street

Orlando, Florida 32811

O: (407) 650-9541

F: (407) 650-9542

rupchurch@pa-roofing.com



From: Jeff Bridges <jbridges@whartonsmith.com>
Sent: Thursday, November 14, 2024 11:36 AM
To: Ryan Upchurch <rupchurch@pa-roofing.com>
Subject: Re: 07_Roofing_P & A Roofing and Sheet Metal.pdf

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That'll work, Ryan.

Jeff Bridges
407-408-5660

From: Ryan Upchurch <rupchurch@pa-roofing.com>
Sent: Thursday, November 14, 2024 11:19:22 AM
To: Jeff Bridges <jbridges@whartonsmith.com>
Subject: Re: 07_Roofing_P & A Roofing and Sheet Metal.pdf

Hey Jeff,
I can provide you with the add for the soffit (M2) on A141A & B.

I cannot provide or install ACM panels or any vertical metal panels.

Regards,
Ryan

Ryan M. Upchurch

Project Estimator

4495 35th Street

Orlando, Florida 32811

O: (407) 650-9541

F: (407) 650-9542

rupchurch@pa-roofing.com

ROOFING AND SHEET METAL

From: Jeff Bridges <jbridges@whartonsmith.com>
Sent: Thursday, November 14, 2024 11:01 AM
To: Ryan Upchurch <rupchurch@pa-roofing.com>
Subject: RE: 07_Roofing_P & A Roofing and Sheet Metal.pdf

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Hey Ryan,

Still struggling with this scope and prices all over the board.

1. Did you include the fascia and the soffit material shown?
    1. See details on A551 and finish call outs of 300-31 on A201 and A202.
    2. If not, I need you to include it. You can break it out as an add.
2. Can you include the ACM panels?
    1. See details on A551 and finish call outs of 300-35 on A201 and A202.
3. Can you include the metal soffit system shown on the RCP's?
    1. See sheets A141A and A141B with finish call outs of M2.
        i. I believe the M2 may be the same soffit material shown in the details on A551.

Feel free to call me with any questions.

Jeff Bridges | Preconstruction Services Manager – Commercial

Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com

750 Monroe Road, Sanford, FL 32771

Office: (407) 321-8410 | Cell: (407) 408-5660

From: Jeff Bridges
Sent: Tuesday, November 12, 2024 3:32 PM
To: rupchurch@pa-roofing.com
Subject: 07_Roofing_P & A Roofing and Sheet Metal.pdf

Ryan,

Give me a call when you can to go over your scope.

Something is off...

Jeff Bridges | Preconstruction Services Manager – Commercial

Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com

750 Monroe Road, Sanford, FL 32771

Office: (407) 321-8410 | Cell: (407) 408-5660

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CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!

Subcontractor Bid Form-General

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	S&S Roofing Systems, Inc
Scope of Work:	Standing Seam Metal Roofing

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	**$** 867,000.00
Amount in Words:	Eight Hundred and Sixty Seven Thousand Dollars

(1.2) Alternates (Voluntary)

NA	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	Roofing, Wall Panels, Soffit, Crane, Boom Lift, Fork Lift
Amount:	$ 361,000.00

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1	NA	$
2		$
3		$

(1.5) MWBE Participation

MWBE	$ NA
LDB	$ NA
VBE	$ NA

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %: 2%	

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)
NA			

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	01	Dated:	11/7/24	RFI No.		Dated:	
RFI No.	02	Dated:	11/11/24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	01	Dated:	10/22/24	WSI No.	04	Dated:	10/28/24	07 11/6/24
WSI No.	02	Dated:	10/24/24	WSI No.	05	Dated:	10/31/24	08 11/8/24
WSI No.	03	Dated:	10/24/24	WSI No.	06	Dated:	11/4/24	

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.	NA	Dated:	NA	ASI No.	NA	Dated:	NA

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.	NA	Dated:		Addenda No.	NA	Dated:	
Addenda No.	NA	Dated:		Addenda No.	NA	Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

S&S Roofing Systems, Inc

Company Name

2949 W. SR 434 Suite 300 Longwood FL 32779

Address (Street, City, State, Zip)

407-696-4334 tdurrance@ss-roofing.com

Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: S&S Roofing Systems, Inc
By: Troy Durrance
Printed Name: Troy Durrance
Title: Project Manager
Dated: 11/12/2024
License No.: CCC058106

Date 11/12/2024 **Proposal 24-268**

Project: City of Port Orange Public Utilities Field Operations Facility

Scope of Work for Steep Slope Roof – Standing Seam Roof – Administration Bldg.

1) Supply and install 2 layers of 2.6" polyisocyanurate to roof.
2) Supply and install 5/8" coverboard over insulation
3) Supply and install self-adhered high temperature underlayment.
4) Supply and install Berridge Double Lock Zee Lock, 040 aluminum 16" wide standing seam roof panels in 3 coat fluoropolymer color.
5) Supply and install all flashing and trims associated with the roof system. Flashings to match roof gauge .040 aluminum in 3 coat fluoropolymer color.
6) Supply and install 8" .040 aluminum box gutter in 3 coat fluoropolymer color.
7) Supply and install .040 aluminum 4"x4" square downspouts in 3 coat fluoropolymer color.
8) Supply and install .040 aluminum metal fascia in 3 coat fluoropolymer color.
9) Supply and install .040 aluminum metal soffit in 3 coat fluoropolymer color.
10) Supply and install wall panels in 3 coat fluoropolymer color.
11) Issue manufactures standard material finish warranty.
12) Issue manufacturer's standard 20-year weather tightness warranty.
13) Issue S&S 2-year workmanship warranty.

Additions, Inclusions, Exclusions, and Clarifications:

- **ADD**
  1) 2% for Bond
- **Includes**:
  1) Hoisting
  2) Material handling
  3) Equipment
  4) Taxes
  5) Permitting
  6) Administration Building Roof System only
- **Clarifications**:
  1) Price is based on first shift work.
  2) Any additional clip spacing or changes to the manufactures site-specific engineering or fastener type by FM will be an additional cost.
  3) Multiple mobilizations or out-of-sequence work will result in additional charges.
  4) Metal roof system and all roof flashings are priced in standard color. 3 coat fluoropolymer color.
  5) All work is to be done according to industry standards and conforming to all applicable codes.
  6) All materials and labor are to be provided by S&S Roofing Systems.
  7) Removal of all debris generated by this scope of work shall be legally disposed of off-site by the general contractor.
  8) Any scope of work that is not specified specifically in this proposal is considered excluded and will be additional costs.

- **<u>Excludes</u>**:
  1) Premanufactured metal building work of any kind – Warehouse Building
  2) Covered parking prefabricated structures.
  3) Wall panels on prefabricated structures
  4) Insulation of any kind under wall panels
  5) Hat channel for soffit or wall panel attachment.
  6) Dumpsters
  7) Guardrails of any kind
  8) Fascia board of any kind.
  9) Wall cladding of any kind
  10) Foam trim.
  11) Davis Bacon wages/Prevailing wages
  12) Badging
  13) Roof decking of any kind
  14) Engineering.
  15) Sheathing of any kind other than what is listed in scope of work.
  16) Siding other than wall panels listed in scope of work above.
  17) Scaffolding
  18) Liquid applied waterproofing of any kind
  19) Spray foam
  20) Framing for attachment
  21) MEP trades
  22) Gypsum Soffit
  23) ACM panels of any kind
  24) Insulation other than roof insulation
  25) Louvers or related flashings and trim touching louvers
  26) Lightning protection work or certifications.
  27) Supplemental framing
  28) Wood blocking
  29) Bond
  30) Purlins/light gauge framing
  31) Fireproofing
  32) Painting, backer rods, nonroof related sealants
  33) Non-roof related flashings
  34) Stucco, brick or stone, EFIS or EFIS related décor and flashings
  35) Wall panel liquid or membrane waterproofing
  36) Window flashings
  37) Liquidated damages

Work to be performed for the base price of**: <u>$867,000.00</u>**

Proposal is valid for 30 days.
Submitted By: Ardie Duncan / Troy Durrance

Christine Carasas

From: Troy Durrance <tdurrance@ss-roofing.com>
Sent: Tuesday, November 12, 2024 5:10 PM
To: Wharton Smith Commercial Estimating
Cc: Ardie Duncan
Subject: Port Orange Public Utilities Field Operations Facility
Attachments: Port Orange Public Utilities Project Proposal11-12-2024.pdf

Please see the attached proposal and bid form for the listed project. If you have any questions please feel free to reach out to me. Thank you for the opportunity and we look forward to working with you and your team.

Thank you,

Troy Durrance
Project Manager



2949 W. SR 434, Suite 300
Longwood, FL 32779

Office (407) 696-4334
Cell (407) 310-9053
Fax (407) 696-4881
Email tdurrance@ss-roofing.com

Website ss-roofing.com

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Subcontractor Bid Form-General

Wharton-Smith, Inc. CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Central Floreda Waterproofing Inc.
Scope of Work:	Sealants, Thermal & Moisture Protection Bid Package

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and if awarded the Contract, to enter into the Contract within the time specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	$ 103,997.00
Amount in Words:	One hundred three thousand nine hundred seventy seven

(1.2) Alternates (Voluntary)

NO	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $50,000)

Material/Equipment Types:	TBD
Amount:	$

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1	N/A	$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$ 100%

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the percentage to be added to the proposal.

Bond Rate %:	3

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)
N/A			

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	24	Dated:	11.11.2024	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	001	Dated:	10/22/24	WSI No.	002	Dated:	10/24/24
WSI No.	003	Dated:	10/24/24	WSI No.	004	Dated:	10/28/24
WSI No.	005	Dated:	10/31/24	WSI No.	006	Dated:	11/4/24
WSI No.	007	Dated:	11/6/24	WSI No.	008	Dated:	11/8/24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.	NA	Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.	NA	Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety 90 calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid received and to award the contract to such Bidder as may be in the Owner's best interest.

The Bidder has reviewed the requirements of the Contract Documents and has submitted a Bid based on the materials, equipment and systems required by the Contract Documents without exception and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

Wharton-Smith, Inc.
CONSTRUCTION GROUP

PART 3: BIDDER INFORMATION

Central Florida Waterproofing Inc.
Company Name

249 Central Pk Dr. Sanford FL. 32771
Address (Street, City, State, Zip)

(407) 696-8188 Justin@CFW-FL.com
Phone Number **Email Address**

Type of Organization (Check One):

( ) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the bidder hereby advises that the bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )WBE ( )SBE ( ) Other VOSB 100%

SIGNATURE OF BIDDER

Bidder Name: Central Florida Waterproofing
By:
Printed Name: Justin Austburn
Title: Pres
Dated: 11.12.24
License No.: 127593

PROPOSAL

CENTRAL FLORIDA
WATERPROOFING
Florida's Moisture Protection Experts

James Manyette

November 12, 2024

Wharton Smith

Re: Port Orange PU Field Op Facility

4505 Clyde Morris BLVD

Port Orange, FL 32129

The following is our quote for the aforementioned project:

Section 072500 - Air and Water Barrier $ 55,429.00

Apply Prosoco Cat 5 liquid applied air and water barrier over CMU at administration walls from top of slab to top of CMU and at warehouse from top of slab to the top of CMU as per elevations pages A201 and A202

Section 079200 - Joint Sealants $48,548.00

Includes sidewalk to building joints, masonry control joints, CMU to metal transitions, both sides of hollow metal door perimeters, louvers, and semi-rigid epoxy joints at warehouse floor to be filled with MM-80

Our price is per plans, tax included, material delivered and installed. If you have any questions, comments, or concerns please feel free to contact us.
Thank you,
Christopher McCarthy
Estimator

ABC
Associated Builders and Contractors, Inc.
Central Florida Chapter

249 Central Park Drive
Sanford, Florida 32771
407-696-8188

VOSB
Veteran Owned Small Business
cVE

Christine Carasas

From: cmccarthy@cfw-fl.com
Sent: Tuesday, November 12, 2024 12:31 PM
To: Wharton Smith Commercial Estimating
Subject: CFW Port Orange Public Utilities project
Attachments: CFW Bid Form_General_Rev.10-25 sub 11.12.2024.pdf; CFW WS Port Orange Proposal 11.12.2024.pdf

Hi James,

Please find our attached bid form and proposal for this project.

Please reach out if you have any changes, clarifications, or questions regarding this proposal.

Thank you,
Chris

Christopher McCarthy
Estimator
249 Central Park Dr.
Sanford Fl 32771
407.824.8606
Cmccarthy@cfw-fl.com
www.cfw-fl.com

CENTRAL FLORIDA
WATERPROOFING
Florida's Moisture Protection Experts

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PROPOSAL

CENTRAL FLORIDA
WATERPROOFING
Florida's Moisture Protection Experts

James Manyette

November 19, 2024

Wharton Smith

Re: Port Orange PU Field Op Facility

4505 Clyde Morris BLVD

Port Orange, FL 32129

The following is our quote for the aforementioned project:

Section 072500 - Air and Water Barrier $ 39,336.00

Apply Prosoco Cat 5 liquid applied air and water barrier over CMU at administration walls from top of slab to top of CMU and at warehouse from top of slab to the top of CMU as per elevations pages A201 and A202. Excluding at stucco per request.

Section 079200 - Joint Sealants $48,548.00

Includes sidewalk to building joints, masonry control joints, CMU to metal transitions, both sides of hollow metal door perimeters, louvers, and semi-rigid epoxy joints at warehouse floor to be filled with MM-80

Our price is per plans, tax included, material delivered and installed. If you have any questions, comments, or concerns please feel free to contact us.
Thank you,
Christopher McCarthy
Estimator

ABC Associated Builders and Contractors, Inc. Central Florida Chapter

249 Central Park Drive
Sanford, Florida 32771
407-696-8188

VOSB Veteran Owned Small Business cVE

Christine Carasas

From: Jeff Bridges
Sent: Tuesday, November 19, 2024 9:31 AM
To: Christine Carasas
Cc: James Manyette
Subject: FW: 07_Waterproofing_Central Florida Waterproofing.pdf
Attachments: CFW Port Orange 11.12.2024 r 11.19.2024.pdf

07_Waterproofing_Central Florida Waterproofing_R1

Jeff Bridges | Preconstruction Services Manager – Commercial
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771
Office: (407) 321-8410 | Cell: (407) 408-5660

From: cmccarthy@cfw-fl.com <cmccarthy@cfw-fl.com>
Sent: Tuesday, November 19, 2024 9:21 AM
To: Jeff Bridges <jbridges@whartonsmith.com>
Subject: RE: 07_Waterproofing_Central Florida Waterproofing.pdf

Hi Jeff, was able to remove the Cat5 behind the stucco and have updated our proposal for you. Please let me know if there is anything else we can help with.

Thank you,
Chris

Christopher McCarthy
Estimator
407.824.8606
Cmccarthy@cfw-fl.com
www.cfw-fl.com

From: Jeff Bridges <jbridges@whartonsmith.com>
Sent: Tuesday, November 19, 2024 8:27 AM
To: cmccarthy@cfw-fl.com
Subject: RE: 07_Waterproofing_Central Florida Waterproofing.pdf

Hey Chris,

If you can get me something by COB tomorrow or first thing the morning of 11/21 that would be great.

Jeff Bridges | Preconstruction Services Manager – Commercial
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771
Office: (407) 321-8410 | Cell: (407) 408-5660

From: cmccarthy@cfw-fl.com <cmccarthy@cfw-fl.com>
Sent: Tuesday, November 19, 2024 7:29 AM
To: Jeff Bridges <jbridges@whartonsmith.com>
Subject: RE: 07_Waterproofing_Central Florida Waterproofing.pdf

Hi Jeff, I will have to go back and look at this, but I imagine that we did, will see what can do to get these changes and re-submitted for you.

Do you need this back today?

Thank you,
Chris

Christopher McCarthy
Estimator
407.824.8606
Cmccarthy@cfw-fl.com
www.cfw-fl.com
CENTRAL FLORIDA WATERPROOFING
Florida's Moisture Protection Experts

From: Jeff Bridges <jbridges@whartonsmith.com>
Sent: Monday, November 18, 2024 1:41 PM
To: cmccarthy@cfw-fl.com
Subject: 07_Waterproofing_Central Florida Waterproofing.pdf

Hey Chris,

I am scoping out this trade package and wanted to make sure you were NOT picking up the Prosoco behind stucco.
Stucco guys have been instructed to include it in their scope of work.

Jeff Bridges | Preconstruction Services Manager – Commercial
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771
Office: (407) 321-8410 | Cell: (407) 408-5660

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Midstate Caulking & Construction Services, LLC

1600 Kelley Ave.
Kissimmee FL 34744
Estimating phone: 407-350-5958
Fax: 407-350-5968
estimating@midstatecaulking.com

PROPOSAL

Issued to: Wharton-Smith Inc

Proposal No: PO11122024A
Date: 11/12/2024
Attention: Project Estimator
Phone: 407-321-8410
Fax: 407-829-4453

Project Name: Port Orange Public Utilities Field Ops Bldg
Sections: Stucco

The following provides a description of the work to be performed by Midstate Caulking & Construction Services in this Proposal.

Included in this Bid:

Cement plaster over paperbacked lath over CMU & parge coat below finishes

Excluded:
All Permits. Davis-Bacon wages excluded.

At the above stated project, our base bid is: **$ 27,890.00**
Thank You for giving us this opportunity and we look forward to being a great asset to your team. If you have any questions, please do not hesitate to call us.

Note:
Due to volatility of material price increases, Midstate proposals are good for 30 Days. We reserve the right to increase this pricing on all bids based on current escalation cost of materials. ***Once LOI is issued, Contracts must be received within 15 days to hold LOI pricing****.*
Please note upon requests we will update pricing.

Midstate Caulking & Construction Services, LLC

1600 Kelley Ave.
Kissimmee FL 34744
Estimating phone: 407-350-5958
Fax: 407-350-5968
estimating@midstatecaulking.com

PROPOSAL

Issued to: Wharton-Smith Inc

Proposal No: PO11122024B
Date: 11/12/2024
Attention: Project Estimator
Phone: 407-321-8410
Fax: 407-829-4453

Project Name: Port Orange Public Utilities Field Ops Bldg
Sections: Waterproofing

The following provides a description of the work to be performed by Midstate Caulking & Construction Services in this Proposal.

Included in this Bid:

Fluid applied waterproofing behind metal panels, split face veneer & stucco

Excluded:
All Permits. Davis-Bacon wages excluded.

At the above stated project, our base bid is: **$ 41,775.00**
Thank You for giving us this opportunity and we look forward to being a great asset to your team. If you have any questions, please do not hesitate to call us.

Note:
Due to volatility of material price increases, Midstate proposals are good for 30 Days. We reserve the right to increase this pricing on all bids based on current escalation cost of materials. ***Once LOI is issued, Contracts must be received within 15 days to hold LOI pricing****.*
Please note upon requests we will update pricing.

Midstate Caulking & Construction Services, LLC

1600 Kelley Ave.
Kissimmee FL 34744
Estimating phone: 407-350-5958
Fax: 407-350-5968
estimating@midstatecaulking.com

PROPOSAL

Issued to: Wharton-Smith Inc

Proposal No: PO11122024C
Date: 11/12/2024
Attention: Project Estimator
Phone: 407-321-8410
Fax: 407-829-4453

Project Name: Port Orange Public Utilities Field Ops Bldg
Sections: Joint Sealants

The following provides a description of the work to be performed by Midstate Caulking & Construction Services in this Proposal.

Included in this Bid:

> **Windows/doors, dissimilar, bollards, building exterior perimeter, slab to building, column isolation joints slab control joints & sidewalk expansion joints**

Excluded:
All Permits. Davis-Bacon wages excluded.

At the above stated project, our base bid is: **$ 34,475.00**
Thank You for giving us this opportunity and we look forward to being a great asset to your team. If you have any questions, please do not hesitate to call us.

Note:
Due to volatility of material price increases, Midstate proposals are good for 30 Days. We reserve the right to increase this pricing on all bids based on current escalation cost of materials. ***Once LOI is issued, Contracts must be received within 15 days to hold LOI pricing****.*
Please note upon requests we will update pricing.

Christine Carasas

From: Estimating <estimating@midstatecaulking.com>
Sent: Tuesday, November 12, 2024 3:51 PM
To: Wharton Smith Commercial Estimating
Subject: RE: Invitation to Bid - Port Orange Public Utilities Field Ops Bldg. : All Trades
Attachments: Port Orange Public Utilities Field Ops Bldg.pdf

Good afternoon,

Please see attached bid proposal for Port Orange Public Utilities Field Ops Bldg. If you need anything further please let me know.

Thank you,

Amber Nguon
Midstate Caulking & Construction Services LLC
1600 Kelley Avenue
Kissimmee, FL 34744
Phone: (407) 530-5775
Fax: (407) 350-5968
Fax: (407) 350-5968

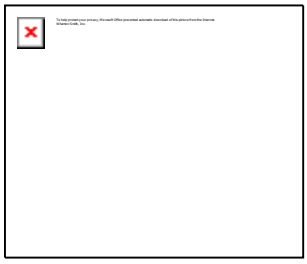
From: Wharton-Smith, Inc. <Transmittals@isqftmail.com>
Sent: Thursday, October 17, 2024 6:36 PM
To: Estimating <estimating@midstatecaulking.com>
Subject: Invitation to Bid - Port Orange Public Utilities Field Ops Bldg. : All Trades

External Email. Please use caution when clicking on links or attachments.

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INVITATION TO BID

From: Wharton-Smith, Inc.
Sent: Thursday, October 17, 2024 6:35 PM ET
Email: comest@whartonsmith.com
Phone:
Fax:



Let us know your bid intention here:





Attention: Amber Nguon - estimating@midstatecaulking.com
Company: Midstate Caulking & Construction Services LLC

You have been invited to bid:
Port Orange Public Utilities Field Ops Bldg.

Bid Due Date:
Project Location:
Project Start Date:
Contact: James Manyette

Description:
Wharton-Smith, Inc. is proudly the Construction Manager serving City of Port Orange and is soliciting proposals from prequalified subcontractors for the construction of City of Port Orange Public Utilities Field Operations Facility.

The project consists of the project consists of two new buildings. One 11,417 SF administration building and one 12,289 SF PEMB warehouse building. The project will include but is not limited to; Concrete, Masonry, Structural Steel, Carpentry, Waterproofing, Roofing, Doors and Frames, Door Hardware, Overhead Doors, Glass and Glazing, Drywall, Stucco, Tile, Acoustical Ceilings, Flooring, Painting, Division 10 Specialties, Shop Equipment, Appliances, Window Treatments, Pre-Engineered Metal Buildings, Fire Protection, Plumbing, HVAC, Electrical, Sitework and Utilities, Fencing, Landscape and Irrigation.

Anticipated Project Milestones:

- Award date: Feb. 08, 2025
- Mobilization: Mar. 06, 2025
- Dry-in: Aug. 18, 2025
- Substantial completion: Jun. 30, 2026

A Pre-Bid Meeting is not scheduled at this time. A notice will be sent when this is scheduled.

Bids will be received at the office of Wharton-Smith, Inc., located at 750 Monroe Road, Sanford, FL 32771 no later than the date and time prescribed above. Bids may be emailed to comest@whartonsmith.com, or hand delivered, mailed. Bids received after the appointed date and time will be subject to rejection. Bids will only be accepted from Prequalified Firms utilizing the required Form of Proposal included in the Bid Package. For more information on Prequalification contact Carly Burleson at prequal@whartonsmith.com.

The RFI deadline is October 29, 2024. Please submit RFI's to comest@whartonsmith.com. Do not contact the Architect or Owner for information on this project.

Payment & Performance Bonds may be required.

MBE/WBE Subcontractors & Suppliers are encouraged to participate.

Message to Bidders:

Click here to view the project

Access Number: QSSW-KV54

Let us know your bid intention here:

For help, visit http://www.isqft.com/start/pages/contact-support/ or call us at (877) 4CC-TOOL (422-8665).

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Midstate Caulking & Construction Services, LLC

1600 Kelley Ave.
Kissimmee FL 34744
Estimating phone: 407-350-5958
Fax: 407-350-5968
estimating@midstatecaulking.com

PROPOSAL

Issued to: Wharton-Smith Inc

Proposal No: PO11122024AREV1
Date: 11/20/2024
Attention: Project Estimator
Phone: 407-321-8410
Fax: 407-829-4453

Project Name: Port Orange Public Utilities Field Ops Bldg
Sections: Stucco

The following provides a description of the work to be performed by Midstate Caulking & Construction Services in this Proposal.

Included in this Bid:

> **5/8" Cement plaster direct applied on CMU, 5/8" stucco on sheathing & parge coat below finishes**

Excluded:
All Permits. Davis-Bacon wages excluded.

At the above stated project, our base bid is: **$ 49,600.00**
Thank You for giving us this opportunity and we look forward to being a great asset to your team. If you have any questions, please do not hesitate to call us.

Note:
Due to volatility of material price increases, Midstate proposals are good for 30 Days. We reserve the right to increase this pricing on all bids based on current escalation cost of materials. ***Once LOI is issued, Contracts must be received within 15 days to hold LOI pricing.***
Please note upon requests we will update pricing.

Midstate Caulking & Construction Services, LLC

1600 Kelley Ave.
Kissimmee FL 34744
Estimating phone: 407-350-5958
Fax: 407-350-5968
estimating@midstatecaulking.com

PROPOSAL

Issued to: Wharton-Smith Inc

Proposal No: PO11122024BREV1
Date: 11/20/2024
Attention: Project Estimator
Phone: 407-321-8410
Fax: 407-829-4453

Project Name: Port Orange Public Utilities Field Ops Bldg
Sections: Waterproofing

The following provides a description of the work to be performed by Midstate Caulking & Construction Services in this Proposal.

Included in this Bid:

Prosoco Cat-5 waterproofing behind metal panels, split face veneer & stucco

Excluded:
All Permits. Davis-Bacon wages excluded.

At the above stated project, our base bid is: **$ 101,205.00**
Thank You for giving us this opportunity and we look forward to being a great asset to your team. If you have any questions, please do not hesitate to call us.

Note:
Due to volatility of material price increases, Midstate proposals are good for 30 Days. We reserve the right to increase this pricing on all bids based on current escalation cost of materials. ***Once LOI is issued, Contracts must be received within 15 days to hold LOI pricing****.*
Please note upon requests we will update pricing.

Midstate Caulking & Construction Services, LLC

1600 Kelley Ave.
Kissimmee FL 34744
Estimating phone: 407-350-5958
Fax: 407-350-5968
estimating@midstatecaulking.com

PROPOSAL

Issued to: Wharton-Smith Inc

Proposal No: PO11122024CREV1
Date: 11/20/2024
Attention: Project Estimator
Phone: 407-321-8410
Fax: 407-829-4453

Project Name: Port Orange Public Utilities Field Ops Bldg
Sections: Joint Sealants

The following provides a description of the work to be performed by Midstate Caulking & Construction Services in this Proposal.

Included in this Bid:

> **Windows/doors, dissimilar, bollards, building exterior perimeter, slab to building, column isolation joints slab control joints & sidewalk expansion joints**

Excluded:
All Permits. Davis-Bacon wages excluded.

At the above stated project, our base bid is: **$ 34,475.00**
Thank You for giving us this opportunity and we look forward to being a great asset to your team. If you have any questions, please do not hesitate to call us.

Note:
Due to volatility of material price increases, Midstate proposals are good for 30 Days. We reserve the right to increase this pricing on all bids based on current escalation cost of materials. ***Once LOI is issued, Contracts must be received within 15 days to hold LOI pricing****.*
Please note upon requests we will update pricing.

Christine Carasas

From: Jeff Bridges
Sent: Wednesday, November 20, 2024 9:31 AM
To: Christine Carasas
Cc: James Manyette
Subject: FW: 07_Waterproofing_Midstate Caulking & Construction Services.pdf
Attachments: Port Orange Public Utilities Field Ops Bldg.pdf

07_Waterproofing_Midstate Caulking & Construction Services_R1

Jeff Bridges | Preconstruction Services Manager – Commercial
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771
Office: (407) 321-8410 | Cell: (407) 408-5660

From: Estimating <estimating@midstatecaulking.com>
Sent: Wednesday, November 20, 2024 9:19 AM
To: Jeff Bridges <jbridges@whartonsmith.com>
Subject: RE: 07_Waterproofing_Midstate Caulking & Construction Services.pdf

Good morning,

Please see attached revised bid proposal for Port Orange Public Utilities Field Ops Bldg. If you need anything further please let me know.

Thank you,

Amber Nguon

Midstate Caulking & Construction Services LLC
1600 Kelley Avenue
Kissimmee, FL 34744
Phone: (407) 530-5775
Fax: (407) 350-5968
Fax: (407) 350-5968

From: Jeff Bridges <jbridges@whartonsmith.com>
Sent: Monday, November 18, 2024 1:56 PM
To: Estimating <estimating@midstatecaulking.com>
Subject: 07_Waterproofing_Midstate Caulking & Construction Services.pdf

External Email. Please use caution when clicking on links or attachments.

.
Hi Amber,

I am reviewing your proposal and noticed you all included the stucco as well. I don't think that particular scope is correct.

- The stucco is 5/8" thick and will not require any lath due to thickness.
- Make sure you are quoting the Prosoco AVB at the stucco.
- Your stucco number is also very low comparted to the other 2 numbers.
- Need an add alternate for potential stucco at the east elevation shown on detail L1 on sheet A201.

With that being said, I probably back the stucco out of your package or list it separately under the stucco package.

Also, can you confirm that the remainder of your fluid applied AVB is either Prosoco or the Dupont Tyvek Fluid Applied AVB?

Jeff Bridges | Preconstruction Services Manager – Commercial
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771
Office: (407) 321-8410 | Cell: (407) 408-5660

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SALES QUOTATION

BFS GROUP, LLC

dba BUILDERS FIRSTSOURCE

8601 JUSTICE PLACE, GROVELAND, FL 34736

HOLLOW METAL - WOOD DOORS - FINISH HARDWARE

DATE: November 12, 2024

TO: Wharton Smith

REVISED:

QUOTED BY: **Ben Lowery**

DIRECT # 352 366 4846

ATT:

PROJECT: City Of Port Orange Public Utilities

PLANS DATED:

ADDENDUM:

WE ARE PLEASED TO SUBMIT THE FOLLOWING MATERIALS ESTIMATE FOR ACCEPTANCE WITHIN TEN DAYS PURSUANT TO THE TERMS AND CONDITIONS STATED IN OUR CREDIT AGREEMENT.

MATERIAL FURNISHED ONLY TO JOBSITE

3	6070	16G Welded Hollow Metal Frame
52	3070	16G Welded Hollow Metal Frame
2 Pair	3070	Flush 16G Hollow Metal Door
7	3070	FG2 Lite 16G Hollow Metal Door
3	3070	Half Lite 16G Hollow Metal Door
6	3070	Flush 16G Hollow Metal Door
1 Pair	3070	Flush Prefinished Plain Sliced White Birch Door- 45 Minute Fire Core
2	3070	Half Lite Prefinished Plain Sliced White Birch Door- 45 Minute Fire Core
2	3070	Flush Prefinished Plain Sliced White Birch Door- 45 Minute Fire Core
1	3070	FG2 Lite Prefinished Plain Sliced White Birch Door
7	3070	Half Lite Prefinished Plain Sliced White Birch Door
17	3070	Narrow Lite Prefinished Plain Sliced White Birch Door
7	3070	Flush Prefinished Plain Sliced White Birch Door
1	LOT	Hardware As Scheduled

NOTES: Excludes All Aluminum Doors/Frames/Hardware
Excludes All Existing Doors/Frames/Hardware
Wood Doors Are Stained To Match 7965 Walnut Heights- Door Is NOT Walnut
Wood Doors Are Prefinished Plain Sliced White Birch- No Species Specified
Excludes All Access Doors
Excludes All Glass/Glazing
Excludes All Access Control/Card Readers/DPS/Power Supplies- By Security Contractor
Excludes Door Release Switch- By Security Contractor
Excludes All Window Frames/Transoms
Excludes All Overhead Coiling Doors/Frames/Hardware

TOTAL MATERIAL AMOUNT: $176,275
TAX INCLUDED

Install Doors And Hardware Only (Frames By Others): $18,850

Grand Total: $195,125

Price Quoted is valid only if accepted within 10 days. Order will be subject to surcharges and factory increases. Lead times determined at time of order.

WOOD DOOR WARRANTY DOES NOT APPLY FOR THE APPEARANCE OF FIELD FINISHED OR FACTORY PRIMED DOORS.

Accepted by:_____ Date:_____

GENERAL NOTES:

(1. Submittals are not included in quotes less then $ 5,000.00

(2. **Factory orders have extended lead times. Actual lead time will be determined when order is placed with manufacturer.**

(3. Exclude all glass and glazing.

(4. F.O.B. jobsite-tailgate delivery only is included.

(5. Exclude asphalt backpainting of frames unless noted otherwise.

(6. Material furnished only unless noted otherwise.

(7. Standard warranties only unless noted otherwise.

Christine Carasas

From: Ben Lowery <ben.lowery@bldr.com>
Sent: Tuesday, November 12, 2024 10:06 AM
To: Wharton Smith Commercial Estimating
Cc: Christina Rowell
Subject: Port Orange Public Utilities
Attachments: City Of Port Orange Public Utilities.pdf

Please see attached quote
Thanks

Ben Lowery
Estimator
8615 Justice Place
Groveland FL, 34736
Ben.Lowery@BLDR.com
O: 352-366-4846 | BLDR.com

OUTPERFORM TODAY. TRANSFORM TOMORROW.

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☐ **ATLANTA**
5105 Avalon Ridge Pkwy **P** 404-745-7223
Peachtree Corners, GA 30071 **F** 404-327-5107

☐ **CHICAGO**
1 E. North Ave., Ste #101 **P** 630-597-0050
Glendale Heights, IL 60139 **F** 630-597-0051

☐ **COLUMBUS**
777 Dearborn Park Ln, Ste R **P** 614-456-4441
Columbus, OH 43085

☐ **DENVER**
4200 Monaco Street **P** 303-783-3667
Denver, CO 80216 **F** 303-783-3617

☐ **DES MOINES**
69 Washington Ave. **P** 515-635-6014
Des Moines, IA 50314 **F** 844-828-2350

☐ **KANSAS CITY**
1901 E. 119th St. **P** 816-480-2600
Olathe, KS 66061 **F** 816-480-2658

DHPACE
Everything Doors Since 1926

☐ **NASHVILLE**
1922 Old Murfreesboro Rd. **P** 615-287-3120
Nashville, TN 37217 **F** 615-287-3089

☐ **OMAHA**
13315 Centennial Rd, #100 **P** 402-331-3667
La Vista, NE 68138 **F** 402-403-1523

☐ **ORLANDO**
7576 Kingspointe Pkwy, #100 **P** 407-563-3668
Orlando, FL 32819 **F** 844-878-8669

☐ **NORTHEAST KANSAS**
2322 S.W. 6th Avenue **P** 785-234-7553
Topeka, KS 66606 **F** 844-302-0400

☐ **SPRINGFIELD**
1960 E. Bergman St, #100 **P** 417-831-5585
Springfield, MO 65802 **F** 417-831-5565

☐ **ST. LOUIS**
12046 Lackland Road **P** 314-781-5200
St. Louis, MO 63146 **F** 314-781-0938

☐ **TAMPA**
4951 Tampa West Blvd. **P** 813-839-3667
Tampa, FL 33634

☐ **WICHITA**
3506 West Harry **P** 316-944-3667
Wichita, KS 67213 **F** 316-944-6465

ENTRY DOOR SYSTEMS GROUP • CONTRACT PROPOSAL

BUYER (and billing address if different from site):	**PROJECT (site address):**	**PROPOSAL #:** CT-481-11122024
Wharton-Smith, Inc Send bids to: comest@whartonsmith.com	Port Orange Public Utilities Field Ops Building Port Orange, FL	

Submitted To:	James Maynette		407.321.8410	jmaynette@wartonsmith.com
Submitted By:	Brandon Fields	FL Sales Manager	404.427.5280	Brandon.fields@dhpace.com
Proposal date: 8/31/2022				
I am pleased to quote the following (select one):	☐			
	☒ **per plans dated** 9/30/2024 **and specifications dated** 9/30/2024**.**			

Addenda #(s) WSI #001-#008, RFI-001 & 002 **are included in this quote.**

NET AMOUNT

I am pleased to quote the following materials as supplied only (unless noted otherwise), FOB jobsite per plans and specifications dated above, with clarifications and exclusions noted (if any). **TAX IS INCLUDED**

081113 HOLLOW METAL DOORS AND FRAMES:
55 each-Hollow Metal frames, prefit, premachined and standard factory primed for painting by others.
20 each-Hollow Metal doors, prefit, premachined and standard factory primed for painting by others.
No Hollow Metal borrowed lites

081416 WOOD DOORS:
38 each-A grade Plain Sliced White Maple wood doors, prefit, premachined and factory standard stained.
******NOTE: Wood doors are to match PL-1 stain color per the Finish Legend, however no veneer was specified. The wood doors have been quoted as White Maple per WD-3 of the Finish Legend.***

087100 FINISH HARDWARE:
1 Lot finish hardware for hollow metal and wood doors.
******NOTE: This excludes hardware at aluminum doors, except final cores which have been included.***

TEMPORARY DOORS & HARDWARE:
Temporary doors & hardware at electrical room opening #140. Hardware includes hinges, lockset, surface bolts.

INSTALLATION:
Installation of the 38 wood doors, 20 hollow metal doors and hardware as scheduled.
Installation & removal of 2 each temporary doors and hardware.
Includes a 1 year warranty on labor.
Frame check and installation of permanent cores is included.
Unloading, receiving, staging, and installation of hollow metal frames by others.
Installation of aluminum storefront hardware and glass/glazing to be by others.
Labor to be completed during normal business hours of 7:00am to 4:00pm Monday thru Friday.
***See Installation Clarifications and Exclusions on Page 2.

BASE BID (Tax included) — ***$249,182.00***

PRICING OPTIONS:
1. Add for cardboard protection to be applied to the hollow metal doors, wood doors, and hollow metal frames. This pricing includes installation of these products. Removal to be by others. — ***$9,570.00***
2. Add for the wood doors to be factory glazed. — ***$4,522.00***

Current Lead times for material as of 11/12/24. Subject to change without notice.
Hollow Metal Frames – 11-13 weeks after receipt of approved submittal
Hollow Metal Doors –14-16 weeks after receipt of approved submittal
Wood Doors – 16-18 weeks after receipt of approved submittal
Hardware– 8-10 weeks after receipt of approved submittal
Should be confirmed at NTP and when submittals are returned.

~Add .5% to accepted bid amount for Payment and Performance Bond~
~Bid clarifications and exclusions on page two~

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BID CLARIFICATIONS:

1. DH Pace has quoted a maximum of 9 deliveries on this project.
2. Proposal subject to mutually agreeable contract terms.
3. If this project is under consideration for a Direct Purchase By Owner program, DH Pace must receive the following: 1) Owner Purchase Order; 2) Tax Exemption Certificate; 3) Certification of Entitlement form. If DH Pace does not receive the Tax Exemption Certificate and the Certificate of Entitlement form from the owner, then DH Pace invoices will include sales tax to be paid for by the owner.
4. Costs are currently rising at sudden and unpredictable rates. This proposal is based on current pricing from Seller's suppliers and includes all price increases and surcharges levied by those suppliers and known by Seller as of the date of this proposal. This proposal is valid for acceptance for 30 days. After 30 days, the Seller reserves the right to require an approved change order before the order can be released into production to compensate for any supplier price increases or surcharges announced after the date of this Proposal and prior to the release of materials for fabrication. Seller will provide written documentation of the Supplier increase notice upon request.
5. Payment terms-Net 30 Days. No discount terms allowed.
6. All products quoted with manufacturer's standard lead time, after returned approved submittals.

INSTALLATION CLARIFICATIONS AND PRICING OPTIONS:

1. If a lull/forklift is not available onsite for unload of doors, DH Pace will provide a rental lift at $1,800 per delivery.
2. This proposal includes 3 mobilizations to the jobsite. Additional mobilizations – Add $1,500.
3. One 1-hour jobsite meeting per week onsite is included in bid. Additional meetings may be subject to change order.
4. A DH Pace representative will inspect the jobsite 1 week prior to scheduled mobilization to check frame installation and confirm a generally unobstructed path to work area. If DH Pace determines jobsite conditions will have an adverse impact on installation schedule or material safety, inspector will work with contractor to identify a mutually agreeable date to reschedule mobilization.
    a. Readiness is generally defined as a work area have walls and ceilings up, painting of walls and door frames completed, flooring installed, and a clear path for installers to convey and install doors in a timely manner.
    b. If frames are found to be out of plumb/level/square or are otherwise improperly installed, inspector will report the quality issues to contractor for correction and schedule door installation mobilization accordingly.
5. This EXCLUDES in-wall blocking.
6. Undercutting of doors due to flooring conditions is EXCLUDED. ***Pricing available upon request.***
7. Offsite parking costs are EXCLUDED.
8. Composite clean up is EXCLUDED.

BID EXCLUSIONS:

1. Enhanced Hurricane Protection Areas (EHPA) as we do not believe that is required on this project. DH Pace has bid the exterior openings as standard level D impact rating. If level E is required, please contact DH Pace for additional pricing
2. Set-up of key cabinet and any associated training.
3. Borrowed lites, as they are aluminum.
4. Fire rated inspectors.
5. Egress Inspectors.
6. Wiring diagrams.
7. Grout and mineral fiber insulation.
8. In wall blocking.
9. Glass and glazing.
10. BIM modeling.
11. Receiving, unloading, material handling, and installation of all hollow metal frames.
12. Textura.

Acceptance of this offer by the Purchaser shall constitute an order and contract for the purchase of the items described herein. We shall not be liable for the non-performance of this contract, in whole or in part, if such non-performance is the result of any cause or causes beyond the reasonable control of DH Pace, including (but without limitation by reason of enumeration) the following: fires, strikes, differences with employees, casualties, delays in transportation, shortage of cars, government restrictions, or other cause: nor shall these exceptions be limited or waived by any other terms of the contract, whether printed or written. Terms: **Net 30 days**, subject to the approval of DH Pace credit department. Progress billings made to meet project requirements will be invoiced when applicable and subject to the same terms. In the event it shall become necessary for DH Pace to enforce any of the provisions of this agreement, Purchaser agrees to pay all costs and expenses associated with such enforcement, including without limitation, the fee of a collection agency and an attorney. Price above excludes sales tax. Tax exempt certificate must be presented.

The proposal described herein, including all price(s) quoted, is made conditionally upon Buyer's continued credit status and must be accepted by Byer as made by Seller. To accept this Proposal, Buyer must date, sign and return the original copy hereof to Seller within 30 days after the date hereof. Unless expressly disclosed and stated, the amount of any sales and use tax is not included in this proposal.

Buyer acknowledges and agrees that each and all of the terms and conditions on Attachment A (**TERMS AND CONDITIONS**) are a part of this Proposal and that upon Buyer's acceptance of this Proposal shall constitute a valid and binding contract between the parties and all prior proposals, discussions and agreements respecting the subject matter hereof are cancelled. **DEPOSIT ON SPECIAL ORDER ITEMS IS NON-REFUNDABLE.**

BUYER ACCEPTANCE

_____ _____/_____/_____ _____

TYPE OR PRINT NAME OF BUYER **ACCEPTANCE DATE** **REFERENCE #**

This is my authorization to proceed with the above stated work at the base price of ***Enter Text***.

_____ _____

SIGNATURE of: ☐ Owner ☐ Partner ☐ Officer *(indicate which)* **TITLE**

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Attachment A: TERMS AND CONDITIONS

Terms. The products ("Products") described in this contract and the labor necessary to install the Products ("Labor") are herein collectively referred to as the "Work".

Condition Precedent. Buyer and Seller agree that if, following Buyer's acceptance hereof, a contract is to be executed by them, Seller's performance hereunder shall be subject to the condition precedent that the terms and conditions of such contract are acceptable to Seller.

Scope of Work. Seller agrees to perform for Buyer the Work at the Project. Buyer acknowledges and agrees that: (i) the prices quoted by Seller for the Products are based upon plans, specifications, verbal information or sketches as indicated herein and the addenda hereto; and (ii) that the Work contemplated under this Proposal is fully and correctly described herein.

Unless included in the description of and prices quoted for Products, glass, glazing, painting and electrical wiring is excluded under this Proposal and will be provided only upon receipt of a supplemental order signed by Buyer.

Proposal Price. Conditional upon Seller's prior approval of Buyer's credit, Buyer will pay Seller the unpaid balance for performance of the Work within 30 days of the date of Seller's invoice. If performance of the Work extends over 30 days, Buyer agrees to pay Seller progress payments under Seller's regular billing terms and if Products have been delivered to the Project or stored in a mutually agreed location, Buyer agrees to pay an amount not to exceed 90% of the Proposal Price in payment of the cost of such Products.

If payment of any sum is not made when and as due under this Proposal, Buyer shall pay interest on such delinquent sums at the rate of 1.50% per month or, the highest contract rate allowed under applicable law.

If following Buyer's default Seller refers this account to an attorney for collection, Buyer agrees to pay all attorneys' fees incurred by Seller whether or not a lawsuit for collection is instituted, and all other costs of collection and litigation.

Contract Time. Installation dates are estimates only and Seller cannot guarantee commencement of Work or completion thereof on any given date. Completion dates cannot be given until Seller has been furnished with complete approved drawings and any additional information it may request. Seller shall not be liable for total or partial failure to complete or for any delay in delivering Products or Labor under this Proposal. Seller shall not be liable in any event for any special or consequential damages on account of failure or delay in performance regardless of cause.

Work Performance. Performance of the Work will be made by Seller in a prompt manner but Seller cannot be responsible for damage or delay due to acts of God, accidents, civil disturbances, delays in transportation by common carrier, strikes, war, unavailability of material or other cause beyond the reasonable control of Seller.

If Products are installed before a finished floor is completed, warranty is limited and Seller assumes no responsibility for fitting the Product to the floor. An additional charge may be made to Buyer for returning to the Project for adjustments to the Product.

Seller assumes no responsibilities for failure of installation of the Product due to structural deficiencies in an existing building. Buyer shall prepare the Project for installation in accordance with requirements of Seller.

If special work, requiring additional material and labor is required to meet conditions other than those specifically described in this Proposal, Buyer agrees to pay an additional charge therefore.

Seller shall be allowed uninterrupted and exclusive access to the Project during performance of the Work.

No Product may be returned without Seller's prior written approval. All Product returned is subject to a minimum of 25% restocking fee.

Cancellation. In the event Buyer cancels this Proposal after the Seller has commenced Work, Buyer shall forfeit the amount of the down payment given to Seller at the time of the execution of this Proposal, and in addition, shall pay to the Seller such proportion of the total Proposal Price as the amount of Work bears to the total amount of Work agreed upon to be furnished under this Proposal, plus a sum equal to 25% of the total Proposal Price as liquidated damages, which amount is to be paid within 30 days from the date of such cancellation.

In the event of Buyer's insolvency this Proposal shall be cancelled and Seller shall have no further obligations to Buyer hereunder.

Insurance. Seller shall carry workmen's compensation and public liability insurance to cover the Work. Seller shall not be liable to indemnify, hold harmless or protect in any way the Buyer, or any other party involved in the Work, whether an employee of Seller or Buyer or any third party, except to the extent of the workmen's compensation and public liability insurance maintained by Seller.

Buyer shall keep the Project adequately insured against any loss to Seller by reason of damage to Seller's Product or Work or Seller' vehicles, equipment and tools by vandalism, fire, water, windstorm and any other occurrence during the course of Work.

Alterations. Any alterations or modifications initiated by Buyer must be agreed upon between the parties and the price fixed by them before work on such alteration or modification shall commence. Payment for such alteration or modification shall be made at the time of the completion of the Work.

Permits and Licenses. Buyer shall be responsible for securing the necessary permits and licenses for the Work at Buyer's own cost and expense.

Warranties. Seller warrants the Product sold to be free from defects in material and workmanship under normal and intended use and service. This warranty extends only to the Buyer and expires one year after the date of delivery or installation of the Product by Seller.

Parts and labor for service work are warranted for the following periods: All replacement parts 90 days; labor-service 30 days. Seller's sole obligation is limited to repairing or replacing any parts which shall be determined by Seller to be defective and is conditioned upon Buyer giving notice of any such defect to Seller within the warranty period. If Seller concludes that repair or replacement is necessary, Seller will commence work within a reasonable time after the decision to repair or replace is made.

This warranty does not apply to any Product which has been altered or repaired by any person not authorized by the Seller or which has been subjected to misuse, neglect or accident.

Seller assumes no liability for incidental or consequential damages. Warranties implied by law are limited to duration to one year period described above.

Wood Products will be guaranteed only if properly protected within 10 days of delivery or installation by Seller with a prime and finish coat of manufacturer's recommended paint.

No warranty will be honored unless the Proposal Price has been paid in full, including any applicable service charges.

Modification of Proposal. Any modification of this Proposal or additional obligation assumed by either party in connection with this Proposal shall be binding only if evidenced in writing signed by each party or an authorized representative of each party.

Governing Law. It is agreed that this Proposal shall be governed by, construed and enforced in accordance with the laws of the state in which the Project is located.

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City of Port Orange

Public Utilities Field Operations Facility

Doors / Frames /Hardware

Bid Package

Prepared by Wharton-Smith (Construction Manager at Risk)

Issued 10/07/2024

Wharton-Smith Contact:
Keri Strawder – Project Manager
kstrawder@whartonsmith.com

Architect: Schenkel Shultz

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SECTION 1 – INVITATION TO BID

Invitations were sent electronically via ConstructConnect platform

See also Bid Manual for additional invitation information

SECTION 2 – LIST OF BID DOCUMENTS

1. Bid Manual
2. Project Specifications – Issued for Bid – Dated September 30, 2024 (Volumes 1 &2)
3. Project Drawings – Issued for Bid – Dated September 30, 2024
4. Wharton-Smith Standard Subcontract with Bond
5. Wharton-Smith Team Player – Instructions for Subcontractor Pay Applications

SECTION 3 – INSTRUCTION TO BIDDERS

See Bid Manual

SECTION 4 – BID REQUIREMENTS AND CONDITIONS

See Bid Manual

SECTION 5 – BID PROPOSAL EVALUATION

5.1 GENERAL

5.1.1 Bid Proposals will be evaluated based upon review of the following:

A. Cost – The evaluation of this criterion will be based on the Bidder's total base bid, bid alternates, unit prices.

B. Value Engineering – This criterion measures the ability of the Bidder to identify potential areas of cost savings or improvements of the final project.

C. Bidder's ability to meet all other criteria outlined herein.

5.1.2 Reference the Instructions to Bidders section of this Bid Manual and the Bid Form for more information regarding detailed requirements of the Bid Proposals.

5.1.3 In evaluating Bids, Wharton-Smith, Inc. shall consider the submission of the Bidders, and whether or not the Bids comply with the prescribed requirements as outlined in these Instructions, the Bid Form, this Bid Manual, and all associated Owner and Bid Related documents provided with this Bid Package.

5.1.4 Wharton-Smith, Inc. may conduct such investigations and require supplemental information as it deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of the Bidders, proposed Subcontractors, proposed equipment and material suppliers, and other persons and organizations to provide the materials in accordance with the Contract Documents to Wharton-Smith, Inc.'s satisfaction within the prescribed time.

5.1.5 Bidder shall, upon request of Wharton-Smith, Inc., submit documentation evidencing its capability to execute the work properly within the time specified. This information must be received by Wharton-Smith, Inc. within ten (10) calendar days of Bidder receiving written request.

5.2 RECOMMENDATION AND APPROVAL OF RANKING

5.2.1 The CMAR will review all Bid Proposals that are received in conformance of the requirements herein and provide a recommendation to the Owner. The Owner, at its sole discretion, may accept the CMAR's recommendation or re-evaluate the Bid Proposals. The Owner will establish and approve the final recommended of award for the Bid Package. The Owner will be the sole judge of its own interests, the proposals, and the resulting agreements. The Owner's decision will be final.

5.3 AWARD OF CONTRACT

5.3.1 Award shall be based on products, equipment and materials named in the Contract Documents. Consideration of any decisions regarding substitution shall not be made until after Award of Contracts.

5.3.2 If the Contract is to be awarded, Wharton-Smith, Inc. will give the Bidder a Notice of Award after the Owner's agreement of the Bidder to receive Award.

5.3.3 The Awarded Bidder will be required to enter into a Purchase Order Agreement or Subcontract Agreement with Wharton-Smith, Inc. This agreement will contain the same terms and conditions as shown in the sample agreement provided in this Bid Manual. The Purchase Order or Subcontract will also contain the defined work scope as shown in this Bid Manual. Modifications to this Agreement will not be allowed.

SECTION 6 – SCOPE OF WORK

The Bidder shall utilize the information within this section of the Bid Manual to assist in development of the Bid Proposal. The outlined scopes herein are not intended to detail the complete scope of the Bid Package. The Bidder is responsible for reviewing the Contract Documents to understand the full scope and requirements.

The Subcontractor Is to furnish all labor, equipment, material, subcontracts, and supervision required to complete the Scope of Work generally described as the **DOORS/FRAMES/HARDWARE PACKAGE**, detailed herein, for the Public Utilities Field Operations Facility. All work shall be complete and in accordance with the Contract Documents. In the event of conflicts between the Scope of Work and other parts of the Contract Documents, this section shall take precedence.

6.1 WORK OVERVIEW

Provide complete, all required **Doors, Frames, and Hardware Work**, for the Project known as **City of Port Orange Public Utilities Field Operations Facility.**

The Work included in this Subcontract is project specific and outlines the general Scope of Work for this Subcontract, all in complete accordance with the Plans and Specifications as defined in Exhibit "C" attached hereto.

Other Specification Sections may form a part of this Subcontract, whether listed or not.

The Scope of this Subcontract includes, but is not necessarily limited to the furnishing and installation of the following Work by this Subcontractor.

1. Visitors - No one shall be admitted to the jobsite by the Subcontractor, except as necessary to perform the Work hereunder, without, in each instance, first obtaining the approval of the Contractor.

2. Replace Guardrails - This Subcontractor shall install, maintain and replace all required guardrails in accordance with OSHA Standards for the purpose of safety at all openings and suspended work at the locations not protected and where Subcontractor is performing work. Subcontractor is also responsible for all construction fencing, temporary walkways, overhead protection, signage, and/or barricades to perform work outside the boundaries of Contractor furnished construction fencing.

3. Ongoing Operations/Residential Environment/Parking - Without limitation of the foregoing, Subcontractor understands that the Work may be constructed near on-going business or facility operations and may be in and around private residences and neighborhoods. Subcontractor shall use its best efforts, in conformity with the applicable standard of care, to perform the services hereunder in a manner which will not interfere with the on-going business operations and residences. All construction employees are to enter and park in the construction parking area designated by Contractor. Subcontractors are responsible for all off-site parking of employees which may be required and busing to jobsite via route identified by Contractor. Busing of employees, jobsite vehicles or deliveries shall not be routed through surrounding neighborhoods. **Excludes off-site parking.**

4. Jobsite Storage - Subcontractor is aware of the existing site conditions and the limited space availability. On-site storage and staging of materials and equipment will be allowed, only as specifically approved by Contractor's Project Superintendent or Project Manager. All deliveries of Subcontractor will be coordinated through Contractor. If scheduled deliveries are not ready at appointed time, Contractor may refuse acceptance and deliveries will be rescheduled. All cost and/or delays associated with the refusal of deliveries will be the responsibility of the Subcontractor. Subcontractor has included in this Subcontract price, all off-site storage as may be required, including, but not limited to transportation of materials from staging area to site.
9 deliveries included

5. Phased Turnover - This Subcontractor acknowledges that the Project may have phased turnover in accordance with the Project Schedule and that several mobilizations may be required and are included as part of this Subcontract. Additionally, Subcontractor acknowledges that the Project may have multi-buildings and that concurrent work on each building will be required in order to complete some phases ahead of the Project Schedule and all costs for doing same are included. **3 mobilizations included**

6. Owner's Facilities - All Project employees are subject to the Owner's rules and regulations while employed within their property limits. Use of the Owner's other parking lots and facilities by this Project's workmen are not permitted.

7. Limitation of Noise/Hours of Work - Subcontractor shall comply with all city, county, state and local jurisdictional authorities' Noise and Hours of Work Regulations.

8. Care and Custody: This Subcontractor shall provide labor and equipment to receive, unload, inventory, store, and provide for the care and custody of all materials it procures for its own behalf, or is furnished by others for installation by this Subcontractor, until such time as the material is permanently installed and accepted by the Owner and Architect. Storage containers to be provided by Contractor. **Frames tailgate delivery only. All unloading, receiving, staging by others.**

9. Install all ~~**Frames**~~**, Hollow Metal Doors and Finish Hardware Work** in strict accordance with the Contract Documents, complete, turnkey and fully functioning to the designer's intent, specifically including all details, sections and notes contained within the Contract Documents. **All frames installed by others.**

10. Subcontractor certifies that it meets the minimum Contractor Qualification requirements as further detailed in the Specification and elsewhere in the Contract Documents.

11. The installing Subcontractor shall attend and participate in the pre-installation conference to be held at the Project Site and conducted in concert with Owner, the Architect, the installer, and Contractor. **Job site meetings may be attended via conference call or teams.**

12. This Subcontractor shall provide and install Complete Door, Frame, and Hardware package. This includes, but is not limited to, all solid core wood doors, hollow metal doors, hollow metal door frames, hollow metal window frames, fire rated door assemblies, wood and metal lite kits, door hardware and all other incidental items required by this Scope of Work all in strict accordance with the Contract Documents, manufacturer's specifications, governing building codes, and the Authority Having Jurisdiction. **Frames tailgate delivery only. All unloading, receiving, staging by others.**

13. Provide and install all Hollow Metal Doors, Wood Doors, and Finish Hardware Work in strict accordance with the Contract Documents, complete and fully functioning to the designer's intent, specifically including all details, sections and notes contained within the Contract Documents.

14. This Subcontractor shall provide and install doors, frames, and hardware by preapproved manufacturers in strict accordance with the Contract Documents. **Frames tailgate delivery only. All unloading, receiving, staging by others.**

15. This Subcontractor shall **furnish** ~~provide~~ all hollow metal door frames and hollow metal window frames in strict accordance with the Contract Documents. All hollow metal frames are to be delivered to the Project site as directed by Contractor to allow for normal installation in concrete masonry walls, masonry partitions, and drywall partitions. **All frames installed by others.**

16. This Subcontractor shall **furnish** ~~provide~~ all door frames protected and packaged as required in strict accordance with the Contract Documents. **Manufacturers standard packaging of all materials.**

17. This Subcontractor shall provide all miscellaneous anchors, clips, fasteners, ~~flashings, extrusions, shims and~~ spacers necessary for the installation of all door frames.

18. This Subcontractor shall provide and install all doors in strict accordance with the door schedule in the Contract Documents. All doors are to be prepped for appropriate hardware and lites at the factory. Glazing of door light kits, transom panels, side view panels, and other hollow metal windows (normal and fire rated) is not included as it shall be provided by the glass Subcontractor, however the vision trim kits are to be provided as part of this scope of work

19. This Subcontractor shall **furnish** ~~provide~~ door finishes in strict accordance with the Contract Documents.

20. This Subcontractor shall provide all doors delivered to the Project site with nonpermanent labels designated by door opening.

21. This Subcontractor shall provide all doors with fire, smoke ~~and STC~~ rated labels in strict accordance with the Contract Documents. **See attached proposal for clarifications.**

22. This Subcontractor shall provide all door hardware including, but not limited to, all hinges, cylinder cores, keying, panic devices, wiring harnesses, ~~power supplies~~, wall and floor stops, closers, pulls, handles, weather-stripping,

Power supplies by security per hardware sets in 087100.

locks, surface bolts, lock guards, latch sets, exit devices, kick plates, push/pull plates, seals, drip caps, thresholds, silencers, mullions, and door sweeps.

23. This Subcontractor shall provide all required cylinders at all aluminum storefront doors. All hardware required at aluminum storefront doors, minus referenced cylinders, is provided by others.

24. Provide and install all temporary cylinders and cores at all exterior doors, electric room doors, and other locations at the discretion and direction of the Wharton-Smith Superintendent, for locking and securing the premises during the construction phase.

25. Furnish and install all doors, frames, and hardware required of the plans even if not included on the door schedule. As required of the specification, should any particular door or items be omitted in any door or window schedule, or scheduled hardware group, furnish door, or items with hardware same as required for similar purposes.

26. This Subcontractor shall coordinate that all door hardware, door frame prep and associated electrical hardware (hinges, strikes, etc.) will integrate with the electrical contractor's access control equipment for a fully functioning turnkey access control system.

27. This Subcontractor understands and agrees that if discrepancies are noted between the hardware shown on the door schedule and the hardware shown in the specifications, the listed hardware group number detailed in the specifications shall prevail. **Door schedule doesn't have hardware sets defined.**

28. This Subcontractor shall provide and index one (1) key cabinet that allows room for expansion for 150% of quantity of keys required for the project.

29. This Subcontractor shall provide all required submittals for approval prior to release for fabrication. Material is to be on site ready for installation in accordance with the Project schedule.

30. This Subcontractor shall provide the required hardware schedule for approval prior to release for fabrication. Hardware is to be on site ready for installation in accordance with the Project schedule.

31. This Subcontractor shall provide all State of Florida Product Approvals for this Scope of Work as required by the Contract Documents, governing building codes, and the Authority Having Jurisdiction.

32. This Subcontractor understands and agrees that the Project will require multiple deliveries by this Subcontractor. All associated costs for multiple deliveries as directed by the Contractor are included. **9 deliveries included**

33. This Subcontractor includes providing bituminous coating of hollow metal frames in concrete wall/masonry partitions, as necessary. **By frame installer.**

34. This Subcontractor has reviewed the Project Schedule and understands that the Subcontract amount includes all costs associated with material expediting and manpower to meet the Project Schedule.

35. Subcontractor certifies that it meets the minimum Contractor Qualification requirements as further detailed in the Specification and elsewhere in the Contract Documents.

36. The Subcontractor shall attend and participate in the pre-installation conference to be held at the Project Site and conducted in concert with the Owner, the Architect, the Installer, and Wharton-Smith.
Job site meetings may be attended via conference call or teams.

37. Provide all warranty requirements including signing all documents required of the Specifications..

38. Subcontractor shall provide all warranties as called for by the Contract Specifications.

39. Install all temporary cylinders and cores at all exterior doors, electric room doors, and other locations at the discretion and direction of the Contractor's Superintendent, for locking and securing the premises during the construction phase. Remove temporary mechanisms and replace with permanent cylinders or cores upon completion of the project and at the direction of the Wharton-Smith Superintendent.

40. Provide all execution (installation) of the materials furnished as required of the referenced Specifications and elsewhere in the Contract Documents also including in particular compliance with all examination, preparation, environmental conditions, installation, protection during construction, adjusting and cleaning, and demonstration.
Frames tailgate delivery only. All unloading, receiving, staging by others.

41. Install products in accordance with manufacturer's recommendation and requirements.

42. Receive, unload, inventory confirmation, and store at the jobsite all hollow metal doors, and finish hardware in strict accordance with all NWWDA i.s. 1-a requirements.

43. Install all hollow metal doors in strict accordance with the Contract Documents.

44. Install all finish hardware, also including but not limited to, door seals, lock blocks, bumpers, metal stops, holders, thresholds, ~~lock guard~~s, drip edges, door sweeps, rain caps, hinges, locksets, latch sets, exit devices, kick plates, push/pull plates, closers, silencers, ~~and mullion~~s.

45. Check and adjust all hardware items for complete and proper operation and to the satisfaction of Contractor, Architect, and Owner. Adjust door closers to enable door to latch after test and balance has been completed. Subcontractor shall verify all door closers are set and operating properly and in accordance with ADA and Regulatory requirements. Subcontractor must be present for all required door pressure inspections and testing as required per project schedule and must provide proper adjustments to door to meet requirement.

46. Install temporary doors and lockset for all ~~IDF~~, electrical ~~and elevator machine~~ room doors. Remove temporary and install permanent hardware when directed by the Wharton-Smith Superintendent. **One pair electrical room doors only on this project.**

47. Furnish necessary miscellaneous fasteners, specialty tools, equipment, hand tools, carts, and all consumable materials required for the proper and complete performance of the work.

48. Subcontractor shall install all permanent cores to all aluminum storefront entrances noted on the Contract Documents.

49. Install surface bolts in lieu of flush bolts at all EHPA openings to comply with Florida Building Code for windstorm as directed in Contract Documents.

50. Door hardware for the aluminum storefronts and curtain wall system are not included and shall be installed by that specialty contractor.

Other Items of Note:

A. Wharton-Smith will be utilizing a software called **Team Player** to process monthly pay applications. The fee for this service is $10.00 per Pay Application, regardless on the number of revisions in each month. Please review the Team Player Welcome Letter that has been included in the Bidding Documents which contains embedded links for training documentation and videos. This will be a requirement for all subcontractors on this project.

B. With respect to Article 22 of this Subcontract Agreement, the Owner will exercise the right to purchase materials directly as part of the Owner Direct Purchase Program. This Subcontractor shall actively participate in the Owner Direct Purchase Program for this Project Prior to the Subcontractor's final payment, a final reconciliation of Owner Direct Purchases against this Subcontract will be performed. This does not apply to temporary fence.

C. On-Site Work Hours: Limit work to between 7 a.m. to 5 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.

D. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site. Subcontractor shall maintain list of approved screened personnel with Owner's representative.

6.2 BID PRICING / ALTERNATES

The bid pricing shall be broken out as follows and as indicated on the bid form. The City of Port Orange has the sole discretion to accept any, all, or none of the work items for this scope of work based on the bid pricing received. Subcontractor to price the work accordingly.

6.2.1 This bid does not include any bid alternates.

6.2.2 Retainage will be held at 5% for the duration of the Contract and will be released upon retainage release by the Owner.

6.3 CLARIFICATIONS

6.3.1 The Subcontractor will be responsible for protecting ~~all~~ our new ~~and existing~~ work throughout the site from damage that could be caused by performing the Scope of Work. Any damage caused by Subcontractor is the responsibility of Subcontractor and Subcontractor will bear the costs of said damage. See pricing option on proposal.

6.3.2 The Subcontractor will be required to attend all project progress and coordination meetings as requested by Wharton-Smith, Inc. or the owner. Job site meetings may be attended via conference call or teams.

6.3.3 All materials must be submitted upon and approved prior to being sent to the jobsite, all non-approved items may be rejected and returned at the Subcontractor's cost.

6.3.4 Subcontractor is responsible to coordinate with the CMAR and all other Subcontractors as necessary.

6.3.5 Subcontractor will be responsible for all general notes indicated on the drawings that pertain to this scope of work.

6.3.6 ~~Subcontractor will obtain all permits, licenses, certificates, and coordination efforts, or any such approvals of plans or specifications as may be required by federal, state and local laws, ordinances, rules and regulations, for the proper execution and completion of the work specified herein.~~

6.3.7 Subcontractor will be responsible for offloading all equipment deliveries and proper short-term and long-term storage requirements per the manufacturer's requirements. Provide all equipment necessary to offload and set equipment including cranes. Frames tailgate delivery only. All unloading, receiving, staging of frames by others.

6.4 GENERAL REQUIREMENTS

6.4.1 The Subcontractor will be bound to the CMAR to the same extent the CMAR is bound to the Owner by the terms of the Contract Documents.

6.4.2 The Scope of Work shall comply with all Federal, State and Local Codes.

6.4.3 This is a lump sum agreement, including freight, incidental fees, and all applicable taxes. A schedule of values for submittals, materials, checkout, startup and closeout paperwork will be submitted with the return of the signed agreement for review and approval by the CMAR's Project Manager.

6.4.4 If requested by the CMAR, the Subcontractor will assist in cost loading of the project's master schedule. Schedule of Values will follow the cost loaded actives provided by Subcontractor.

6.4.5 No billing will be accepted without an approved Schedule of Values.

6.4.6 A detailed Schedule of Values must be provided within two (2) weeks of a contract being executed should your bid be accepted.

6.4.7 No escalation costs are permitted, pricing will remain firm through the project duration.

6.4.8 The Subcontractor is required to abide by the Wharton-Smith, Inc. safety program and OSHA standards. Excavation, confined space plans, and MSDS sheets will be required for all applicable work.

6.4.9 Subcontractor is responsible to develop and provide a site-specific safety plan for this scope of work.

A. Safety plan will list all potential hazards and competent persons who will be supervising the work.

6.4.10 Subcontractor will maintain an OSHA Certified competent person on site at all times while the work is conducted.

6.4.11 All Subcontractors will be required to follow security protocol of the City of Port Orange and Wharton-Smith at all times.

6.4.12 OSHA and the CMAR's safety standards will be followed at all times.

6.4.13 Proper PPE will be worn by any personnel on the jobsite, including but not limited to delivery drivers, startup and commissioning representatives, manufacturer's representatives, and other personnel.

6.4.14 Materials are to be released as required to maintain Schedule, but Subcontractor is to inform CMAR of material releases and deliveries. No item will be released for production without approval from the Engineer.

6.4.15 All equipment will be labeled and tagged in accordance with the Contract Documents.

6.4.16 Provide all management necessary to adequately support field activities and maintain the Project Schedule.

6.4.17 ~~Fulltime and~~ onsite supervision is required while any work by Subcontractor is being performed. If Subcontractor fails to do so, the CMAR will provide supervision and all costs will be back charged to Subcontractor. The Subcontractor's superintendent will be required to attend all requested progress, safety, scheduling, coordination, and quality control meetings. Meetings of other natures may be required as requested by Engineer, Owner, or the CMAR. **All on-site supervision will be by a third party installer.**

6.4.18 The Subcontractor will be required to coordinate with all other construction trades as required to complete this Scope of Work.

6.4.19 Anticipated (general) sequencing – Your crews may be interfacing with several other trades including mechanical, concrete, piping, and testing agencies. Reasonable time provisions need to be made for coordination and time for these trades to complete their work.

6.4.20 All deliveries will be made between 7am-3pm M-F; all deliveries will be escorted onto the site by WSI. A 72-hour notice to WSI's Superintendent will be required prior to any deliveries.

6.4.21 The Subcontractor may not utilize any area of the project site for storage without approval from the CMAR. If the Subcontractor plans to utilize storage space, the Subcontractor will submit, to the CMAR, a site plan detailing the areas being requested for storage.

6.4.22 An emergency contact list will be provided by the Subcontractor. This list will include at least one point of contact that is available 24 hours a day.

6.4.23 Furnish appropriate Material Safety & Data Sheets (MSDS) and warranty documentation with shop drawings for approval.

6.4.24 Subcontractor is required to coordinate with all applicable authorities as required

6.4.25 The Subcontractor utilizing an Employee Leasing Company for Workers Compensation Insurance coverage will not be allowed to use any Subcontractor on the project (i.e. no third-party subs)

6.4.26 It is the sole responsibility of the Subcontractor to secure any and all tools, materials, and equipment stored on the site. Wharton-Smith, nor the Owner, will be responsible for any theft, vandalism, or damage to the Subcontractors property. The Subcontractor is responsible for all security measures required to secure their resources.

6.4.27 Subcontractor will provide temporary generators as needed and fresh drinking water for their employees. Subcontractor is only responsible for their work and personnel.

6.4.28 The Subcontractor is responsible to follow all site plan details and to adhere to all specifications applicable to the Scope of Work items above.

6.4.29 All hazardous material will be properly disposed of at an offsite location.

6.4.30 The Subcontractor will be responsible to utilize available dumpsters for debris and daily clean-up. All areas will be left clean at the end of each day.

6.4.31 A representative of the Subcontractor knowledgeable of the work will be present at weekly coordination meetings with the General Contractor.

6.4.32 Subcontractor is to provide Daily Reports.

6.4.33 ~~A Superintendent (not~~ Foreman) must be present at all times the Subcontractor's crews are onsite.

All on-site supervision will be by a third party installer.

6.4.34 Pre-Mobilization Jobsite QC/QA Conference - Subcontractor to participate in WSI Quality Control Plan as outlined in the Subcontract Agreement. Subcontractor's Project Superintendent and or Foremen will attend Quality Control Meetings as deemed necessary by WSI including a minimum of one (1) pre-mobilization meeting to be held in advance of Subcontractor's mobilization on site.

Meetings may be attended via conference call or teams.

6.4.35 Subcontractor must have approval for additional work (not included in this Scope) in writing by an authorized W/S representative prior to proceeding with said work.

6.4.36 No claim for extra services rendered or materials furnished will be valid by either party unless agreed to in writing by both parties.

6.5 PROJECT SCHEDULE

6.5.1 The Subcontractor is to provide a detailed schedule for the Scope of Work with the submission of bid. The Subcontractor will coordinate with the CMAR to ensure the detailed schedule conforms to the overall Project Schedule. The Subcontractor will update this Scope of Work Schedule each month and provide a written update to the CMAR.

6.5.2 The Subcontractor will account for not working on holidays and still plan for the Scope of Work to be completed per the overall Project Schedule. Holidays will include those observed by the Owner, the CMAR, and the Subcontractor. The CMAR or Owner observes the following holidays:

A. New Year's Day
B. Martin Luther King Day
C. President's Day
D. Memorial Day
E. Independence Day
F. Labor Day
G. Thanksgiving
H. Day after Thanksgiving
I. Christmas Eve
J. Christmas Day

6.6 SUBMITTAL REQUIREMENTS

6.6.1 The Subcontractor will provide submittal documentation as required within the Contract Documents. Upon execution of this Agreement the Subcontractor will provide a list of anticipated submittals for the Scope of Work. The Subcontractor will provide any additional submittal documentation requested for any materials or services related to the Scope of Work.

6.6.2 All submittals which have any deviation will be supplied with a letter addressing all deviations.

6.6.3 All submittals will be provided with a cover page listing the following information:

A. Project name

B. Submittal title

C. Relevant specification sections

a. Specification sections, with addendum updates included, are to have each paragraph check-marked to indicate specification compliance. Check marks shall denote full compliance with a paragraph as a whole. Any deviation shall be clearly marked by an "X" and numbered to indicate a requested deviation. If deviations from the specifications are indicated, and therefore requested, each deviation shall be underlined and denoted by a unique number in the margin to the right of the identified paragraph, referenced to a detailed written explanation of the reasons requesting the deviation. The remaining portions of the paragraph not underlined will signify compliance with the specifications. Failure to include a copy of the marked-up specification sections along with justifications for any requested deviations to the specification requirements shall be cause for return of the entire submittal with no further review.

D. Subcontractor's contact information

E. Manufacturer's contact information

6.6.4 All submittals will include the following information for each individual piece of equipment or fabrication:

A. Complete model number

B. The tag number of each per the Contract Documents (if applicable)

C. List of major components

D. Specification section (if varied from the submittal prime specification section)

6.6.5 It is the Subcontractor's sole responsibility to ensure submittals are complete and accurate for the complete scope of this agreement. Coordination of submittal information from others working under the Subcontractor is the sole responsibility of the Subcontractor. Subcontractor will not provide submittals with any items marked out of scope or by others if such items are part of the scope of this agreement.

6.6.6 Revised submittals will include a comment response document, this document will respond to every comment in writing and reference the location of all corrections within the revised submittal. Revised submittals will be at no additional cost to the Purchaser.

6.6.7 The Subcontractor may be responsible for any costs incurred by the CMAR due to excessive submittal revisions.

6.7 RECORD DOCUMENTS

6.7.1 The Subcontractor will maintain accurate and current as-built documents. These documents will meet the requirements within the Contract Documents. All survey information will be certified by a licensed surveyor.

6.7.2 Prior to approval of the Subcontractor's monthly pay application, the CMAR may elect to review the Subcontractor's as-built documents. If these documents are found to be inaccurate or not current, up to the date of the pay application, the CMAR may reject the pay application until the Subcontractor provides accurate and current as-built documents. Subcontractor will not be entitled for any additional costs, fees, or other compensation due to rejected pay applications and delayed payments as a result of Subcontractor's failure to provide accurate and current as-built documents.

6.7.3 After completion of the Scope of Work, the Subcontractor will provide complete and final as-built documents within two (2) weeks. As-built documents will be provided as detailed in the Contract Documents

6.8 INSURANCE

6.8.1 Subcontractor will provide the minimum insurance limits required to meet the requirements in this purchase order and all the requirements detailed within the Contract Documents. A sample insurance document is included within the Contract Documents for additional reference.

6.8.2 The Subcontractor will maintain a worker's compensation insurance policy for the complete scope of services. The Subcontractor will not utilize a Professional Employer Organization (PEO) to provide workers compensation insurance.

Attached DH Pace proposal is to be made part of this scope of work.

Christine Carasas

From: Carlene Tresnak <Carlene.Tresnak@dhpace.com>
Sent: Tuesday, November 12, 2024 1:14 PM
To: Wharton Smith Commercial Estimating; James Manyette
Cc: Brandon Fields
Subject: Port Orange Proposal
Attachments: Port Orange Proposal.pdf; COPO - 08 11 13 Doors Frames Hdw Bid Package.pdf

Good Afternoon,
If you have any questions, please contact Brandon Fields or myself.
Thank you,

Carlene Tresnak
Senior Estimator
DH Pace Entry Door Systems Group

Direct:(816) 480-2602
Office:(816) 480-2600
Email:Carlene.Tresnak@dhpace.com

DH Pace Entry Door Systems Group - 1901 E. 119th Street - Olathe, KS 66061
Who is DH Pace Company?: Click Here

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!

Taylor,
Cotton,
Ridley, Inc. *Doors, Hardware, & Building Specialties*

1904 Brengle Avenue
Orlando, Florida 32808
Ph: 407.298.5114 ext. 213
Fax: 407.298.5336

Date: November 12, 2024 Quote# LD111224.01

Quote good for 30 days from date of Quote

To: Wharton-Smith, Inc. Construction Group
750 Monroe Road
Sanford, Florida 32771
Attn: Preconstruction Estimating ph: 407.321.8410 ext. 3692 / fax: 407.327.6984 / cell: 407.
comest@whartonsmith.com

Re: **Port Orange Public Utilities Field OPS Bldg. – City of Port Orange**
4505 Clyde Morris Blvd. Port Orange, Volusia County, FL 32129

Taylor, Cotton & Ridley, Inc. is pleased to provide a material supply quotation for the above referenced project as follows:
Div. 8: Doors, Frames & Finish Hardware per Specification Section 08 11 13, 08 14 16, 08 71 00

Base Materials:

Section of Hollow Metal Doors & Frames:

Hollow Metal Frames & Doors are quoted per plans & specifications; manufactured by Ceco (Division of Assa-Abloy)
Frames quoted with 5-3/4" jamb depths, 2" face profile. Frames quoted welded at locations
Exterior Hollow Metal Frames are 16 gauge galvanized (A60); Interior 16 gauge cold rolled steel
Anchors at custom jamb depths are welded. Supplied loose at standard jamb depths.
Electrical back boxes included for all electrical hardware preps in HM frames. CONDUIT EXCLUDED.
No STC ratings quoted at this time *(Note: Quoted STC Ratings are Lab rated – any field testing is by others)*
No Lead Lined frames quoted / Bituminous Paint currently included in our scope of work.
Frame lead time tentative 6-8 weeks; Doors 10-16 weeks from approved current shop drawings
Require current approved hardware schedule to order doors and frames
Exclude all glass and glazing as by glass sub-contractor, furnished, and installed.
Exterior Hollow Metal Doors: 16 gauge galvanized, polystyrene core, seamless edge construction.
Interior Hollow Metal Doors: 16 gauge cold rolled steel, honeycomb core, seamed edge construction.

Quantities: 55 each Hollow Metal Frames / No Hollow Metal Special Assembly Frames
20 each Hollow Metal Doors

Note: All frame installation is excluded / Hollow Metal Frames tailgate delivered

Section of Wood Doors, Specification 08 14 16:

Wood doors per plans & specifications: Wood doors manufactured by Masonite Flush Architectural Doors
LEED material compliant products quoted; does not contain added formaldehyde.
Premium AA grade plain sliced walnut face veneers with matching edges
PC5 particleboard and mineral core construction, Factory pre-fit and pre-machined for finish hardware
Blocking & Intumescent seals as required by manufacturer's labeling service
Lites and / or Louver sizes may have been adjusted to maintain the guarantee and / or label.
No STC rated openings quoted at this time. *(Note: Quoted STC Ratings are Lab rated – any field testing is by others)*
No Lead lined openings quoted / EXCLUDE GLASS & GLAZING
Factory Custom Stain Included, written approval of stain color required prior to door fabrication; poly bagged
Lead time 12-22 weeks after approved shop drawings (copy of approved current hardware schedule
Required prior to ordering doors.

Quantities: 38 each Wood doors

Section of Finish Hardware, Specification 08 71 00:
Hardware estimated per plans and specifications, identical to specified products in the hardware schedule
Locksets included manufactured by Sargent (division of Assa-Abloy)
Hardware lead time tentative 8-12 weeks after receipt of current approved hardware schedule and keying information
Electrified hardware components quoted per hardware schedule listing in preamble.
(Card Reader, Card reader equipment, power supplies, cipher locks are excluded and quoted as furnished and installed by low voltage electrified sub-contractor (by others), these items are excluded from our scope of work)
No Automatic Operators quoted at this time, if required, they are excluded and quoted as furnished and installed by others.
Exclude Aluminum Door hardware / Exclude Overhead Door hardware / Exclude Gate hardware.

Quantities: 1 Lot of Finish Hardware

Installation of Frames, Doors and Finish Hardware:

Door Installation Typical inclusions:

TCR Self performs installation of doors and hardware
Receiving, storage, distribution & installation of Door & Hardware materials listed above.
Storage of Doors & Hardware in Distributors Orlando warehouse if Conex not available on site.
Electrical connection by TCR at door: wiring through frame & above by Electrical Contractor or Integrator.
Junction box at each electrical opening is provided by others.
TCR will make connections to specified hardware as listed in hardware set)
power supply installed and located above the door by others.
Daily clean up. Composite crew allowance available upon request, currently not quoted.
Project staffed with working 30 hour OSHA & First Aid and CPR certified superintendent.

Door Installation Typical Exclusions:

Card reader terminations and door monitoring connections excluded.
Aluminum door hardware installation excluded
Frame installation excluded
Glass installation excluded
Conduit & Wire (from locations over 15'-0" of local electrical opening) excluded.
High Voltage connections excluded
Labor to receive, distribute & install hollow metal frames excluded.
Additional protection of doors and frames (other than manufacturer's packaging) excluded.

PLEASE NOTE: **INSTALLATION OF DOORS AND FINISH HARDWARE IS IN CONJUNCTION WITH MATERIAL SUPPLY.**
INSTALLATION IS NOT AN INDEPENDENT QUOTE.
TCR WILL NOT INSTALL MATERIAL FURNISHED BY A THIRD PARTY.

BASE BID:

Material Supply Price:	**$**	**267,557.00 (Tax Included)**
Installation Price:	**$**	**56,448.00 (Tax Excluded) ****
Bid Package Price:	**$**	**324,005.00 ***

*Payment & performance Bond Value : 1.0% (Not Included in Bid) **Add $ 3,240.00**
*If Textura used for billing **add** 0.22% (max $3,750.00) to total billing (Not Included in Bid) **Add $ 715.00**
*If TCR is to participate in a composite cleanup crew, to total billing (Not Included in Bid) **Add $3,240.00**
*If TCR is to utilize Compass Prequalification Services, to total billing (Not Included in Bid) **Add $3,800.00**

Material Supply Qualifications and Exclusions:

Quotes currently good for thirty (30) days from date of quote.

1. Taylor Cotton & Ridley, Inc. is a distributor of materials manufactured by others. As such we are not quoting "Delegated Design" unless contracted specifically for this purpose. Our quote is based solely on the bid documents as released for pricing by the Owner / Architect.
2. Taylor Cotton & Ridley, Inc. and it's manufacturer's are not Engineers and are not to be considered Engineer of Record. Any engineering calculations provided are to confirm our compliance to the specifications as issued by the Owner / Architect.
3. Taylor Cotton & Ridley, Inc. does not pull or pay for permits or inspection fees. TCR will NOT pay for product tests. We quote products from available tested and approved Florida Building Code Compliant products as specified in the bid documents.
4. Labor to receive and disseminate materials including door hardware is excluded, unless installation included in TCR subcontract
5. Installation of doors and hardware is excluded unless installation included in TCR subcontract.
6. Installation of ALL frames is excluded. Grouting of ALL frames is excluded.
7. All Aluminum Storefront, frames, doors and associated hardware, except cylinders, is excluded from our scope of work.
8. Glass and glazing is excluded as by other trades
9. Per Specification the wood door delivery to the site is only permitted after the project is weatherproofed & having controlled temperature and humidity. Wood door storage will have to be stationed inside the facility. Off-site storage is excluded and would result in a contract add.
10. Additional protection of doors, frame and hardware other than the manufacturer's standard packaging is excluded. *If additional door protection is desired, please call for quote to add material & cost to quote.* Please advise if door or frame or both and door size and quantity or location desired protected.
11. Exclude hollow metal frame, door, wood door and finish hardware field repair resulting from damage by other trades.
12. A copy of the Notice of Commencement or Notice to Proceed or information associated with these forms will be required at point of sale.
13. We acknowledge no addendum.
14. Pricing based on Construction Documents drawings dated 09/30/2024
15. Pricing based on Specifications dated 09/30/2024
16. RFI's acknowledged none .
17. Quote FOB job site.
18. Exclude keying of existing cylinders and locksets not provided by this supplier.
19. Quotes are good for 30 days from date of quote unless a formal letter of intent, purchase order or sub-contract received. Prices subject to change after 30-day deadline.

Additional TCR Bid Qualifications:

When required, shop drawings shall be furnished, and when approved by the purchaser's Architect, they shall be deemed to be correct interpretation, design and dimensions.

No Back Charges will be accepted unless specifically agreed upon in writing.

We will not be responsible for loss or damage arising from delays caused by lack of correct or complete data, by Changes or revisions, by late approval of drawings, or by any other cause beyond our control.

Should the purchaser tend his own purchase order contract, all terms and conditions of the proposal shall be by This reference be incorporated therein.

Materials in this quotation are quoted F.O.B. Factory, with freight included for Tailgate Delivery to your jobsite. Quotation is subject to review if not accepted within 30 days.

We are bondable: However, a bond premium has not been included. Our terms are: No retainage, Net 30 days With approved credit or proof of bonding. Add $250.00 (per name) to our quotation if you are to be named as an additional insured on our insurance policy.

RE: Bid Price & Project Time Completion Terms

We regret that we can only protect our quotation pricing for 30 days. We can only protect our sold or contracted material pricing for 180 days from date of order. This has become necessary due to the unparalleled and unprecedented economic instability the construction industry is experiencing with material shortages, extended manufacturing lead times, shipping delays and lack of qualified available work forces at the manufacturing level.

We must reserve the right to increase pricing and/or jobsite delivery times during the duration of a contract award due to sudden announced material price increases or surcharges on materials and/or delivery costs. In the event either of these increases were to happen, we will provide proof of written confirmation from our vendors and shippers. Again, we regret that we must impose these restrictions, but we cannot remain a valuable partner to you servicing your customers if we cannot pass along delays and announced price increases that greatly affect our stability and yours

Published lead times on our bid proposals are based on manufacturers' recent publications. As a distributor we can only publish the information provided. They are not guaranteed by any manufacturer to ship or deliver by that said date. Lead times are subject to change at any time, and should only be considered a best-case scenario. Materials are sourced from multiple states across the country and the world. Delayed freight/transit times may affect delivery dates for materials to arrive locally. Construction schedules need to carry these lead times, plus a buffer for worst case scenarios that are out of our control.

If you should have any questions, please call me. Thank you for the opportunity to provide you a quotation.

Sincerely,

LynDea Drury AHC FDAI

LynDea Drury AHC, FDAI (DHI Certified)
Senior Estimator / Project Manager
ldrury@taylorcottonridley.com
cc: file 11.12.2024

Acceptance of Quote:

_____ Date: _____
Signature

_____ _____
Name of Authorized Signature Name of Company

_____
Purchase Order / Contract #

Christine Carasas

From: ldrury@taylorcottonridley.com
Sent: Tuesday, November 12, 2024 3:05 PM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Utilities
Attachments: Q Port Orange Public Utilities est LD111224.pdf

Good afternoon,

Please find attached a copy of my bid on the Port Orange Public Utilities Field OPS Bldg. project.
Should you have any questions, require additional information or modifications to my scope of work,
Please email or call,

Submitted respectfully,

LynDea Drury AHC FDAI

LynDea Drury AHC FDAI
Senior Estimator / Project Manager
Taylor-Cotton-Ridley, Inc.
1904 Brengle Avenue
Orlando, FL 32808
Ph: 407.298.5114 extn.313
Fax: 407.298.5336
Email: ldrury@taylorcottonridley.com
Or ldrury.taylorcottonridley@gmail.com

GO LIONS! Never Hunt Alone

Please note, when NDA is in effect on a project, receiving party acknowledges that by opening these or any attached documents, you may not directly or indirectly divulge, disclose, or communicate any o the confidential in ormation to any third party.

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!

Date: 11/18/2024

Proposal: LM24-132

Contractor Name:
Wharton-Smith
750 Monroe Road
Sanford, FL 32771
Attn: James Manyette

Project Name:
City of Port Orange Public Utilities Field Operation Facility
4505 Clyde Morris Blvd.
Port Orange, FL 32129

Thank you for providing the Unified Door and Hardware Group (UDH Group) with this opportunity to present our proposal for the **Port Orange Public Utilities Field Ops Fac.** project.

We propose furnishing and delivering doors, frames, and finish hardware as outlined below. The values presented here are based on our material scope, our qualifications, and our exclusions as outlined within the body of this proposal. Should you feel we have omitted or included items in our scope incorrectly please contact us as soon as possible.

Material Furnished and Delivered

Material Price (Less Tax):	$ 170,000.00
6 % Florida State Sales Tax (Material):	10,200.00
.5% Volusia County Sales Tax (Material):	25.00
Material Total w/Tax (Less Bond):	$ 180,225.00

This proposal is based upon the following bid documents.

Bid Documents	**Dated**	**Document Completion %**
Architectural Plans & Drawings:	09/30/2024	100%
Specification Sections: 081113 081416 087100	 09/30/2024 09/30/2024 09/30/2024	100%
Door Schedule Sheet Number(s):	A500 dated 09/30/2024	100%
Includes Addendum(s):	None	
Includes RFI Responses	1 thru 27	
Includes WSI	001 thru 008	

Please continue reading the remainder of our proposal for standard and project-specific qualifications, exclusions, lead times, deliveries, and other valuable information.

SPECIFICATION SECTION: 081113 HOLLOW METAL DOORS AND FRAMES

Hollow Metal Frames:		
Hollow Metal Frame Construction – ☒ Welded / ☐ Knock Down		
3-Sided, Welded, Hollow Metal Frames, 16 gauge	55	Each
Total Hollow Metal Frame Count	**55**	**Each**
Hollow Metal Doors:		
Openings, 16 gauge, Hollow Metal Doors	20	Each
Total Hollow Metal Door Leaf Count	**20**	**Each**

Hollow Metal Exclusions:

1. Glass for vision kits
2. Temperature-rise rated door construction as this is not required by code in fully-sprinklered buildings.
3. Finish painting hollow metal doors and frames.
4. This proposal does not include frame insulation, grouting, bituminous coating, Tnemec coating, or asphalt emulsion of any kind.
5. Field measuring of existing frames and/or field surveys of walls unless otherwise noted.
6. Cladding over hollow metal doors & frames (wood, stone, etc.). Cladding of hollow metal products may void fire ratings and the manufacturer's warranty.
7. We include a hollow metal frame at opening # 103B per the head detail H1/A511 and not an aluminum frame per jamb detail F1/A512 and sill detail A1/A512.

SPECIFICATION SECTION: 081416 FLUSH ARCHITECTURAL WOOD DOORS

Architectural Wood Doors:		
Grade 'AA', Quarter Sliced, Black Walnut, Book Matched, 5-ply, Particle core, Factory Pre-fit, Pre-machined and Pre-finished, to Match PL-1	38	Each
Total Architectural Wood Door Leaf Count	**38**	**Each**

Furnish (38) Stain Grade Flush Architectural Wood Doors

SPECIES	GRADE	CUT	MATCH	FINISH
Black Walnut	AA	Quarter Sliced	Book Matched	Custom Color Stain

Architectural Wood Door Qualifications:

1. Factory pre-finished, doors will be factory finished with manufacturer's standard finish system. This includes standard sheen and gloss levels.
2. Wood veneer door pricing has been estimated based on the information provided. Pricing is subject to change until physical finish samples are approved.
3. Wood doors will be marked with an opening identification number, wrapped for protection, and secured on pallets for delivery.

Architectural Wood Door Exclusions:

1. Due to technological improvements in the component materials used by contemporary architectural door manufacturers, sealing the top and bottom edges of architectural wood doors is no longer a

warranty requirement. Architectural wood doors constructed with composite materials make wood doors more dimensionally stable than wood door construction practices used by manufacturers in the past.
2. Individual boxing of wood doors.
3. Unless stated otherwise, this proposal excludes top and bottom edge face matching construction.

SPECIFICATION SECTION: 087100 FINISH HARDWARE

Architectural Hardware:		
• Quantity of Sets Assigned to Hollow Metal & Architectural Wood Doors	**55**	Sets
• Quantity of Sets Assigned to Storefront Aluminum Framed Openings ☒Cylinders only ☒ Balance of Hardware for aluminum and glass doors by Others	**2**	Sets

Finish Hardware Qualifications:

1. If specified, interchangeable construction cores are to be returned to UDH Group at the end of the project. Additional charges will be assessed for construction cores that are not returned.
2. Unless noted otherwise, any hardware samples requested and provided are to be turned over and incorporated into the project's bill of materials.

Finish Hardware Exclusions:

1. All items considered to be part of the security and access control package as defined by the security and access control specification(s) including but not limited to power supplies, low voltage wiring, conduits, wire pulls, and all terminations.
2. Setting Up of Key Cabinet & Key Management Software (if specified).

VOLUNTARY ALTERNATES

1.) If we are to furnish openings # 109B and 154 with Steelcraft hollow metal doors with a G2 elevation, and with Von Duprin panic devices in lieu of Curries hollow metal flush doors with Sargent panic devices in order to match the G2 elevations and maintain the FBC Hurricane Code and fire rated labels, to the bid price:

Add Material Price (less Tax):	$ 3,850.00
6% Florida State Sales Tax:	231.00
Total Add Price w/Tax:	$ 4,081.00

VOLUNTARY ALTERNATES CONTINUED

2.)	If we are to furnish all the wood doors with Quarter Sliced, White Maple, Veneers, in lieu of Quarter Sliced, Black Walnut, from the bid price:	
	Deduct Material Price (less Tax):	($ 1,800.00)
	6% Florida State Sales Tax:	108.00
	Total Deductive Price w/Tax:	($ 1,908.00)
3.)	If we are to furnish all the wood doors with Plain Sliced, White Maple, Veneers, in lieu of Quarter Sliced, Black Walnut, from the bid price:	
	Deduct Material Price (less Tax):	($ 2,200.00)
	6% Florida State Sales Tax:	132.00
	Total Deductive Price w/Tax:	($ 2,332.00)
4.)	If we are to furnish all the wood doors with Custom Grade 'A' Veneers, in lieu of specified Premium Grade 'AA' Veneers, from the bid price:	
	Deduct Material Price (less Tax):	($ 500.00)
	6% Florida State Sales Tax:	30.00
	Total Deductive Price w/Tax:	($ 530.00)

STANDARD QUALIFICATIONS

1. LEED Requirements, if applicable and specified in the appropriate specification sections, are included according to the specified manufacturers' capabilities. Therefore, compliance with the specified LEED requirements may be limited by the products specified.
2. The warranty of material shall be limited to the warranty extended to UDH Group by its suppliers. All warranties are the maximum allowed by each manufacturer. No other warranties expressed or implied shall supersede those as set forth by the manufacturers.
3. Door / Frame sizes and elevations may vary from those specified or shown in the bid documents to maintain the specified fire and warranty requirements.
4. We cannot guarantee all the specified door, frame, and hardware manufacturers listed within the bid documents have products that are compatible with one another. We therefore reserve the right to provide alternate material, or items, by a specified manufacturer to obtain the intended function.
5. All undercuts are to be confirmed by the client during the submittal process.
6. Where the manufacturer's product numbers have been specified incorrectly, we have done our best to interpret the architect's intent and cost of the indented item. If we have made an error in our interpretation, we will not be held liable for any additional costs associated with providing the correct item.
7. All fire ratings unless otherwise noted, have been determined and priced as listed on the architect's door schedule.
8. Submittals will not commence until we have received a formal "Notice to Proceed."

9. Should one of the specified manufacturers or vendors, as a normal course of business, require a deposit before processing your order the UDH Group will invoice for said deposit and will not release any material requiring deposits without the deposit invoice being satisfied.

STANDARD EXCLUSIONS

1. Material installation and installation supervision.
2. Glass and glazing unless specifically stated otherwise herein.
3. Aluminum storefront doors, frames, and hardware.
4. Herculite/glass doors, frames, and hardware.
5. Demountable Partitions and all associated hardware.
6. Attic Stock unless specifically stated otherwise herein.

PROJECT EXECUTION AND LOGISTICS

The value(s) represented in this proposal is predicated on the material being shipped by 11/28/2025 It is our understanding that this date is in accordance with the project's construction schedule at the time of this writing. If the project is delayed necessitating shipments after said date, the delayed materials may be subject to a manufacturer's cost increases and may need to be requoted based on market conditions. If required, any adjustments to our contract will be addressed via a change order.

MATERIAL LEAD TIMES:

The anticipated manufacturing lead times for the material listed in this proposal have been outlined below. The times provided should be considered an estimated time and represent industry-standard lead times at the time of this writing. All lead times are after receipt of approved shop drawings and hardware submittals and are subject to change.

Shop drawings:	6 to 8 weeks
Hardware submittals:	12 to 14 weeks
Hollow metal frames:	6 to 8 weeks
Hollow metal doors:	10 to 12 weeks
Wood doors:	12 to 16 weeks
Finish hardware:	8 to 10 weeks

Please allow one additional week for order entry after we receive approved submittals with no unanswered questions. One additional week should also be added for the transportation of materials once manufactured.

UDH Group is not responsible for manufacturing and other delays beyond our control.

1. This proposal's value is predicated on delivering the above quantities listed. If there are truck size limitations or restrictions, please notify us.

2. This proposal is based on full truckload shipments to the project site. Partial, expedited, off-site, or additional deliveries will incur additional costs.
3. All deliveries are tailgate delivery, no liftgate service is provided.
4. Wood doors will ship directly from the manufacturer to the project site.
5. All deliveries will be made during normal working hours (Monday – Friday, 7:30 AM – 3:30 PM). No after-hour or weekend deliveries are provided in the base scope.
6. No flagman or traffic control is provided for deliveries. This is to be provided by others, if necessary.

TERMS OF OFFER

1. **Unless stated otherwise herein, this proposal is good for 30 days from the date of this proposal.**
2. For clients in good standing, payment terms are Net 30 days from delivery.
3. This offer supposes payment terms without retainage or holdback on material billings. All material invoices are to be paid in full.
4. This is a lump-sum proposal; the products in this proposal may not be purchased separately.
5. This proposal reflects current published and custom-configured pricing based on the ship dates outlined in the Project Execution section of this offer. This offer does not include any future unannounced manufacturer's surcharges, tariffs, etc... If any material within our scope of work becomes subject to this type of price increase, we will submit a contract change order(s) as applicable at the time said cost increase is imposed.
6. All "alternate" values presented in this proposal are based on client acceptance before our "notice to proceed". Once UDH Group has proceeded with work all "alternate" values are null and void and will be updated as needed to reflect current costs.
7. Stored material has not been calculated as part of the value of this proposal. If UDH Group is required to store material, project progress payments must be made for any materials stored in a secure off-site location (including a UDH Group warehouse). Progress payments must include additional compensation for storage expenses such as insurance, handling, etc. UDH Group will provide additional documentation as required.
8. Once a project schedule has been agreed upon, it is the responsibility of the purchaser to provide any schedule updates as soon as possible.
9. This is a material-only proposal, if accepted, UDH Group will anticipate receipt of a Purchase Order agreement for the value of this proposal, plus any applicable taxes.
10. As a material supply-only vendor, UDH Group will not accept liquidated or consequential damages.

Thank you for the opportunity to submit this proposal. We will do everything we can to ensure a successful project. If you have any questions, please reach out to me directly.

Sincerely,



Mark Carpenter
Director of Sales
O: 407-333-0500
mcarpenter@udhgroup.com

James Manyette

From: Mark Carpenter <mcarpenter@udhgroup.com>
Sent: Monday, November 18, 2024 2:02 PM
To: James Manyette
Subject: City of Port Orange Public Utilities Ops Fac.
Attachments: CITY OF PORT ORG. PUB UTILITIES OPS. FAC. LM24-132 Template.pdf; COPO - 08 11 13 Doors Frames Hdw Bid Package.pdf

James,
Please review the attached proposal and scope of work bi package.
Any questions please let me know.

Mark Carpenter
Director of Sales

UNIFIED DOOR & HARDWARE
A Foundation Building Materials Company

Lake Mary Branch
1105 Sand Pond Road, Lake Mary, FL 32746
O: (407) 333-0500
mcarpenter@udhgroup.com
www.udhgroup.com

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City of Port Orange

Public Utilities Field Operations Facility

Doors / Frames /Hardware

Bid Package

Prepared by Wharton-Smith (Construction Manager at Risk)

Issued 10/07/2024

Wharton-Smith Contact:
Keri Strawder – Project Manager
kstrawder@whartonsmith.com

Architect: Schenkel Shultz

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SECTION 1 – INVITATION TO BID

Invitations were sent electronically via ConstructConnect platform

See also Bid Manual for additional invitation information

SECTION 2 – LIST OF BID DOCUMENTS

1. Bid Manual
2. Project Specifications – Issued for Bid – Dated September 30, 2024 (Volumes 1 &2)
3. Project Drawings – Issued for Bid – Dated September 30, 2024
4. Wharton-Smith Standard Subcontract with Bond
5. Wharton-Smith Team Player – Instructions for Subcontractor Pay Applications

SECTION 3 – INSTRUCTION TO BIDDERS

See Bid Manual

SECTION 4 – BID REQUIREMENTS AND CONDITIONS

See Bid Manual

SECTION 5 – BID PROPOSAL EVALUATION

5.1 GENERAL

5.1.1 Bid Proposals will be evaluated based upon review of the following:

A. Cost – The evaluation of this criterion will be based on the Bidder's total base bid, bid alternates, unit prices.

B. Value Engineering – This criterion measures the ability of the Bidder to identify potential areas of cost savings or improvements of the final project.

C. Bidder's ability to meet all other criteria outlined herein.

5.1.2 Reference the Instructions to Bidders section of this Bid Manual and the Bid Form for more information regarding detailed requirements of the Bid Proposals.

5.1.3 In evaluating Bids, Wharton-Smith, Inc. shall consider the submission of the Bidders, and whether or not the Bids comply with the prescribed requirements as outlined in these Instructions, the Bid Form, this Bid Manual, and all associated Owner and Bid Related documents provided with this Bid Package.

5.1.4 Wharton-Smith, Inc. may conduct such investigations and require supplemental information as it deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of the Bidders, proposed Subcontractors, proposed equipment and material suppliers, and other persons and organizations to provide the materials in accordance with the Contract Documents to Wharton-Smith, Inc.'s satisfaction within the prescribed time.

5.1.5 Bidder shall, upon request of Wharton-Smith, Inc., submit documentation evidencing its capability to execute the work properly within the time specified. This information must be received by Wharton-Smith, Inc. within ten (10) calendar days of Bidder receiving written request.

5.2 RECOMMENDATION AND APPROVAL OF RANKING

5.2.1 The CMAR will review all Bid Proposals that are received in conformance of the requirements herein and provide a recommendation to the Owner. The Owner, at its sole discretion, may accept the CMAR's recommendation or re-evaluate the Bid Proposals. The Owner will establish and approve the final recommended of award for the Bid Package. The Owner will be the sole judge of its own interests, the proposals, and the resulting agreements. The Owner's decision will be final.

5.3 AWARD OF CONTRACT

5.3.1 Award shall be based on products, equipment and materials named in the Contract Documents. Consideration of any decisions regarding substitution shall not be made until after Award of Contracts.

5.3.2 If the Contract is to be awarded, Wharton-Smith, Inc. will give the Bidder a Notice of Award after the Owner's agreement of the Bidder to receive Award.

5.3.3 The Awarded Bidder will be required to enter into a Purchase Order Agreement or Subcontract Agreement with Wharton-Smith, Inc. This agreement will contain the same terms and conditions as shown in the sample agreement provided in this Bid Manual. The Purchase Order or Subcontract will also contain the defined work scope as shown in this Bid Manual. Modifications to this Agreement will not be allowed.

SECTION 6 – SCOPE OF WORK

The Bidder shall utilize the information within this section of the Bid Manual to assist in development of the Bid Proposal. The outlined scopes herein are not intended to detail the complete scope of the Bid Package. The Bidder is responsible for reviewing the Contract Documents to understand the full scope and requirements.

The Subcontractor Is to furnish all labor, equipment, material, subcontracts, and supervision required to complete the Scope of Work generally described as the **DOORS/FRAMES/HARDWARE PACKAGE**, detailed herein, for the Public Utilities Field Operations Facility. All work shall be complete and in accordance with the Contract Documents. In the event of conflicts between the Scope of Work and other parts of the Contract Documents, this section shall take precedence.

6.1 WORK OVERVIEW

Provide complete, all required **Doors, Frames, and Hardware Work**, for the Project known as **City of Port Orange Public Utilities Field Operations Facility.**

The Work included in this Subcontract is project specific and outlines the general Scope of Work for this Subcontract, all in complete accordance with the Plans and Specifications as defined in Exhibit "C" attached hereto.

Other Specification Sections may form a part of this Subcontract, whether listed or not.

The Scope of this Subcontract includes, but is not necessarily limited to the furnishing and [illegible] of the following Work by this Subcontractor.

1. Visitors - No one shall be admitted to the jobsite by the Subcontractor, except as necessary to perform the Work hereunder, without, in each instance, first obtaining the approval of the Contractor.
2. Replace Guardrails - This Subcontractor shall install, maintain and replace all required guardrails in accordance with OSHA Standards for the purpose of safety, at all openings and suspended work at the locations not protected and where Subcontractor is performing work. Subcontractor is also responsible for all construction fencing, temporary walkways, overhead protection, signage, and/or barricades to perform work outside the boundaries of Contractor furnished construction fencing.
3. Ongoing Operations/Residential Environment/Parking - Without limitation of the foregoing, Subcontractor understands that the Work may be constructed near on-going business or facility operations and may be in and around private residences and neighborhoods. Subcontractor shall use its best efforts, in conformity with the applicable standard of care, to perform the services hereunder in a manner which will not interfere with the on-going business operations and residences. All construction employees are to enter and park in the construction parking area designated by Contractor. Subcontractors are responsible for all off-site parking of employees which may be required and busing to jobsite via route identified by Contractor. Busing of employees, jobsite vehicles or deliveries shall not be routed through surrounding neighborhoods.
4. Jobsite Storage - Subcontractor is aware of the existing site conditions and the limited space availability. On-site storage and staging of materials and equipment will be allowed only as specifically approved by Contractor's Project Superintendent or Project Manager. All deliveries of Subcontractor will be coordinated through Contractor. If scheduled deliveries are not ready at appointed time, Contractor may refuse acceptance and deliveries will be rescheduled. All cost and/or delays associated with the refusal of deliveries will be the responsibility of the Subcontractor. Subcontractor has included in this Subcontract price, all off-site storage as may be required, including, but not limited to transportation of materials from staging area to site.
5. Phased Turnover - This Subcontractor acknowledges that the Project may have phased turnover in accordance with the Project Schedule and that several mobilizations may be required and are included as part of this Subcontract. Additionally, Subcontractor acknowledges that the Project may have multi-buildings and that concurrent work on each building will be required in order to complete some phases ahead of the Project Schedule and all costs for doing same are included.

6. Owner's Facilities - All Project employees are subject to the Owner's rules and regulations while employed within their property limits. Use of the Owner's other parking lots and facilities by this Project's workmen are not permitted.

7. Limitation of Noise/Hours of Work - Subcontractor shall comply with all city, county, state and local jurisdictional authorities' Noise and Hours of Work Regulations.

8. Care and Custody: This Subcontractor shall provide labor and equipment to receive, unload, inventory, store and provide for the care and custody of all materials it procures for its own behalf, or is furnished by others for installation by this Subcontractor, until such time as the material is permanently installed and accepted by the Owner and Architect. Storage containers to be provided by Contractor.

9. Install all **Frames, Hollow Metal Doors and Finish Hardware Work** in strict accordance with the Contract Documents, complete, turnkey and fully functioning to the designer's intent. Specifically including all details, sections and notes contained within the Contract Documents.

10. Subcontractor certifies that it meets the minimum Contractor Qualification requirements as further detailed in the Specification and elsewhere in the Contract Documents.

11. The Installing Subcontractor shall attend and participate in the pre-installation conference to be held at the Project Site and conducted in concert with Owner, the Architect, the Installer, and Contractor.

12. This Subcontractor shall provide and install Complete Door, Frame, and Hardware package. This includes, but is not limited to, all solid core wood doors, hollow metal doors, hollow metal door frames, hollow metal window frames, fire rated door assemblies, wood and metal lite kits, door hardware and all other incidental items required by this Scope of Work all in strict accordance with the Contract Documents, manufacturer's specifications, governing building codes, and the Authority Having Jurisdiction.

13. Provide and install all Hollow Metal Doors, Wood Doors, and Finish Hardware Work in strict accordance with the Contract Documents, complete and fully functioning to the designer's intent, specifically including all details, sections and notes contained within the Contract Documents.

14. This Subcontractor shall provide and install doors, frames, and hardware by preapproved manufacturers in strict accordance with the Contract Documents.

15. This Subcontractor shall provide all hollow metal door frames and hollow metal window frames in strict accordance with the Contract Documents. All hollow metal frames are to be delivered to the Project site as directed by Contractor to allow for normal installation in concrete masonry walls, masonry partitions, and drywall partitions.

16. This Subcontractor shall provide all door frames protected and packaged as required in strict accordance with the Contract Documents.

17. This Subcontractor shall provide all miscellaneous anchors, clips, fasteners, flashings, extrusions, shims and spacers necessary for the installation of all door frames.

18. This Subcontractor shall provide and install all doors in strict accordance with the door schedule in the Contract Documents. All doors are to be prepped for appropriate hardware and lites at the factory. Glazing of door light kits, transom panels, side view panels, and other hollow metal windows (normal and fire rated) is not included as it shall be provided by the glass Subcontractor, however the vision trim kits are to be provided as part of this scope of work

19. This Subcontractor shall provide door finishes in strict accordance with the Contract Documents.

20. This Subcontractor shall provide all doors delivered to the Project site with nonpermanent labels designated by door opening.

21. This Subcontractor shall provide all doors with fire, smoke and rated labels in strict accordance with the Contract Documents.

22. This Subcontractor shall provide all door hardware including, but not limited to, all hinges, cylinder cores, keying, panic devices, wiring harnesses, power supplies, wall and floor stops, closers, pulls, handles, weather-stripping,

locks, surface bolts, lock guards, latch sets, exit devices, kick plates, push/pull plates, seals, drip caps, thresholds, silencers, mullions, and door sweeps.

23. This Subcontractor shall provide all required cylinders at all aluminum storefront doors. All hardware required at aluminum storefront doors, minus referenced cylinders, is provided by others.

24. Provide and install all temporary cylinders and cores at all exterior doors, electric room doors, and other locations at the discretion and direction of the Wharton-Smith Superintendent, for locking and securing the premises during the construction phase.

25. Furnish and install all doors, frames, and hardware required of the plans even if not included on the door schedule. As required of the specification, should any particular door or items be omitted in any door or window schedule, or scheduled hardware group, furnish door, or items with hardware same as required for similar purposes.

26. This Subcontractor shall coordinate that all door hardware, door frame prep and associated electrical hardware (hinges, strikes, etc.) will integrate with the electrical contractor's access control equipment for a fully functioning turnkey access control system.

27. This Subcontractor understands and agrees that if discrepancies are noted between the hardware shown on the door schedule and the hardware shown in the specifications, the listed hardware group number detailed in the specifications shall prevail.

28. This Subcontractor shall provide and index one (1) key cabinet that allows room for expansion for 150% of quantity of keys required for the project.

29. This Subcontractor shall provide all required submittals for approval prior to release for fabrication. Material is to be on site ready for installation in accordance with the Project schedule.

30. This Subcontractor shall provide the required hardware schedule for approval prior to release for fabrication. Hardware is to be on site ready for installation in accordance with the Project schedule.

31. This Subcontractor shall provide all State of Florida Product Approvals for this Scope of Work as required by the Contract Documents, governing building codes, and the Authority Having Jurisdiction.

32. This Subcontractor understands and agrees that the Project will require multiple deliveries by this Subcontractor. All associated costs for multiple deliveries as directed by the Contractor are included.

33. This Subcontractor includes providing bituminous coating of hollow metal frames in concrete wall/masonry partitions, as necessary.

34. This Subcontractor has reviewed the Project Schedule and understands that the Subcontract amount includes all costs associated with material expediting and manpower to meet the Project Schedule.

35. Subcontractor certifies that it meets the minimum Contractor Qualification requirements as further detailed in the Specification and elsewhere in the Contract Documents.

36. The Subcontractor shall attend and participate in the pre-installation conference to be held at the Project Site and conducted in concert with the Owner, the Architect, the Installer, and Wharton-Smith.

37. Provide all warranty requirements including signing all documents required of the Specifications..

38. Subcontractor shall provide all warranties as called for by the Contract Specifications.

39. Provide and install all temporary cylinders and cores at all exterior doors, electric room doors, and other locations at the discretion and direction of the Contractor's Superintendent, for locking and securing the premises during the construction phase. Remove temporary mechanisms and replace with permanent cylinders or cores upon completion of the project and at the direction of the Wharton-Smith Superintendent.

40. Provide all execution (installation) of the materials furnished as required of the referenced Specifications and elsewhere in the Contract Documents also including in particular compliance with all examination, preparation, environmental conditions, installation, protection during construction, adjusting and cleaning, and demonstration.

41. Provide and install products in accordance with manufacturer's recommendation and requirements.

42. Receive, unload, inventory confirmation, and store at the jobsite all hollow metal doors, and finish hardware in strict accordance with all NAAWDA's & DHI requirements.

43. Provide ~~Install~~ all hollow metal doors in strict accordance with the Contract Documents.

44. Provide ~~Install~~ all finish hardware, also including but not limited to, door seals, lock blocks, bumpers, metal stops, holders, thresholds, lock guards, drip edges, door sweeps, rain caps, hinges, locksets, latch sets, exit devices, kick plates, push/pull plates, closers, silencers, and mullions.

45. Check and adjust all hardware items for completeand proper operation and to the satisfaction of Contractor, Architect, and Owner. Adjust door closers to enable door to latch after test and balance has been completed. Subcontractor shall verify all door closers are set and operating properly and in accordance with ADA and Regulatory requirements. Subcontractor must be present for all required door pressure inspections and testing as required per project schedule and must provide proper adjustments to door to meet requirement.

46. Install temporary doors and lockset for all IDF, electrical and elevator machine room doors. Remove temporary and install permanent hardware when directed by the Wharton-Smith superintendent.

47. Furnish necessary miscellaneous fasteners, specialty tools, equipment, hand tools, carts, and all consumable materials required for the proper and complete performance of the work.

48. Subcontractor shall ~~install~~ provide all permanent cores to all aluminum storefront entrances noted on the Contract Documents.

49. Provide ~~Install~~ surface bolts in lieu of flush bolts at all EHPA openings to comply with Florida Building Code for windstorm as directed in Contract Documents.

50. Door hardware for the aluminum storefronts and curtain wall system are not included and shall be installed by that specialty contractor.

Other Items of Note:

A. Wharton-Smith will be utilizing a software called **Team Player** to process monthly pay applications. The fee for this service is $10.00 per Pay Application, regardless on the number of revisions in each month. Please review the Team Player Welcome Letter that has been included in the Bidding Documents which contains embedded links for training documentation and videos. This will be a requirement for all subcontractors on this project.

B. With respect to Article 22 of this Subcontract Agreement, the Owner will exercise the right to purchase materials directly as part of the Owner Direct Purchase Program. This Subcontractor shall actively participate in the Owner Direct Purchase Program for this Project Prior to the Subcontractor's final payment, a final reconciliation of Owner Direct Purchases against this Subcontract will be performed. This does not apply to temporary fence.

C. On-Site Work Hours: Limit work to between 7 a.m. to 5 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.

D. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site. Subcontractor shall maintain list of approved screened personnel with Owner's representative.

6.2 BID PRICING / ALTERNATES

The bid pricing shall be broken out as follows and as indicated on the bid form. The City of Port Orange has the sole discretion to accept any, all, or none of the work items for this scope of work based on the bid pricing received. Subcontractor to price the work accordingly.

6.2.1 This bid does not include any bid alternates.

6.2.2 Retainage will be held at 5% for the duration of the contract and will be released upon retainage release by the Owner.

6.3 CLARIFICATIONS

6.3.1 The Subcontractor will be responsible for protecting all new and existing work throughout the site from damage that could be caused by performing the Scope of Work. Any damage caused by Subcontractor is the responsibility of Subcontractor and Subcontractor will bear the costs of said damage.

6.3.2 The Subcontractor will be required to attend all project progress and coordination meetings as requested by Wharton-Smith, Inc. or the owner.

6.3.3 All materials must be submitted upon and approved prior to being sent to the jobsite, all non-approved items may be rejected and returned at the Subcontractor's cost.

6.3.4 Subcontractor is responsible to coordinate with the CMAR and all other Subcontractors as necessary.

6.3.5 Subcontractor will be responsible for all general notes indicated on the drawings that pertain to this scope of work.

6.3.6 Subcontractor will obtain all permits, licenses, certificates, and coordination efforts for any such approvals of plans or specifications as may be required by federal, state and local laws, ordinances, rules and regulations, for the proper execution and completion of the work specified herein.

6.3.7 Subcontractor will be responsible for offloading all equipment deliveries and proper short-term and long-term storage requirements per the manufacturer's requirements. Provide all equipment necessary to offload and set equipment including cranes.

6.4 GENERAL REQUIREMENTS

6.4.1 The Subcontractor will be bound to the CMAR to the same extent the CMAR is bound to the Owner by the terms of the Contract Documents.

6.4.2 The Scope of Work shall comply with all Federal, State and Local Codes.

6.4.3 This is a lump sum agreement, including freight, incidental fees, and all applicable taxes. A schedule of values for submittals, materials, checkout, startup and closeout paperwork will be submitted with the return of the signed agreement for review and approval by the CMAR's Project Manager.

6.4.4 If requested by the CMAR, the Subcontractor will assist in cost loading of the project's master schedule. Schedule of Values will follow the cost loaded actives provided by Subcontractor.

6.4.5 No billing will be accepted without an approved Schedule of Values.

6.4.6 A detailed Schedule of Values must be provided within two (2) weeks of a contract being executed should your bid be accepted.

6.4.7 No escalation costs are permitted, pricing will remain firm through the project duration.

6.4.8 The Subcontractor is required to abide by the Wharton-Smith, Inc. safety program and OSHA standards. Excavation, confined space plans, and MSDS sheets will be required for all applicable work.

6.4.9 Subcontractor is responsible to develop and provide a site-specific safety plan for this scope of work. Safety plan will list all potential hazards and competent persons who will be supervising the work.

6.4.10 Subcontractor will maintain an OSHA Certified competent person on site at all times while the work is conducted.

6.4.11 All Subcontractors will be required to follow security protocol of the City of Port Orange and Wharton-Smith at all times.

6.4.12 OSHA and the CMAR's safety standards will be followed at all times.

6.4.13 Proper PPE will be worn by any personnel on the jobsite, including but not limited to delivery drivers, startup and commissioning representatives, manufacturer's representatives, and other personnel.

6.4.14 Materials are to be released as required to maintain Schedule, but Subcontractor is to inform CMAR of material releases and deliveries. No item will be released for production without approval from the Engineer.

6.4.15 All equipment will be labeled and tagged in accordance with the Contract Documents.

6.4.16 Provide all management necessary to adequately support field activities and maintain the Project Schedule.

6.4.17 Full time and onsite supervision is required while any work by Subcontractor is being performed. If Subcontractor fails to do so, the CMAR will provide supervision and all costs will be back charged to Subcontractor. The Subcontractor's superintendent will be required to attend all requested progress, safety, scheduling, coordination, and quality control meetings. Meetings of other natures may be required as requested by Engineer, Owner, or the CMAR.

6.4.18 The Subcontractor will be required to coordinate with all other construction trades as required to complete this Scope of Work.

6.4.19 Anticipated (general) sequencing – Your crews may be interfacing with several other trades including mechanical, concrete, piping, and testing agencies. Reasonable time provisions need to be made for coordination and time for these trades to complete their work.

6.4.20 All deliveries will be made between 7am-3pm M-F; all deliveries will be escorted onto the site by WSI. A 72-hour notice to WSI's Superintendent will be required prior to any deliveries.

6.4.21 The Subcontractor may not utilize any area of the project site for storage without approval from the CMAR. If the Subcontractor plans to utilize storage space, the Subcontractor will submit, to the CMAR, a site plan detailing the areas being requested for storage.

6.4.22 An emergency contact list will be provided by the Subcontractor. This list will include at least one point of contact that is available 24 hours a day.

6.4.23 Furnish appropriate Material Safety & Data Sheets (MSDS) and warranty documentation with shop drawings for approval.

6.4.24 Subcontractor is required to coordinate with all applicable authorities as required

6.4.25 The Subcontractor utilizing an Employee Leasing Company for Workers Compensation Insurance coverage will not be allowed to use any Subcontractor on the project (i.e. no third-party subs)

6.4.26 It is the sole responsibility of the Subcontractor to secure any and all tools, materials, and equipment stored on the site. Wharton-Smith, nor the Owner, will be responsible for any theft, vandalism, or damage to the Subcontractors property. The Subcontractor is responsible for all security measures required to secure their resources.

6.4.27 Subcontractor will provide temporary generators as needed and fresh drinking water for their employees. Subcontractor is only responsible for their work and personnel.

6.4.28 The Subcontractor is responsible to follow all site plan details and to adhere to all specifications applicable to the Scope of Work items above.

6.4.29 All hazardous material will be properly disposed of at an offsite location.

6.4.30 The Subcontractor will be responsible to utilize available dumpsters for debris and daily clean-up. All areas will be left clean at the end of each day.

6.4.31 A representative of the Subcontractor knowledgeable of the work will be present at weekly coordination meetings with the General Contractor.

6.4.32 Subcontractors to provide Daily Reports.

6.4.33 A Superintendent (not Foreman) must be present at all times the Subcontractor's crews are onsite.

6.4.34 Pre-Mobilization Jobsite QC/QA Conference - Subcontractor to participate in WSI Quality Control Plan as outlined in the Subcontract Agreement. Subcontractor's Project Superintendent and or Foremen will attend Quality Control Meetings as deemed necessary by WSI, including a minimum of one (1) pre-mobilization meeting to be held in advance of Subcontractor's mobilization on site.

6.4.35 Subcontractor must have approval for additional work (not included in this Scope) in writing by an authorized W/S representative prior to proceeding with said work.

6.4.36 No claim for extra services rendered or materials furnished will be valid by either party unless agreed to in writing by both parties.

6.5 PROJECT SCHEDULE

6.5.1 The Subcontractor is to provide a detailed schedule for the Scope of Work with the submission of bid. The Subcontractor will coordinate with the CMAR to ensure the detailed schedule conforms to the overall Project Schedule. The Subcontractor will update this Scope of Work schedule each month and provide a written update to the CMAR.

6.5.2 The Subcontractor will account for not working on holidays and still plan for the Scope of Work to be completed per the overall Project Schedule. Holidays will include those observed by the Owner, the CMAR, and the Subcontractor. The CMAR or Owner observes the following holidays:

A. New Year's Day
B. Martin Luther King Day
C. President's Day
D. Memorial Day
E. Independence Day
F. Labor Day
G. Thanksgiving
H. Day after Thanksgiving
I. Christmas Eve
J. Christmas Day

6.6 SUBMITTAL REQUIREMENTS

6.6.1 The Subcontractor will provide submittal documentation as required within the Contract Documents. Upon execution of this Agreement the Subcontractor will provide a list of anticipated submittals for the Scope of Work. The Subcontractor will provide any additional submittal documentation requested for any materials or services related to the Scope of Work.

6.6.2 All submittals which have any deviation will be supplied with a letter addressing all deviations.

6.6.3 All submittals will be provided with a cover page listing the following information:

A. Project name

B. Submittal title

C. Relevant specification sections

a. Specification sections, with addendum updates included, are to have each paragraph check-marked to indicate specification compliance. Check marks shall denote full compliance with a paragraph as a whole. Any deviation shall be clearly marked by an "X" and numbered to indicate a requested deviation. If deviations from the specifications are indicated, and therefore requested, each deviation shall be underlined and denoted by a unique number in the margin to the right of the identified paragraph, referenced to a detailed written explanation of the reasons requesting the deviation. The remaining portions of the paragraph not underlined will signify compliance with the specifications. Failure to include a copy of the marked-up specification sections along with justifications for any requested deviations to the specification requirements shall be cause for return of the entire submittal with no further review.

D. Subcontractor's contact information

E. Manufacturer's contact information

6.6.4 All submittals will include the following information for each individual piece of equipment or fabrication:

A. Complete model number

B. The tag number of each per the Contract Documents (if applicable)

C. List of major components

D. Specification section (if varied from the submittal prime specification section)

6.6.5 It is the Subcontractor's sole responsibility to ensure submittals are complete and accurate for the complete scope of this agreement. Coordination of submittal information from others working under the Subcontractor is the sole responsibility of the Subcontractor. Subcontractor will not provide submittals with any items marked out of scope or by others if such items are part of the scope of this agreement.

6.6.6 Revised submittals will include a comment response document, this document will respond to every comment in writing and reference the location of all corrections within the revised submittal. Revised submittals will be at no additional cost to the Purchaser.

6.6.7 XXXX

6.8 INSURANCE

6.8.1 Subcontractor will provide the minimum insurance limits required to meet the requirements in this purchase order and all the requirements detailed within the Contract Documents. A sample insurance document is included within the Contract Documents for additional reference.

6.8.2 The Subcontractor will maintain a worker's compensation insurance policy for the complete scope of services. The Subcontractor will not utilize a Professional Employer Organization (PEO) to provide workers compensation insurance.

Submittal Package

Entrances | Storefronts | Window Walls | Curtain Walls | Balcony Doors | Sun Controls

Submitted to:

WHARTON SMITH

Project:

Port Orange Utilities Facility
Port Orange

Submitted by:

Alerion Door & Glass, Inc

November 12, 2024

YKK AP products Included:

50H Wide Stile Impact Resistant Door, YHS 50 TU, YES 45 FS, YHC 300 OG

This submittal package is to assist in the specification and selection of YKK AP products. Basic product descriptions and technical data are included. For further information or technical assistance, please contact your local YKK AP representative.

visit our website at ykkap.com

YKK AP America's manufacturing facility located in Dublin, Georgia and has achieved ISO 14001 certification as a means to measure and continually improve environmental performance.

50H Wide Stile Impact Resistant Door

YKK AP®

www.ykkap.com

ProTek®
YKK AP Hurricane & Blast Solutions



Texas State Aquarium - Corpus Christi, TX



35H/50H

Impact Resistant and Blast Mitigating Entrance Systems

Our standard pressure entrances are available in 3-1/2" medium and 5" wide stile versions. In addition to a comprehensive array of locking and hinging options, this product is available with monolithic 9/16" or 1" laminated insulating glass units.

YKK AP has also addressed ongoing maintenance in abusive environments, such as schools and military bases. To reduce maintenance costs, choose either rim panic exit devices combined with an impact rated aluminum removable mullion, or single point locks paired with flush bolts on the inactive panel. These institutional grade entrance systems provide maximum security under the most demanding conditions without the need for steel reinforcing.

- 3-1/2" Medium & 5" Wide Stiles
- Single and Paired door options
- YKK AP VersaJamb®: reinforced tubular door frame allows for side-lite glazing without shear clips while maintaining the structural integrity of transom frames.
- Large & Small Missile up to 90 psf
- Florida Product Approval and HVHZ
- Blast Mitigation Tested - ASTM F 1642

Door Leaf:

Glazing	Glass Setting	Installation
Outside	Center Set	Single or Pair

35H/50H SPECS		
System Stiles	3-1/2" - Medium and 5" - Wide	
Config	Outside Glazed / Center Set	
Tested Glass	9/16" Mono or 1" Lam IGU with Low-E (C.O.G. U-Factor: 0.29)	
Test	Results	Standards
Air Infiltration	**Single:** 0.50 CFM/FT² (1.10 m³/h·m²) **Pair:** 1.00 CFM/FT² (1.10 m³/h·m²) @ 6.24 PSF (299 Pa)	ASTM E 283
Water Infiltration	**Static:** 10.5 PSF (479 Pa) **Dynamic:** 10.5 PSF (479 Pa)	ASTM E 331 AAMA 501
Acoustical (1" IGU)	**Standard STC:** 32 **Standard OITC:** 30	ASTM E 90 ASTM E 1425
	Laminated STC: 34 **Laminated OITC:** 31	
Structural Uniform Load	Up to 90 psf with Dry or Wet Glazing *May change based on hardware and glass	ASTM E 330

Entrance Hardware	**Standard:** **Single: 35H:** 3' x 7' **50H:** 3' x 8' **Pair: 35H:** 6' x 7' **50H:** 6' x 8' Offset Pivot, Butt/Continuous Hinge, Single/3-Point Locks for Single Doors, 5-Point Locks for Paired Doors, Rim and CVR Exit Device
	Custom: **Single: 35H:** 4' x 8' **50H:** 3'-6" x 9'-6" **Pair: 35H:** 8' x 8' **50H:** 7' x 9'-6" Standard and Custom Hardware

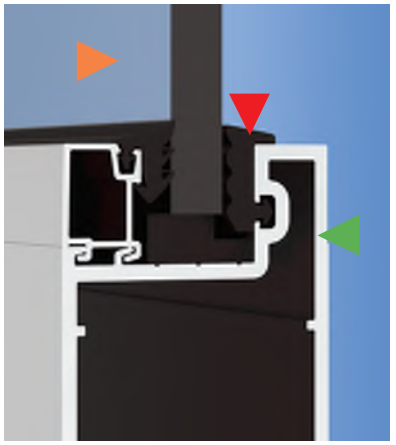
Midrail Sizes	Glass Sizes
5-3/4", 9-1/8" and 12"	9/16" Monolithic IGU and 1" Laminated IGU

Finish Options	
Type	Standard
Factory Anodized	AAMA 612
Organic Paints	AAMA 2605

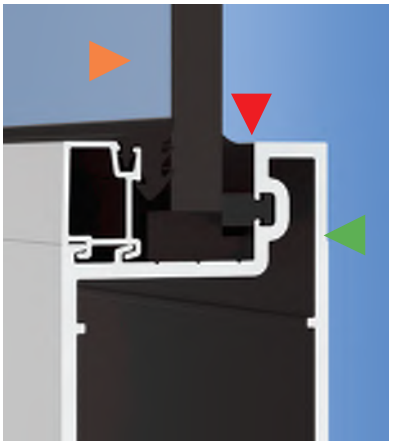
Product Approvals	
Missile Level E	Large/Small Missile
Hurricane HVHZ	International ICC
Florida FBC	Texas TDI

You can view all of our standard entrance hardware options by selecting the entrance hardware data sheets on our product guide at www.ykkap.com

A Closer Look at our Impact Doors



Dry Glazed



Wet Glazed

Monolithic or IGU Glazing Pocket - Monolithic and insulating glazing utilize different rail designs.

Thermal Performance - Improved thermal performance can be achieved with Insulating Glass. Entrances have been thermally tested utilizing insulating glass with 0.29 center of glass "U" factor.

Glazing Options - For reduced installation labor, dry glaze solutions (up to 90 PSF) are available. Wet and Dry Glaze options are available for both hurricane impact and blast mitigation.

Integral Muntins - For increased aesthetic possibilities, Insulating Glass Units can be ordered with grids.



Additional information including CAD details, CSI specs, test reports and installation instructions are found on the Product Guide by clicking this link or visiting www.ykkap.com/commercial/productguide

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YHS 50 TU

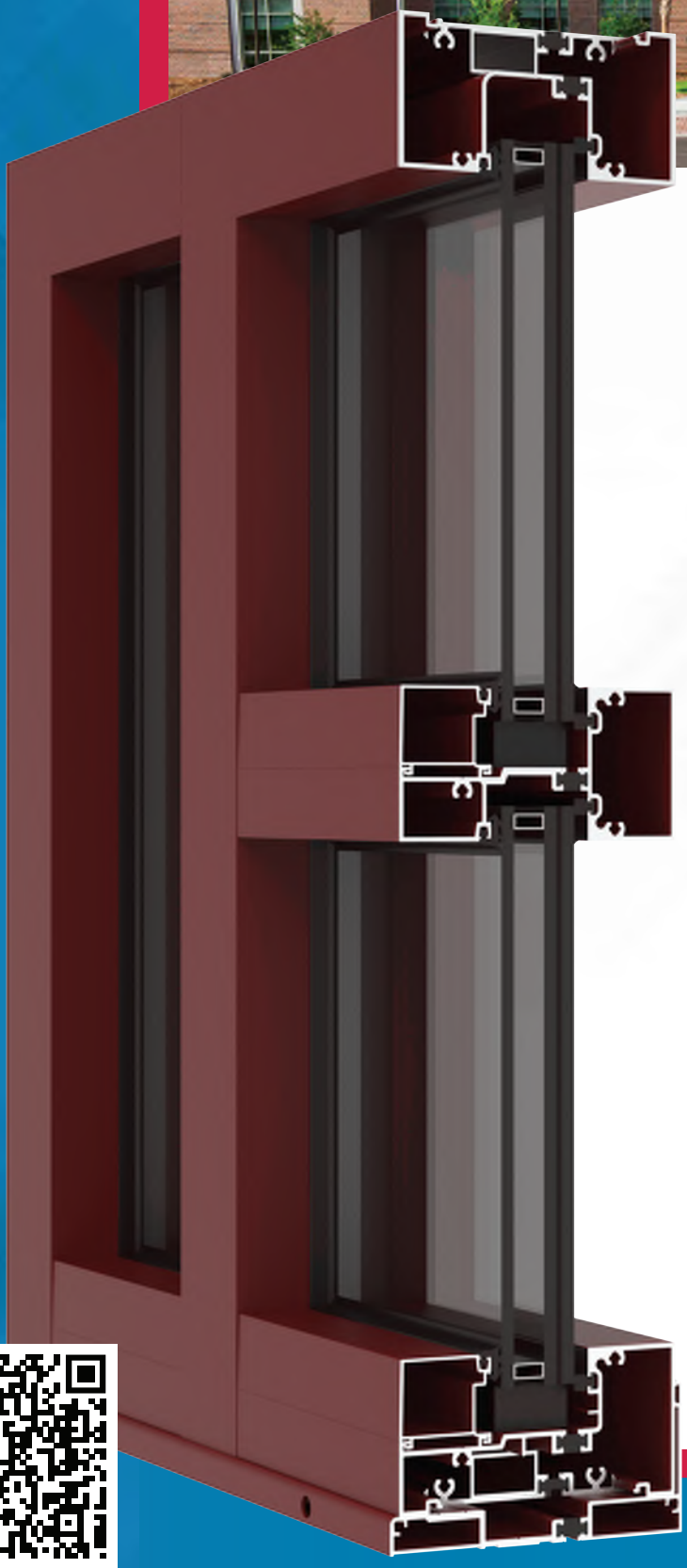
YKK ap®

www.ykkap.com

ProTek®
YKK AP Hurricane & Blast Solutions



North Charleston Public Works Building - Charleston, SC



YHS 50 TU

Thermally Broken, Impact Resistant and Blast Mitigating Storefront

The **YHS 50 TU** is a high performance storefront system designed for insulating glass 1" to 1-5/16" thick. With varied infill and components, YHS 50 TU can meet the requirements for Impact Resistance and/or Blast Mitigation. This system is thermally broken by ThermaBond Plus® technology and easily integrates with H and HL Series entrances with medium/wide stiles.

- **Hurricane Impact** - Large & Small Missle
  - Wind Zone 3 & FPA/Florida HVHZ
  - Approved for Missile Level E
- **Blast Mitigation** - Static and Dynamic Analysis capability to meet DoD, GSA and VA standards
- A Pre-Glazed option along with Field
- Design Pressures up to 70 psf
- Engineered corners reduce job time
- Sill Flashing with 3pt attachment, no blind seals and taller back leg for better water resistance

Configuration:

Glazing	Glass Setting	Installation
Outside & Inside	Center Set	Screw Spline

Thermal Values:

U-Factor:	Values as low as **0.34***
CRF:	Minimum **57**frame and **65**glass

*Based on AAMA 507. Lower values may be achieved through further simulation.

YHS 50 TU SPECS			
Base Depth	5"		
Sightline	2-1/2" (Field), 2-3/4" (Pre-Glazed)		
Config	Inside (Dry), Outside (Wet/Dry) / Center Set		
Tested Glass	1-5/16" Laminating IGU with Low-E (C.O.G. U-Factor: 0.29)		
Test	Results		Standards
Air Infiltration	0.06 CFM/FT^2 (1.10 m^3/h·m^2) @ 6.24 PSF (299 Pa)		ASTM E 283
Water Infiltration	(Field) **Static:** 12 PSF (575 Pa)	(Pre-Glazed) **Static:** 15 PSF (718 Pa)	ASTM E 331
Acoustical (1-1/4" IGU)	(Field) **Lam STC:** 39 **Lam OITC:** 33	(Pre-Glazed) **Lam STC:** 40 **Lam OITC:** 33	ASTM E 90 ASTM E 1425

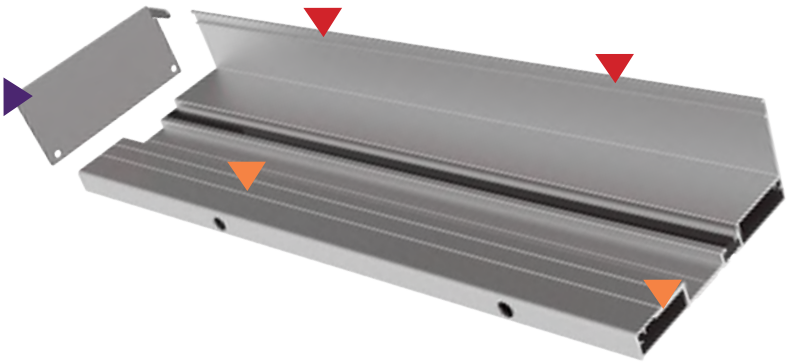
Thermal Performance								
Mullion Depth	U-Factor - BTU/hr·ft^2·°F						CRF	
1-5/16" Laminated IGU - Field Glazed								
2-1/2" x 5" Large Missile	0.46	0.44	0.43	0.41	0.40	0.38	59	78
2-1/2" x 5" Small Missile	0.46	0.44	0.42	0.41	0.39	0.38	57	78
1-5/16" Laminated IGU - Pre-Glazed								
2-1/2" x 5"	0.42	0.41	0.39	0.37	0.36	0.34	61	65
Center of Glass	**0.30**	**0.28**	**0.26**	**0.24**	**0.22**	**0.20**	**Frame**	**Glass**
AAMA 507							AAMA 1503	

Finish Options	
Type	Standard
Factory Anodized	AAMA 612
Organic Paints	AAMA 2605

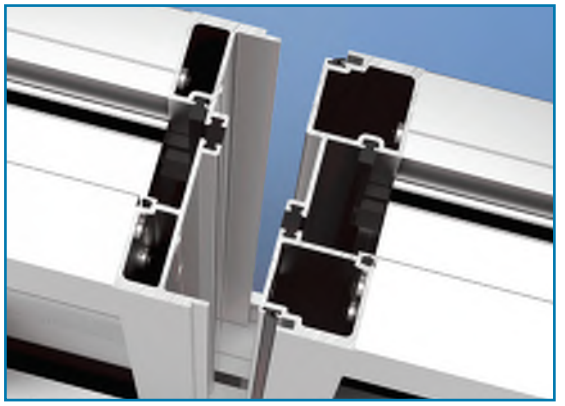
Product Approvals	
Missile Level A, D, E	Wind Zone 3
Hurricane HVHZ	International ICC
Florida FBC	Texas TDI

Sill Flashing Design

- Taller back leg on sill flashing – enhanced water resistance in the field and in water testing
- Three point attachment of end dam, with a foldable tab and two screws into flashing splines
- No blind seals eliminates secondary penetration of sill and flashing when properly sealed



Pre-Glazed Option



- **Inside Glazed (Dry)** and **Outside Glazed (Wet/Dry)** configurations
- **Saves time** on the job site and **less materials** in the field
- **4'w x 10'h panel spans** to 70 PSF with no mullion reinforcement
- Florida Product Approval for **Missile Level A, D and E**
- **New Intermediate Mullions** eliminates need for panel interlocking
- **Double laminate glass option** for higher acoustical performance (STC: 43 OITC: 35)

Storefront Impact Comparison

System	.060 SentryGlass 50 PSF	Design Pressure			144" Span	108" to 120" Spans	Impact Testing	
		50 PSF	65-70 PSF	90 PSF			Missile A & D	Risk Category IV Essential Facilities
YHS 50 FS		■	■	■	■	■	■	
YHS 50 FI	■	■	■	■	■	■	■	■
YHS 50 TU	■	■	■			■	■	■

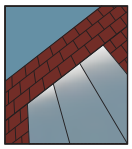
Additional information including CAD details, CSI specs, test reports and installation instructions are found on the Product Guide by clicking this link or visiting **www.ykkap.com/commercial/productguide**

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YES 45 FS

YES 45 FS

Center Set Storefront System with Monolithic Glass



STOREFRONT SYSTEM

Product Description

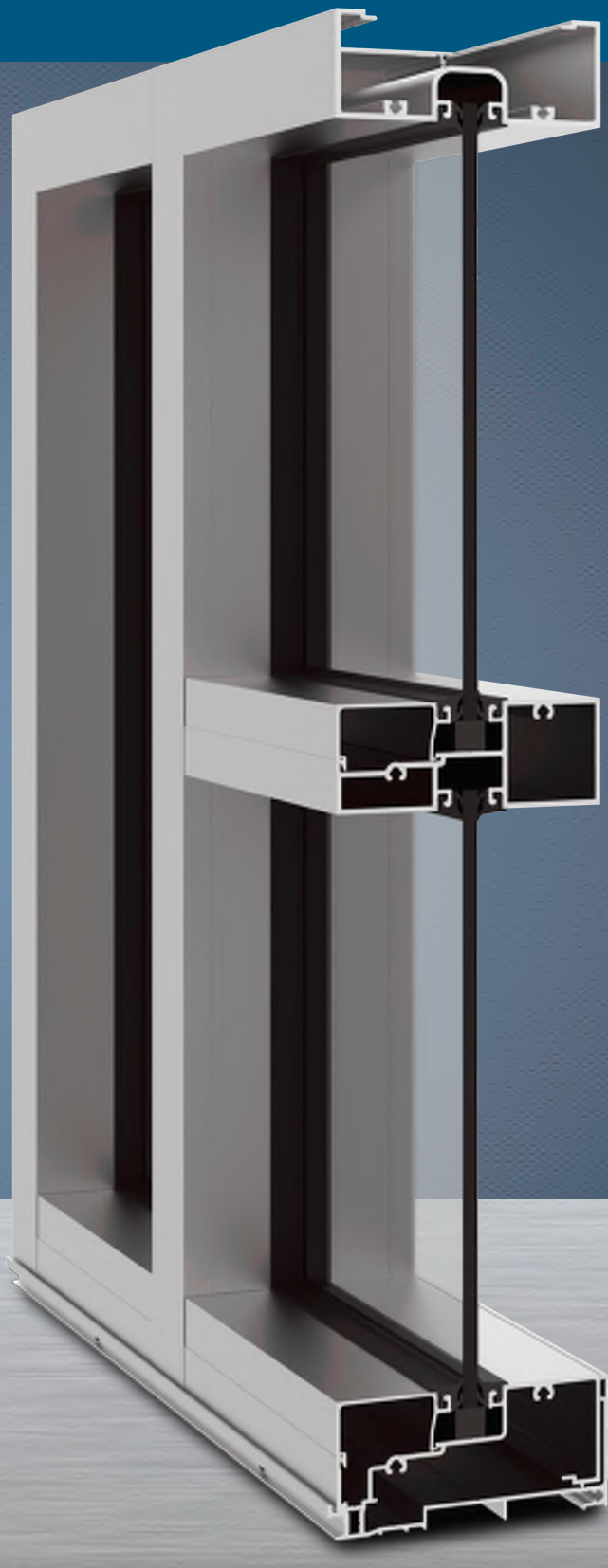
The YES 45 FS (1-3/4"x 4-1/2") is a center set, flush glazed framing system designed primarily for 1/4" glass or infill panels 1/4" to 3/8" thick. The systeme will accommodate YKK AP's hinged mullion, as well as our flexible mullion; these mullions allow more creative freedom where curves and angles become a functional part of the design.

Product Options & Features

- Outside Glazed / Inside Glazed Option
- Glazing of 1/4" up to 3/8"
- Screw Spline or Shear Block Assembly
- Seemless Entrance Door Integration
- Gasket With Stretch-Resistant Cord
- Enhanced Water Infiltration Resistance



YKK AP® Quality inspires®



YES 45 FS

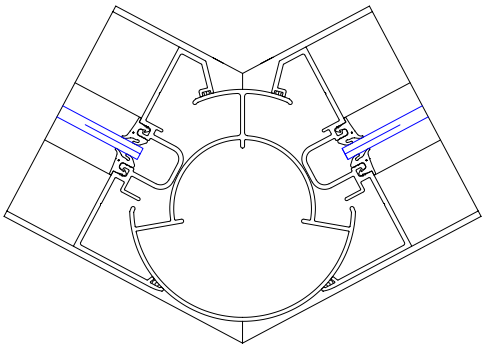
SYSTEM SPECIFICATIONS

System Sightline	Base Depth	Glazing & Config	Glass	Air Infiltration	Water Infiltration	Thermal Performance	Acoustical Performance
1-3/4"	4-1/2"	Inside or Outside & Center Set	1/4" IGU with Low-E (C.O.G. U-factor: 0.29)	0.06 CFM/FT² (1.10 m³/h·m²) @ 6.24 PSF (299 Pa)	10 PSF (479 Pa)	Not Tested	Not Tested
							Not Tested
Testing Standards				ASTM E 283	ASTM E 331 & AAMA 501	* NFRC 100 & ** AAMA 1503	ASTM E 90 & 1425
Installation Options				Screw Spline or Shear Block with Monolithic or Insulating Glass			
Available Finishes				Factory Anodized (AAMA 612) and Organic Paints (AAMA 2604 & AAMA 2605)			

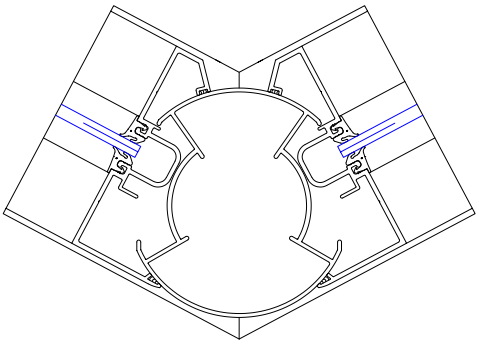
HINGED MULLIONS

With the use of our hinged mullion setup, the YES 45 system direction can be changed to allow angles and curves to create more a aesthetic and functional design with your building project. The 3 mullion options available are: 93-133 degrees, 124-170 degrees and 170-180 degrees. Combined with a 90, 135 or 158 degree static mullion, the design possibilities are endless.

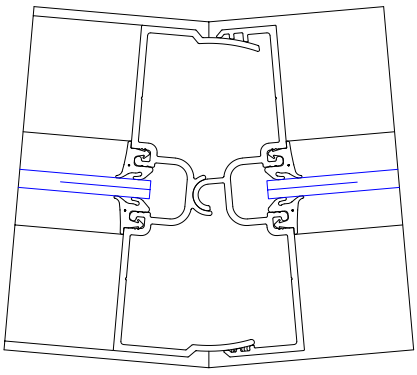
93-133 Degree Hinge Mullion

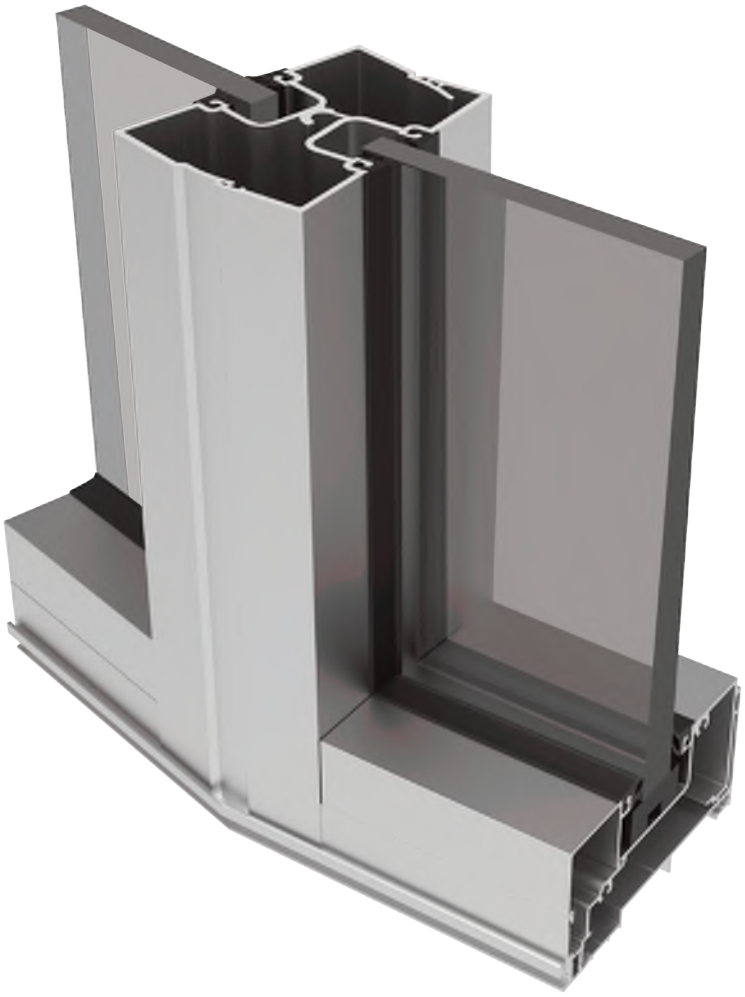


124-170 Degree Hinge Mullion



170-180 Degree Hinge Mullion





Additional information including CAD details, CSI specifications, Test Reports and Installation instructions are available online at:
www.ykkap.com/commercial/product/storefronts/yes-45-fs/

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270 Riverside Pkwy, Suite 100, Austell, GA 30168 Tel: 678-838-6000

YHC 300 OG

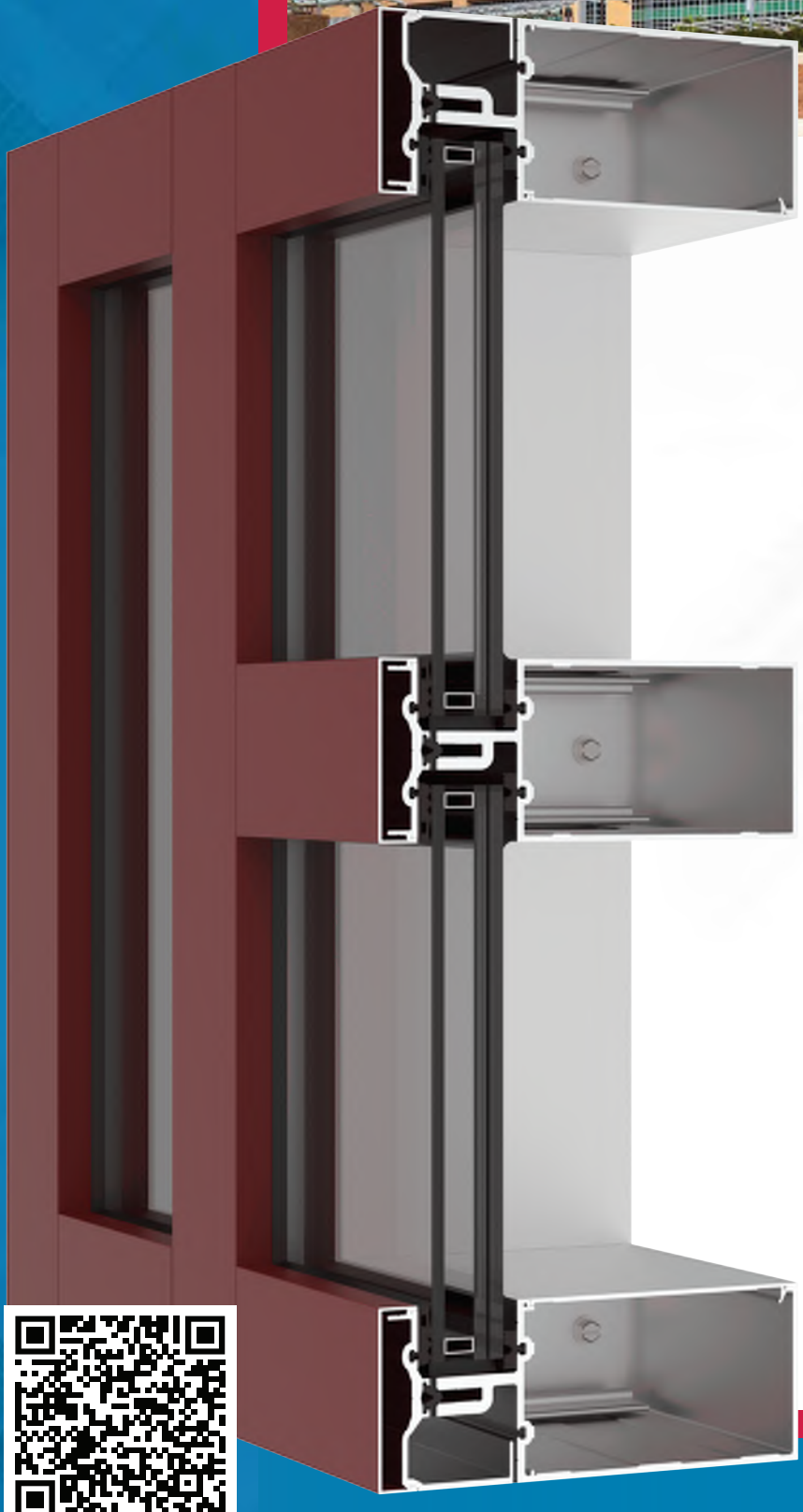
YKK ap®

www.ykkap.com

ProTek®
YKK AP Hurricane & Blast Solutions



Jennie Sealy Hospital - Galveston, TX



YHC 300 OG

Impact Resistant and Blast Mitigating Outside Glazed Curtain Wall System

The **YHC 300 OG** is a high performance curtain wall system designed and tested to provide innovative impact and blast solutions for a wide range of applications and design pressures from 45 PSF all the way to 130 PSF. The 3" face dimension ensures recommended glass clearances are maintained. Dry glazing options (for all design pressure ranges) slash installation time for quicker building dry-in.

- Fully tested to ASTM 1886 / ASTM 1996 and TAS 201-203
- Flordia Product Approvals for large and small missile including HVHZ and Level E
- 15/16" glass bite meets GANA guidelines of 1/4" clearance to reduce glass breaks
- Single and multi-span applications
- Accomodates monolithic & insulting glass
- Shallow mullion option is available

Configuration:

Glazing	Glass Setting	Installation
Outside	Front Set	Shear Block

Thermal Values:

U-Factor:	Values as low as **0.37***
CRF:	Minimum **72**frame and **68**glass

*Based on AAMA 507. Lower values may be achieved through further simulation.

YHC 300 OG SPECS		
Base Depth	7-11/16"	
Sightline	3"	
Config	Outside Glazed / Front Set	
Tested Glass	9/16" Monolithic or 1-5/16" IGU with Low-E (C.O.G. U-Factor: 0.29)	
Test	Results	Standards
Air Infiltration	0.06 CFM/FT^2 (1.10 m^3/h·m^2) @ 6.24 PSF (299 Pa)	ASTM E 283
Water Infiltration	**Static:** 20 PSF (958 Pa) **Dynamic:** 20 PSF (958 Pa)	ASTM E 331 AAMA 501
Acoustical (1-1/4" IGU)	**Laminated STC:** 37 **Laminated OITC:** 32	ASTM E 90 ASTM E 1425

Thermal Performance								
Mullion Depth	U-Factor - BTU/hr·ft^2·°F						CRF	
3" x 7-11/16" **(1-5/16" Laminated IGU)**	0.46	0.44	0.42	0.41	0.39	0.37	72	68
Center of Glass	**0.30**	**0.28**	**0.26**	**0.24**	**0.22**	**0.20**	**Frame**	**Glass**
AAMA 507							AAMA 1503	

Finish Options	
Type	Standard
Factory Anodized	AAMA 612
Organic Paints	AAMA 2605

Product Approvals	
Missile Level A, D, E	Wind Zone 3
Hurricane HVHZ	International ICC
Florida FBC	Texas TDI

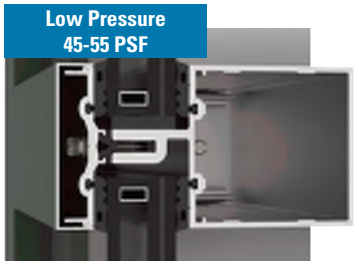
Mullion Depth Options	
Insulated	Monolithic
Low (45-55 PSF)	
5-21/32"	4-7/8"
Med (60-90 PSF)	
7-11/16"	6-15/16"
High (90-130 PSF)	
10-1/2"	9-3/4"

Hurricane and Blast Protection

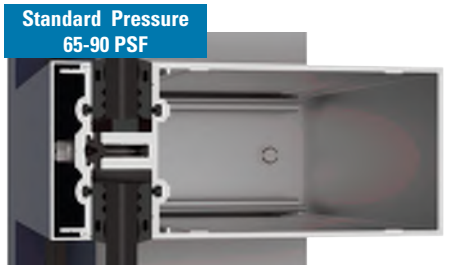
- ICC Compliant and FBC Statewide approvals – HVHZ
- Large Missile Level E – Essential Facilities
- Large Missile Level D & Small Missile Level A
- "Low Hazard" per ASTM F 1642 Test @ 6 psi / 41 psi–ms

Dry Glazing option shown. Visit www.ykkap.com for glazing options and CSI Specs by performance and glazing type.

Low Pressure 45-55 PSF

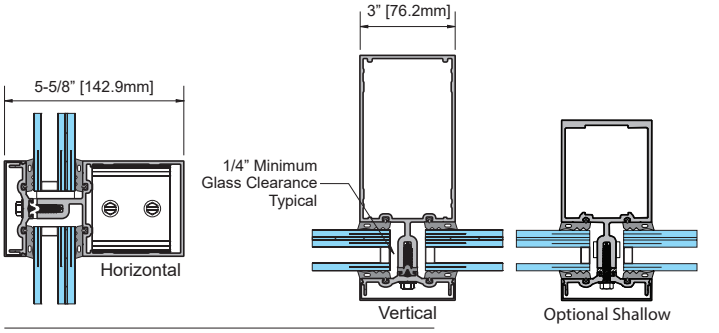


Standard Pressure 65-90 PSF

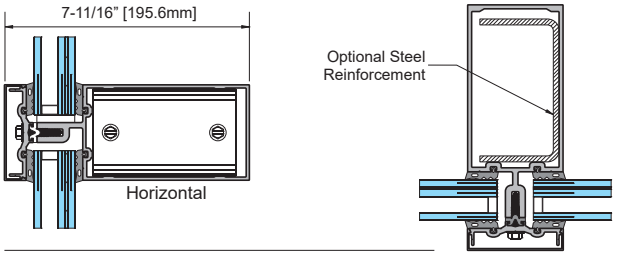


High Pressure 90-130 PSF

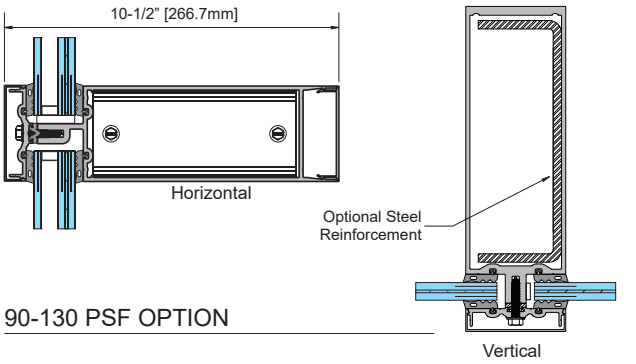




45-55 PSF OPTION



65-90 PSF OPTION



90-130 PSF OPTION

Additional information including CAD details, CSI specs, test reports and installation instructions are found on the Product Guide by clicking this link or visiting **www.ykkap.com/commercial/productguide**

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ALERION DOOR & GLASS, INC

725 Clearlake Rd
Cocoa, FL 32922
(321) 799-8500 Ext. 105
(321) 636-2805 Fax
Jeffh@alerioninc.com

To: Wharton Smith Construction Co.

Date: November 12, 2024
Job: Port Orange Public Utilities

We are pleased to quote the following Materials and Labor needed for the Storefronts & Entrances:

07 92 00 SEALANTS

- DOW CHEMICAL www.dow.com
  - 790 Silicone
  - 995 Structural Silicone:
- TREMCO www.tremcosealants.com
  - DYMONIC 100 Polyurethane

08 41 13 ALUMINUM FRAMED ENTRANCES AND STOREFRONTS

- YKK ARCHITECTURAL ALUMINUM PRODUCTS www.ykkap.com
  - EXTERIOR
    - YHC 300 Impact Curtain Wall System
    - YHS 50 TU Thermally Broken Impact Storefront System
  - INTERIOR
    - YES 40 FS Storefront System
    - Clear Anodized Finish

08 71 00 ARCHITECTURAL HARDWARE

- ALLEGION HARDWARE www.allegionus.com
  - (2) Hardware Sets # 1.0
  - Door # 109A & 151

08 80 00 GLAZING

- VITRO ARCHITECTURAL GLAZING www.vitro.com
  - EXTERIOR GLAZING
    - 1-5/16" Low-E Impact Insulated
    - LEVEL E
  - INTERIOR GLAZING
    - ¼" Clear Tempered Glass

OPENINGS & PRICING

- EXTERIOR
- (3) SF-1
- (1) SF-2 Door # 109A Hardware set # 1.0
- (1) SF-3
- (2) SF-4
- (9) SF-5
- (1) SF-6
- (6) SF-7
- (1) CW-1
- (1) CW-2 Door # 151 Hardware Set # 1.0

- INTERIOR
- (1) W1
- (3) W2
- (2) W3

  - $191,100.00

EXCLUSIONS

- Final Cleanings
- Fire Rated Glazing or Frames
- Low-Voltage wiring or hookups
-

- Standard insurance limits are carried. Any additional coverage or endorsement to policy will be an addition to the contract.
- Alerion will provide 1 Year Parts & Labor Warranty and Standard Manufacturer's Warranties.
- Any additional Warranty will be an addition to the contract.
- These Terms shall become a condition of any other Contract or Agreement pertaining to this Proposal.
- Material delays should be expected due to supply chain issues and timelines cannot be guaranteed.

All work to be completed in a workmanship like manner according to standard industries practice. Any alteration or deviation from above specifications involving extra costs will be executed only upon written orders and will become an extra charge over and above the estimate. This proposal is subject to acceptance within ___30___ days and is void thereafter at the option of the undersigned.

Authorized Signature: Jeffrey Haynes

ACCEPTANCE OF PROPOSAL:

The above prices, specifications and conditions are here by accepted. You are authorized to perform the above work.

AUTHORIZED SIGNATURE OF ACCEPTANCE _____

Date:_____

Christine Carasas

From: Jeffrey Haynes <jeffh@alerioninc.com>
Sent: Tuesday, November 12, 2024 3:53 PM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Utilities Operations Facility
Attachments: PORT ORANGE UTILITES BUILDING PROPOSAL.pdf; Port Orange Operations Facility Material Submittal.pdf

Let me know if you have any questions.
Please confirm you received this proposal.

Thank you,

Jeffrey Haynes
Alerion Door & Glass, Inc.
407-209-9085 Cell

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DIAMOND ARCHITECTURAL GLASS, INC.

. Entrances. Curtainwalls. Windows. Glazing Contractors.

P.O. Box 521742. Longwood FL 32752 PH 407-331-7780 Fax 407-339-2285

November 14th, 2024

Wharton Smith, Inc.
750 Monroe Rd, Sanford, FL 32771
☎ (407) 321-8410
Attn: James Manyette
Re: Port Orange Public Utilities Field Operations Building

James,

I am pleased to confirm our proposal to supply and install the glass and aluminum requirements for the above captioned project as defined below.

SCOPE:

1) Exterior Storefront Framing to be Kawneer IR 501T **(Impact Resistant) (Thermally Broken)**, 2 ½" x 5", for 1 5/16" infill, finish to be #14 Clear Anodized **(Or Equal)**
2) Exterior Curtainwall Framing to be Kawneer 1600 System 1, 2 ½" x 10 ½", for 1 5/16" infill, finish to be #14 Clear Anodized **(Or Equal)**
3) Exterior Storefront Doors to be Kawneer 500 Wide Stile; complete with Std Continuous Hinge, Std Electronic Concealed Vertical Rod Exit Device, Std Power Transfer, Std Power Supply, Rockwood Pull Handle, Rockwood Door Stop, Sargent Door Closer, 10" Bottom Rail, Std Weatherstripping, Std Bottom Sweep, Std Threshold **(Or Equal)**
4) Exterior Glazing to be 1 5/16" Clear, Insulated, Tempered, Laminated **(Impact Resistant Level D)**, with SN68 Low-E Coating **(Spandrel Where Shown Per Plans) (Or Equal)**
5) Interior Storefront Framing to be Kawneer Trifab 450, 1 ¾" x 4 ½", for ¼" infill, finish to be #14 Clear Anodized **(Or Equal)**
6) Interior Glazing to be ¼" Clear, Tempered
7) We include ¼" Clear, Tempered Vision Lites for **(17)** Type N, **(13)** Type G, **(9)** Type G2 WD/HM Doors **(Doors, Frames, Vision Kits BO)**
8) We include Interior and Exterior Perimeter Caulking and Sill Flashing.
9) We include Shop Drawings.
10) We include necessary Lift Equipment

EXCLUSIONS:

1) Cleaning and Protection.
2) Special Warranties.
3) PE Stamp.
4) Break Metal.
5) Mirrors.
6) Demolition.
7) Louvers.
8) WD/HM Doors, Frames, Vision Kits **(BO).**
9) Metal Panels.
10) Card Readers, Door Position Switches, Electro Lynx Harnesses, Access Control Hookup and Wiring **(BO).**

We propose to supply and install scope of work, as defined above, for the base price of**… $158,789.00 (One Hundred Fifty-Eight Thousand Seven Hundred Eighty-Nine Dollars), including applicable taxes.**

NOTE: THIS PROPOSAL IS VALID FOR 30 DAYS FROM DATE OF RECIEPT, AFTER SUCH TIME PROPOSED PRICES MAY BE SUBJECT TO INCREASE. PLEASE RELEASE LETTER OF INTENT AND/OR CONTRACT TO PROTECT PRICING.

I look forward to working with you on this project. Please call me should you have any questions.

Kindest regards,

Anthony Ruggieri
Cell: (407)-620-4934
Office: (407)-331-7780
Email: anthony@daglassinc.com

DIAMOND ARCHITECTURAL GLASS, INC.

. Entrances. Curtainwalls. Windows. Glazing Contractors.
P.O. Box 521742. Longwood FL 32752 PH 407-331-7780 Fax 407-339-2285

November 14th, 2024

Wharton Smith, Inc.
750 Monroe Rd, Sanford, FL 32771
☎ (407) 321-8410
Attn: James Manyette
Re: Port Orange Public Utilities Field Operations Building

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2) Special Warranties.
3) PE Stamp.
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8) WD/HM Doors, Frames, Vision Kits **(BO).**
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10) Card Readers, Door Position Switches, Electro Lynx Harnesses, Access Control Hookup and Wiring **(BO).**

We propose to supply and install scope of work, as defined above, for the base price of**… $158,789.00 (One Hundred Fifty-Eight Thousand Seven Hundred Eighty-Nine Dollars), including applicable taxes.**

NOTE: THIS PROPOSAL IS VALID FOR 30 DAYS FROM DATE OF RECIEPT, AFTER SUCH TIME PROPOSED PRICES MAY BE SUBJECT TO INCREASE. PLEASE RELEASE LETTER OF INTENT AND/OR CONTRACT TO PROTECT PRICING.

I look forward to working with you on this project. Please call me should you have any questions.

Kindest regards,

Anthony Ruggieri
Cell: (407)-620-4934
Office: (407)-331-7780
Email: anthony@daglassinc.com

Christine Carasas

From: James Manyette
Sent: Thursday, November 14, 2024 5:12 PM
To: Wharton Smith Commercial Estimating
Subject: 08_Glass_Diamond Architectural Glass - Port Orange Public Utilities Field Operations Building
Attachments: Proposal - Port Orange Public Utilities Field Ops Building.pdf

08_Glass_Diamond Architectural Glass

Respectfully,

James R. Manyette | Senior Preconstruction Services Manager
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771 | Cell: (407) 810-9590

From: Anthony Ruggieri <anthony@daglassinc.com>
Sent: Thursday, November 14, 2024 5:08 PM
To: James Manyette <jmanyette@whartonsmith.com>
Cc: Joe Schmidt <jschmidt@whartonsmith.com>
Subject: Port Orange Public Utilities Field Operations Building

James,

Please see the attached proposal for the Port Orange Public Utilities project.

Please let me know if you have any questions.

We would love to work with you on this one.

ANTHONY RUGGIERI - ESTIMATING.
DIAMOND ARCHITECTURAL GLASS, INC.
115 BAYWOOD AVE, - LONGWOOD, FL 32750
PHONE: 407-331-7780 - FAX: 407-339-2285
http://www.diamondarchitecturalglass.com
http://www.daglassinc.com

SCC 131151245

The information transmitted in this communication is strictly confidential and intended solely for the named individual recipient. If you are not the intended recipient, you are strictly prohibited from reviewing, using, communicating, disseminating, distributing, printing, or copying any part of this communication. By accepting and viewing this communication, you acknowledge and agree to the confidential nature of its content, and that any unauthorized use or disclosure of this confidential information may result in legal action. Please note that there may be certain legal exceptions to the confidentiality agreement, such as a court order or a legal requirement to

disclose the information to a government agency. However, any such disclosures must be made in compliance with the applicable laws and regulations. If you have received this communication in error, please notify us immediately by telephone or reply email, and then delete this message, along with any copies you have made. We appreciate your cooperation in maintaining the confidentiality of this information.

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Subcontractor Bid Form-General

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Pitts Glass
Scope of Work:	Glass/Glazing

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	**$** 215,500.00
Amount in Words:	Two Hundred Fifteen Thousand Five Hundred Dollars

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	N/A
Amount:	$

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	1.5

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1	Dated:	11/07/2024	RFI No.		Dated:	
RFI No.	2	Dated:	11/11/2024	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10/22/2024	WSI No.	4	Dated:	10/28/2024
WSI No.	2	Dated:	10/24/2024	WSI No.	5	Dated:	10/31/2024
WSI No.	3	Dated:	10/24/2024	WSI No.	6-8	Dated:	11/4--11/6--11/8

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Pitts Glass

Company Name

1159 S. Hwy US 17, Satsuma, FL, 32189

Address (Street, City, State, Zip)

386-447-4740

Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Pitts Glass

By: _____

Printed Name: Quintin Pitts

Title: Project Manager

Dated: 11/12/2024

License No.: SCC131151190

Christine Carasas

From: Pitts Glass <info@pittsglass.com>
Sent: Tuesday, November 12, 2024 3:04 PM
To: Josh Blubaugh; Wharton Smith Commercial Estimating
Cc: Quintin Pitts; Pitts Glass
Subject: Port Orange Utilities Facility Proposal
Attachments: Bid Form_General_Rev.10-25.pdf

Josh,

See attached bid form. Please let me know if you have any questions, Any feedback on the number is appreciated as well. I want to make sure we are apples to apples with everyone else.

Thanks
Quintin Pitts

PITTS GLASS INC.
1159 S. Hwy US 17
Satsuma, FL 32189
386-447-4740
www.pittsglass.com

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Christine Carasas

From: Pitts Glass <info@pittsglass.com>
Sent: Tuesday, November 12, 2024 3:04 PM
To: Josh Blubaugh; Wharton Smith Commercial Estimating
Cc: Quintin Pitts; Pitts Glass
Subject: Port Orange Utilities Facility Proposal
Attachments: Bid Form_General_Rev.10-25.pdf

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Thanks
Quintin Pitts

PITTS GLASS INC.
1159 S. Hwy US 17
Satsuma, FL 32189
386-447-4740
www.pittsglass.com

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FLORIDA DOOR SOLUTIONS
A DHPACE Company

Florida Door Solutions
777 South Park Avenue
Apopka, FL 32703
P 407-884-5955
FloridaDoorSolutions.com

PROPOSAL

CUSTOMER: Wharton Smith	PROJECT: City of Port Orange Public Utilities
Address: 750 Monroe Road	**Address 1:** 4505 Clyde Morris Blvd
City: Sanford **State:** FL **Zip:** 32771	**Address 2:**
Phone:	**City:** Port Orange **State:** FL **Zip:** 32129
Email: comest@whartonsmith.com	

Submitted To:	James Manyette	**Proposal Date:** 11/12/2024	**Proposal #:** NC-24-437
Submitted By:	Nikki Cook Commercial NC Sales 407-466-8807 Nikki.Cook@dhpace.com		
Addendums Acknowledged:		**Drawings Dated:** 9/30/2024	**Specifications Dated:** 9/30/2024

Scope of Work & Product Description:

083323: (2) each 8' wide x 8' high and (6) each 14' wide x 12' high- 6" upset included to be mounted above ceiling

Overhead Door Corp Model 625 Coiling Service Doors with RSX Motors

- 22/24 gauge G90 galvanized steel flat slats; 24 gauge G90 galvanized steel hood enclosure; Double steel angle guides and bottom bar; Complete door to be Powdercoated from (188) RAL colors.
- Foamed-in-place insulation, CFC and HCFC-free polyurethane, with R-value 7.7 and STC rating of 21.
- Standard 50,000 cycle springs;
- 2023 FBC windload rated to +/- 50 PSF with impact rated door;
- RSX Hoist motor, 1/2 HP, 115 volts, 1 phase, 60 hertz; Standard NEMA 1 wall mounted push button (open/close/stop); Monitored safety edge with cord connection to motor.
- Includes Air infiltration package: guide cover and cap, dual brush guide seal, lintel seal, bottom astragal;
- 3 years/20,000 cycles limited on Overhead Door™ door and operator system (when purchased together)

Total Due: Material is installed with sales tax included **$ 142,898.00**

Exclusions and Clarifications:

- Factory wired operators, controls, to be furnished and set-in place by DH Pace / Florida Door Solutions. All conduit, raceways, disconnects, electrical boxes, wiring, and connections by Electrical and/or Fire Alarm Contractor.
- Pricing expires in 30 days from proposal date.
- Work to be performed during normal business hours (Monday - Friday, 7:00 AM - 5:00 PM), unless otherwise noted.
- Please allow specified lead time from order acceptance, material production release, and approved credit terms or 50% deposit for installation to begin. Balance due upon completion if applicable.
- Order acceptance includes a signed proposal, executed contract or purchase order.
- Pricing includes material described above, applicable labor, and use tax. Sales Tax applied upon invoicing.
- This quotation is based upon a visual inspection; it does not consider concealed deficiencies in the substrata. Immediately upon discovery of said deficiencies the customer will be notified of additional cost before corrective work is performed.
- This quote is based on our interpretation of customer supplied information. No specifications were provided for review. DH Pace is not responsible for omissions and/or inaccuracies. Price is subject to change if actual conditions differ from the information provided.
- Quoted price contingent upon customer having opening(s) clear of all obstructions and allow for unfettered access for installation team for a minimum of 8 normal work hours on the day of installation. Excessive wait time to clear opening or additional mobilizations will result in hourly charges being added to the work order.
- Quoted assuming that existing opening structure is functional and capable of supporting new door equipment, any material or labor to repair or replace anything not specifically listed above will be quoted separately.
- Standard warranty is (1) year against defects on materials and workmanship. Additional manufacturer's warrantees apply to material cost only.
- Project lead time as defined above: 6 - 8 Weeks

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The proposal described herein, including all price(s) quoted, is made conditionally upon Buyer's continued credit status and must be accepted by Buyer as made by Seller. To accept this Proposal, Buyer must date, sign and return the original copy hereof to Seller within 30 days after the date hereof. Unless expressly disclosed and stated, the amount of any sales and use tax is not included in this proposal.

Buyer acknowledges and agrees that each and all of the terms and conditions on Attachment A (**TERMS AND CONDITIONS**) are a part of this Proposal and that upon Buyer's acceptance of this Proposal shall constitute a valid and binding contract between the parties and all prior proposals, discussions and agreements respecting the subject matter hereof are cancelled. **DEPOSIT ON SPECIAL ORDER ITEMS IS NON-REFUNDABLE.**

BUYER ACCEPTANCE

_____ _____/_____/_____ _____

TYPE OR PRINT NAME OF BUYER **ACCEPTANCE DATE** **REFERENCE #**

This is my authorization to proceed with the above stated work at the base price of **Enter text.**.

_____ _____

SIGNATURE of: ☐Owner ☐Partner ☐Officer *(indicate which)* **TITLE**

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Attachment A: TERMS AND CONDITIONS

Terms. The products ("Products") described in this contract and the labor necessary to install the Products ("Labor") are herein collectively referred to as the "Work".

Condition Precedent. Buyer and Seller agree that if, following Buyer's acceptance hereof, a contract is to be executed by them, Seller's performance hereunder shall be subject to the condition precedent that the terms and conditions of such contract are acceptable to Seller.

Scope of Work. Seller agrees to perform for Buyer the Work at the Project. Buyer acknowledges and agrees that: (i) the prices quoted by Seller for the Products are based upon plans, specifications, verbal information or sketches as indicated herein and the addenda hereto; and (ii) that the Work contemplated under this Proposal is fully and correctly described herein.

Unless included in the description of and prices quoted for Products, glass, glazing, painting and electrical wiring is excluded under this Proposal and will be provided only upon receipt of a supplemental order signed by Buyer.

Proposal Price. Conditional upon Seller's prior approval of Buyer's credit, Buyer will pay Seller the unpaid balance for performance of the Work within 30 days of the date of Seller's invoice. If performance of the Work extends over 30 days, Buyer agrees to pay Seller progress payments under Seller's regular billing terms and if Products have been delivered to the Project or stored in a mutually agreed location, Buyer agrees to pay an amount not to exceed 90% of the Proposal Price in payment of the cost of such Products.

If payment of any sum is not made when and as due under this Proposal, Buyer shall pay interest on such delinquent sums at the rate of 1.50% per month or, the highest contract rate allowed under applicable law.

If following Buyer's default Seller refers this account to an attorney for collection, Buyer agrees to pay all attorneys' fees incurred by Seller whether or not a lawsuit for collection is instituted, and all other costs of collection and litigation.

Contract Time. Installation dates are estimates only and Seller cannot guarantee commencement of Work or completion thereof on any given date. Completion dates cannot be given until Seller has been furnished with complete approved drawings and any additional information it may request. Seller shall not be liable for total or partial failure to complete or for any delay in delivering Products or Labor under this Proposal. Seller shall not be liable in any event for any special or consequential damages on account of failure or delay in performance regardless of cause.

Work Performance. Performance of the Work will be made by Seller in a prompt manner but Seller cannot be responsible for damage or delay due to acts of God, accidents, civil disturbances, delays in transportation by common carrier, strikes, war, unavailability of material or other cause beyond the reasonable control of Seller.

If Products are installed before a finished floor is completed, warranty is limited and Seller assumes no responsibility for fitting the Product to the floor. An additional charge may be made to Buyer for returning to the Project for adjustments to the Product.

Seller assumes no responsibilities for failure of installation of the Product due to structural deficiencies in an existing building. Buyer shall prepare the Project for installation in accordance with requirements of Seller.

If special work, requiring additional material and labor is required to meet conditions other than those specifically described in this Proposal, Buyer agrees to pay an additional charge therefore.

Seller shall be allowed uninterrupted and exclusive access to the Project during performance of the Work.

No Product may be returned without Seller's prior written approval. All Product returned is subject to a minimum of 25% restocking fee.

Cancellation. In the event Buyer cancels this Proposal after the Seller has commenced Work, Buyer shall forfeit the amount of the down payment given to Seller at the time of the execution of this Proposal, and in addition, shall pay to the Seller such proportion of the total Proposal Price as the amount of Work bears to the total amount of Work agreed upon to be furnished under this Proposal, plus a sum equal to 25% of the total Proposal Price as liquidated damages, which amount is to be paid within 30 days from the date of such cancellation.

In the event of Buyer's insolvency this Proposal shall be cancelled and Seller shall have no further obligations to Buyer hereunder.

Insurance. Seller shall carry workmen's compensation and public liability insurance to cover the Work. Seller shall not be liable to indemnify, hold harmless or protect in any way the Buyer, or any other party involved in the Work, whether an employee of Seller or Buyer or any third party, except to the extent of the workmen's compensation and public liability insurance maintained by Seller.

Buyer shall keep the Project adequately insured against any loss to Seller by reason of damage to Seller's Product or Work or Seller' vehicles, equipment and tools by vandalism, fire, water, windstorm and any other occurrence during the course of Work.

Alterations. Any alterations or modifications initiated by Buyer must be agreed upon between the parties and the price fixed by them before work on such alteration or modification shall commence. Payment for such alteration or modification shall be made at the time of the completion of the Work.

Permits and Licenses. Buyer shall be responsible for securing the necessary permits and licenses for the Work at Buyer's own cost and expense.

Warranties. Seller warrants the Product sold to be free from defects in material and workmanship under normal and intended use and service. This warranty extends only to the Buyer and expires one year after the date of delivery or installation of the Product by Seller.

Parts and labor for service work are warranted for the following periods: All replacement parts 90 days; labor-service 30 days. Seller's sole obligation is limited to repairing or replacing any parts which shall be determined by Seller to be defective and is conditioned upon Buyer giving notice of any such defect to Seller within the warranty period. If Seller concludes that repair or replacement is necessary, Seller will commence work within a reasonable time after the decision to repair or replace is made.

This warranty does not apply to any Product which has been altered or repaired by any person not authorized by the Seller or which has been subjected to misuse, neglect or accident.

Seller assumes no liability for incidental or consequential damages. Warranties implied by law are limited to duration to one year period described above.

Wood Products will be guaranteed only if properly protected within 10 days of delivery or installation by Seller with a prime and finish coat of manufacturer's recommended paint.

No warranty will be honored unless the Proposal Price has been paid in full, including any applicable service charges.

Modification of Proposal. Any modification of this Proposal or additional obligation assumed by either party in connection with this Proposal shall be binding only if evidenced in writing signed by each party or an authorized representative of each party.

Governing Law. It is agreed that this Proposal shall be governed by, construed and enforced in accordance with the laws of the state in which the Project is located.

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Christine Carasas

From: Nikki Cook <Nikki.Cook@dhpace.com>
Sent: Tuesday, November 12, 2024 4:38 PM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Utilities Overhead Door bid
Attachments: PROPOSAL- Wharton Smith Port Orange Utilities.pdf

Please see attached bid, thanks!

Nikki

Nikki Cook
Construction Sales Representative
Florida Door Solutions

Office: (407) 884-5955
Mobile:(407) 466-8807
Email: Nikki.Cook@dhpace.com

FLORIDA DOOR SOLUTIONS
A DHPACE Company

Florida Door Solutions - 777 S Park Ave - Apopka, FL 32703
Who is DH Pace Company?: Click Here

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Overhead Door Company of Daytona Beach

219 Fentress Blvd
Daytona Beach, FL 32114-1223

Contact: Doug Fisher
Phone: +1386-226-3820
Email: Doug@OverheadDoorDaytona.com

November 11, 2024

Wharton Smith / Estimating
PH#: 407 321-8410
EMAIL: comest@whartonsmith.com

This proposal is valid till Wednesday, December 11, 2024 Quote: SQIR009428-1 | Created: 11/11/2024 1:40 PM

Job: Port Orange Public Utilities Field Ops Bldg 4505 Clyde Morris Blvd. Port Orange, FL

	Item	Qty		
1	625.RD 625, 14' 0" x 12' 0" Opening	6		
2	625.RD 625, 8' 0" x 8' 0" Opening	2		

Total (USD): $118,840.00

Quote is per plans & specifications-SEE NOTES BELOW:
Doors include manufacturer's standard factory finish (White, Tan, Gray, or Brown)
EXCLUDES: All electrical service, wiring (LOW & HIGH voltage), connections, conduit, & mounting controls is by by others.

Terms and Conditions

Payment Details	
Payment Terms:	Credit Terms & Conditions

Christine Carasas

From: Doug Fisher <doug@overheaddoordaytona.com>
Sent: Monday, November 11, 2024 4:03 PM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Public Utilities Field Ops Bldg
Attachments: WHARTON SMITH Port Orange Public Utilities Field Ops Bldg.pdf

Please find the attached proposal for the overhead doors on the above referenced project. If you have any questions or I can assist further my contact information is noted below.

Best regards,

Doug Fisher
The Overhead Door Company of Daytona Beach
M: 386 871-4054
Doug@OverheadDoorDaytona.com



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The Genuine. The Original.

OVERHEAD DOOR®

ohdorlando.com

407-830-5600

Job:

CITY OF PORT ORANGE PUBLIC UTILITIES

FL

Prepared For:

ALL BIDDERS
FL

By:

Overhead Door Company of Orlando
Altamonte Springs, FL

Contact:

Chris Ballinger

Name: Chris Ballinger
Phone: 407-830-5600
Fax: 407-830-9001
Email: ohdorlando@aol.com

This proposal is valid until ***Sunday, December 29, 2024***

Overhead Door Company of Orlando
PO Box 150847
Altamonte Springs, FL 32715-0847

10/30/2024 7:47 AM

ALL BIDDERS
FL

Subject: Proposal for CITY OF PORT ORANGE PUBLIC UTILITIES

POWDER COAT COLOR MUST BE CHOOSEN FORM OHD COLOR CHART

EACH DOOR IS INSULATED WITH MOTOR OPERATION

NO LOCK WITH MOTORS

Best Regards,

Chris Ballinger | Phone: 407-830-5600 | Fax: 407-830-9001

Reference: SQNV002290-1 was modified Wednesday, October 30, 2024 and is valid till Sunday, December 29, 2024.

Overhead Door Company of Orlando

PO Box 150847
Altamonte Springs, FL 32715-0847
ohdorlando.com

Contact: Chris Ballinger
Phone: 407-830-5600
Email: ohdorlando@aol.com

This proposal is valid till Sunday, December 29, 2024 Quote: SQNV002290-1 | Created: 10/30/2024 7:34 AM

Job:
CITY OF PORT ORANGE PUBLIC
UTILITIES
FL

Prepared For:
ALL BIDDERS
FL

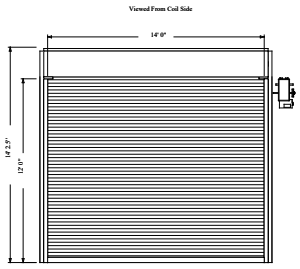
	Item	Qty
1	**625.RD 625, 14' 0" x 12' 0" Opening**	6

Mounting: R: Steel, Face Mount E Guide; L: Steel, Face Mount E Guide; Lintel - Steel, Header - Steel

Curtain: Windload - 41 PSF (Florida Building Code), F265I Insulated, Impact Rated, Steel, PGP RAL, To Be Determined, DoorCompletePC, Backcover - PGP RAL, 22 gauge, 24 Backcover gauge, Interior Mtd Above Lintel, Continuous Windlock

Operation: Motor Supplied by Manufacturer, Front Of Hood, Right Hand

Operator: RHX - Heavy Duty, 1/2 HP, 115/208/230V 1Phase 60Hz, Hoist, 2-Wire Monitored Edge, Brake, Edge Interface, Primary - 2 Wire Entrapment, Receiver,Built-In,Std



Bottom Bar: Double Angle, Steel, PGP RAL, To Be Determined, Electric 2Wire w/CoilCord (Monitored)

Guide: Steel, PGP RAL, To Be Determined, Brush-Both Sides, Bellmouth Entry

Hood: Round, Steel, PGP RAL, To Be Determined, Hood Baffle

Bracket: Steel, PGP RAL, To Be Determined

Misc: ReadyPak

Last Changed: 10/30/2024 7:40 AM EST

Label: DOOR # 201A, 201C, 201D, 205B, 206A, AND 206C

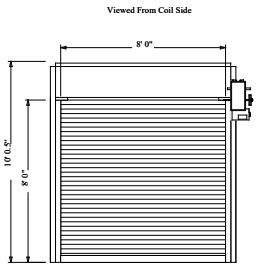
2	**625.RD 625, 8' 0" x 8' 0" Opening**	2

Overhead Door Company of Orlando

PO Box 150847
Altamonte Springs, FL 32715-0847
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Contact: Chris Ballinger
Phone: 407-830-5600
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Mounting:	R: Steel, Face Mount E Guide; L: Steel, Face Mount E Guide; Lintel - Steel, Header - Steel
Curtain:	Windload - 41 PSF (Florida Building Code), F265I Insulated, Impact Rated, Steel, PGP RAL, To Be Determined, DoorCompletePC, Backcover - PGP RAL, 22 gauge, 24 Backcover gauge, Interior Mtd Above Lintel, Continuous Windlock
Operation:	Motor Supplied by Manufacturer, Front Of Hood, Right Hand
Operator:	RSX - Standard Duty, 1/2 HP, 115/208/230V 1Phase 60Hz, Hoist, 2-Wire Monitored Edge, Brake, Edge Interface, Primary - 2 Wire Entrapment, Receiver,Built-In,Std
Bottom Bar:	Double Angle, Steel, PGP RAL, To Be Determined, Electric 2Wire w/CoilCord (Monitored)
Guide:	Steel, PGP RAL, To Be Determined, Brush-Both Sides, Bellmouth Entry
Hood:	Round, Steel, PGP RAL, To Be Determined, Hood Baffle
Bracket:	Steel, PGP RAL, To Be Determined
Misc:	ReadyPak
Last Changed:	10/30/2024 7:42 AM EST
Label:	DOOR # 204C, AND 204D



SubTotal (USD):	**$187,863.35**
Est. Tax - 7%:	**$13,150.44**
Total With Tax (USD):	**$201,013.79**

Overhead Door Company of Orlando

PO Box 150847
Altamonte Springs, FL 32715-0847
ohdorlando.com

Contact: Chris Ballinger
Phone: 407-830-5600
Email: ohdorlando@aol.com

Terms and Conditions

TERMS AND CONDITIONS:

Payment to be made as follows: NET 10 DAY
Prices subject to change if not accepted in days. 30

Quote includes labor for installation unless otherwise stated above. BY OTHERS: Jambs, spring pads, all wiring to motors and control stations, unless otherwise stated above, are not
included. Purchaser agrees that doors shall remain in Seller's possession until paid in full. In the event Purchaser breaches or defaults under the terms and provisions of this Agreement, the Purchaser shall be responsible for the costs of collection, including reasonable attorneys' fees. There shall be a 1.5% service charge per month for all payments due and owing after 30 days.
In the event the purchaser fails to pay or otherwise breaches this agreement, OVERHEAD DOOR COMPANY shall be entitled to reasonable attorney's fees and collection costs, including reasonable attorney fees in determining the amount of attorney fees.
(Agreements are contingent upon strikes, accidents, or delays beyond our control.)
Prices subject to change if not accepted in 30 days. All material manufacture by OVERHEAD DOOR COMPANY is warranty for one year from data of installation.
All power and control wiring is to be by others. Including mounting of controls and excluded from this bid.
Reattach existing operator to the new door. Overhead Door is NOT responsible for the working of the existing operator.

Order Cancellation Policy

Standard Orders
• All orders canceled within 2 weeks of the scheduled ship date or after a production run has started, will be subject to a 35% cancellation fee.

Special Orders
• Orders requiring the purchase of special materials will be charged the full cost of the special material and an additional 35% fee if canceled.

• Orders for which an irregular/oversized product is to be produced, will be subject to a 35% fee if canceled during Approvals stage, and subject to a 100% fee if canceled after order is manufactured.

Acceptance:

Terms, price, and specifications on all pages of this proposal are hereby accepted.

Authorized By (Buyer): _____ Date: _____

Print Name (Buyer): _____

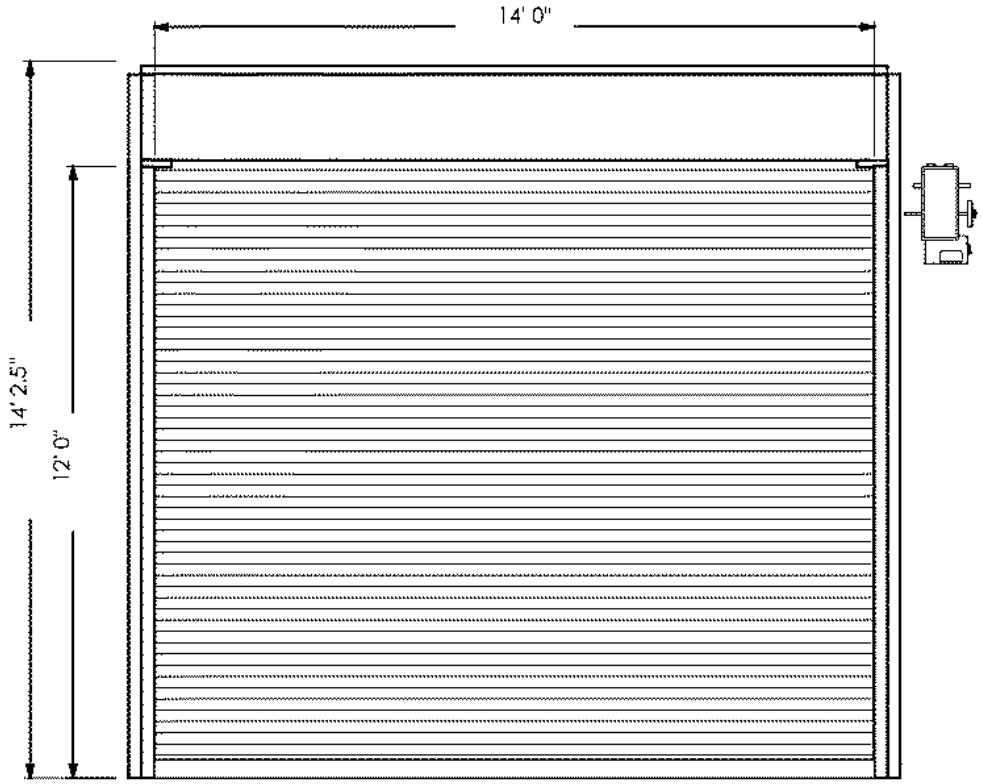
Purchase Order: _____

The Genuine. The Original.

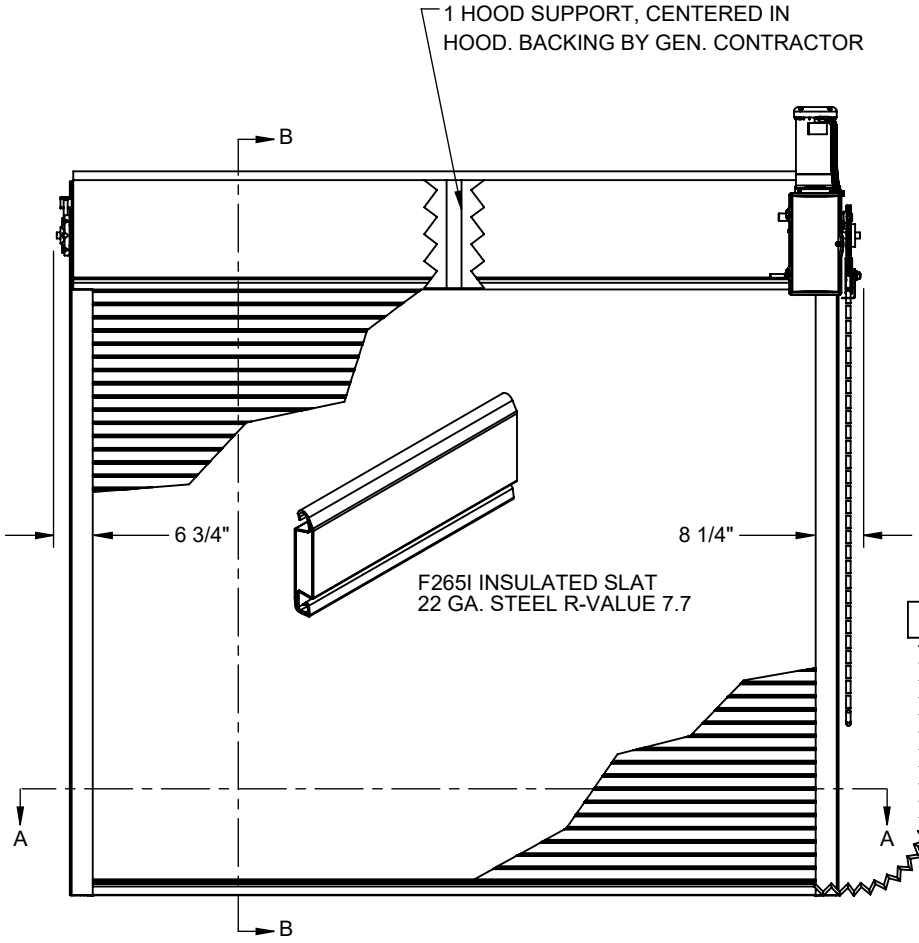
OVERHEAD DOOR®

Last Change: 10/30/2024 7:40 AM EST

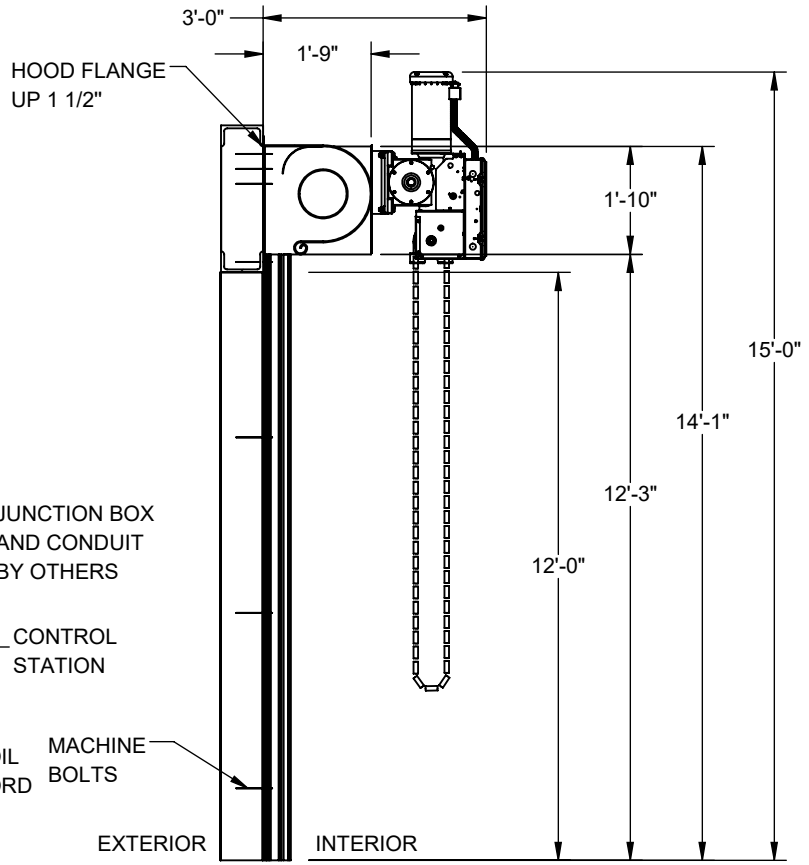
Viewed From Coil Side



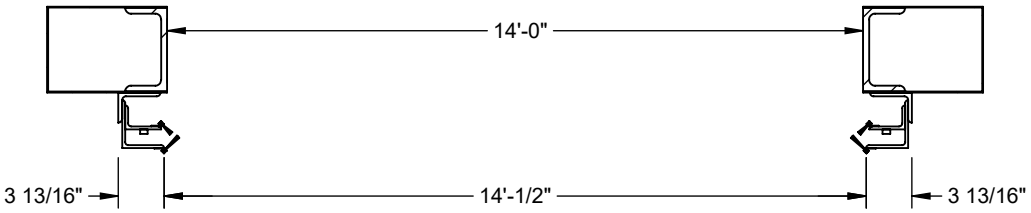
Job: CITY OF PORT ORANGE PUBLIC UTILITIES	Line: 1
Item: 625.RD	Description: 625, 14' 0" x 12' 0" Opening
Quote: SQNV002290-1	



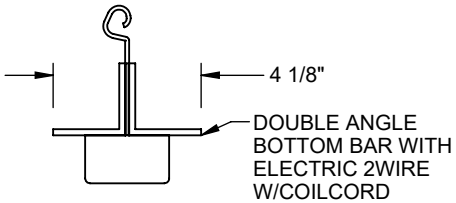
ELEVATION



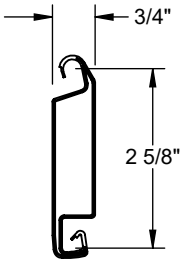
SECTION B-B



SECTION A-A



BOTTOM BAR SECTION



SLAT SECTION

MODEL 625 ROLLING SERVICE DOOR	**DOOR MARK:**	**OPENING WIDTH:** 14'-0"	**OPENING HEIGHT:** 12'-0"	**QUANTITY:** 6
The Genuine. The Original. OVERHEAD DOOR	**JOB NAME:** CITY OF PORT ORANGE PUBLIC UTILITIES	**NOTES:** SHOP DRAWINGS 14' X 12' DOORS		SHEET 1 OF 2
	ARCHITECT: CITY OF PORT ORANGE			**DATE:** 10/30/2024 07:40 AM EST
	CONTRACTOR: -			**QUOTE/ORDER#:** SQNV002290-1
	DISTRIBUTOR: Overhead Door Company of Orlando			**LINE #:** 1

RD_SD_FM_RH

SPECIFICATIONS	
CURTAIN	22 GA. STEEL, POWDERGUARD PREMIUM RAL TO BE DETERMINED
BACKCOVER	24 GA. STEEL, POWDERGUARD PREMIUM RAL TO BE DETERMINED
ENDLOCKS	CONTINUOUS WINDLOCK
BOTTOM BAR	DOUBLE ANGLE, STEEL, POWDERGUARD PREMIUM RAL, TO BE DETERMINED
LOCK	NONE
ROUND HOOD	24 GA. STEEL, POWDERGUARD PREMIUM RAL TO BE DETERMINED
FASCIA	NONE
GUIDES	STEEL, POWDERGUARD PREMIUM RAL TO BE DETERMINED
BRACKET	1/4" STEEL, POWDERGUARD PREMIUM RAL TO BE DETERMINED
PIPE	1 1/4" DRIVE SHAFT, 20,000 CYCLES SPRINGS
INTERLOCK(S)	NONE
DESIGN PRESSURE	41 PSF (FLORIDA BUILDING CODE) FL 742

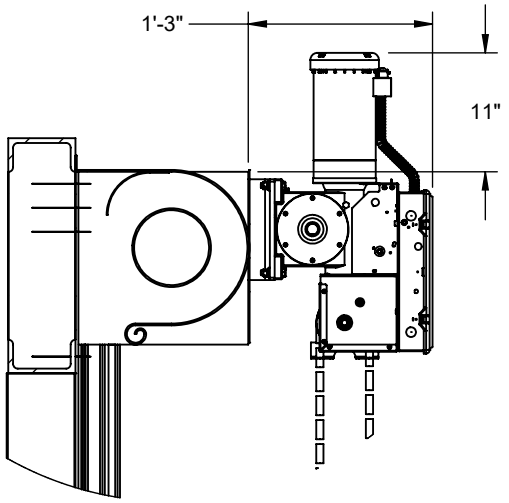
MOTOR UNIT

1/2 HP, 115/208/230V 1PHASE 60HZ,
10.0/5.0/5.0 FLA

RHX MOTOR OPERATOR, HOIST, 24 VDC DISC-TYPE BRAKE, ELECTRO-MECHANICAL LIMIT SWITCH ADJUSTMENT, ELECTRONIC CONTROL BOARD W/ LCD DISPLAY, ON-BOARD OPEN/CLOSE/STOP FUNCTIONS, BUILT IN RADIO RECEIVER, CYCLE COUNTER, MAXIMUM RUN TIMER & DELAY ON REVERSE FEATURE. GEAR HEAD REDUCTION. THERMAL OVERLOAD PROTECTION SYSTEM. CONTINUOUS DUTY MOTOR RATED 60 CYCLES PER HOUR, PUSH BUTTON (OPEN/CLOSE/STOP) , EDGE INTERFACE 2-WIRE.

ACCESSORIES

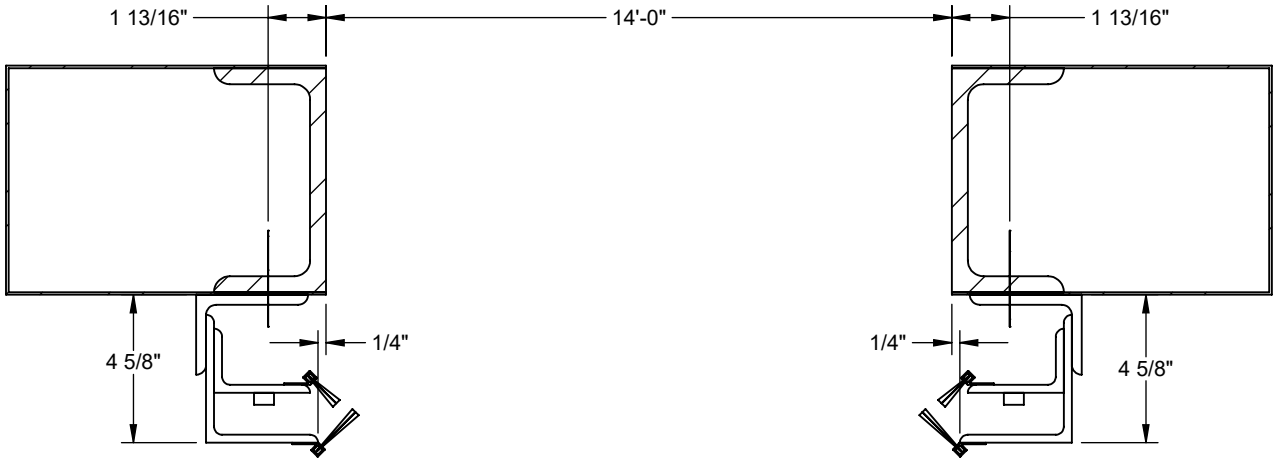
2-WIRE MONITORED EDGE.



MOTOR DETAIL

GUIDE DETAILS
STEEL ANGLES
WALL ANGLE
3-1/2x2-1/2x5/16
INNER ANGLE
3x2x1/4
OUTER ANGLE
4x3-1/2x1/4

WALL FASTENERS
MACHINE BOLTS
1/2-13, 18" ON CENTER



INTERIOR FACE MOUNT E GUIDE ON STEEL JAMB

EST. SHIPPING WEIGHT 2330 LBS				
MODEL 625 ROLLING SERVICE DOOR	**DOOR MARK:**	**OPENING WIDTH:** 14'-0"	**OPENING HEIGHT:** 12'-0"	**QUANTITY:** 6
The Genuine. The Original. OVERHEAD DOOR	**JOB NAME:** CITY OF PORT ORANGE PUBLIC UTILITIES	**NOTES:** SHOP DRAWINGS 14' X 12' DOORS		SHEET 2 OF 2
	ARCHITECT: CITY OF PORT ORANGE			**DATE:** 10/30/2024 07:40 AM EST
	CONTRACTOR: -			**QUOTE/ORDER#:** SQNV002290-1
	DISTRIBUTOR: Overhead Door Company of Orlando			**LINE #:** 1

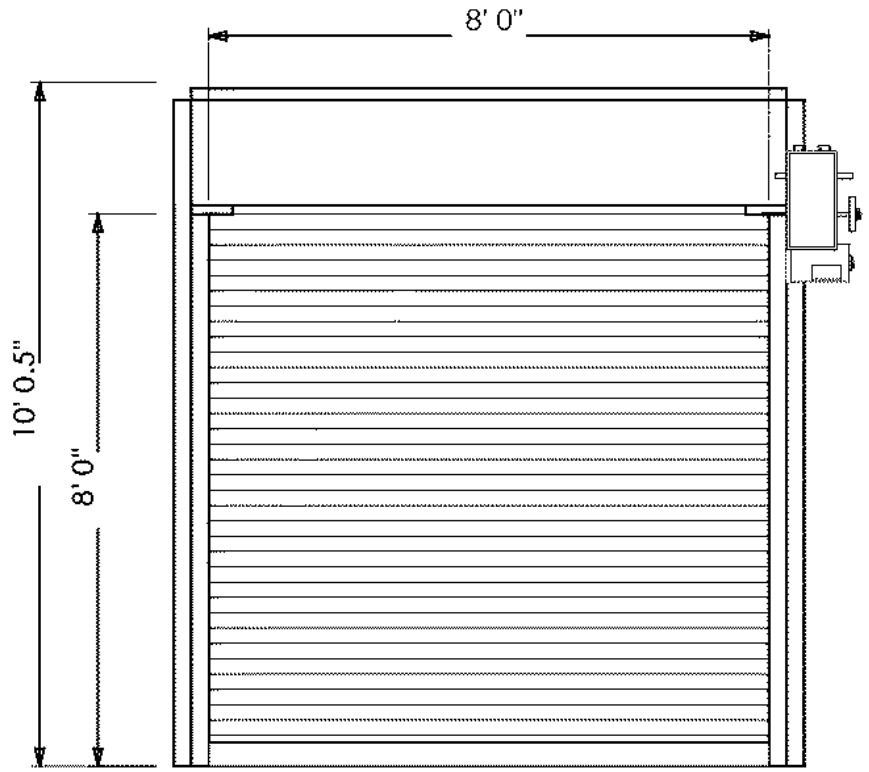
RD_SD_FM_RH

The Genuine. The Original.

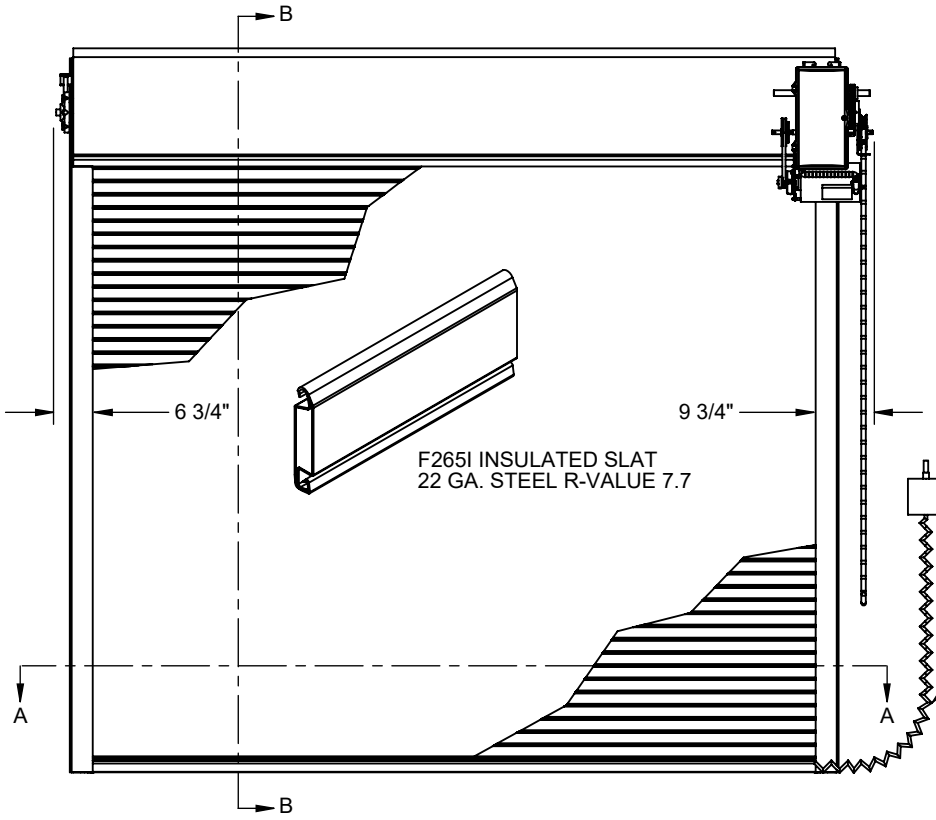
OVERHEAD DOOR®

Last Change: 10/30/2024 7:42 AM EST

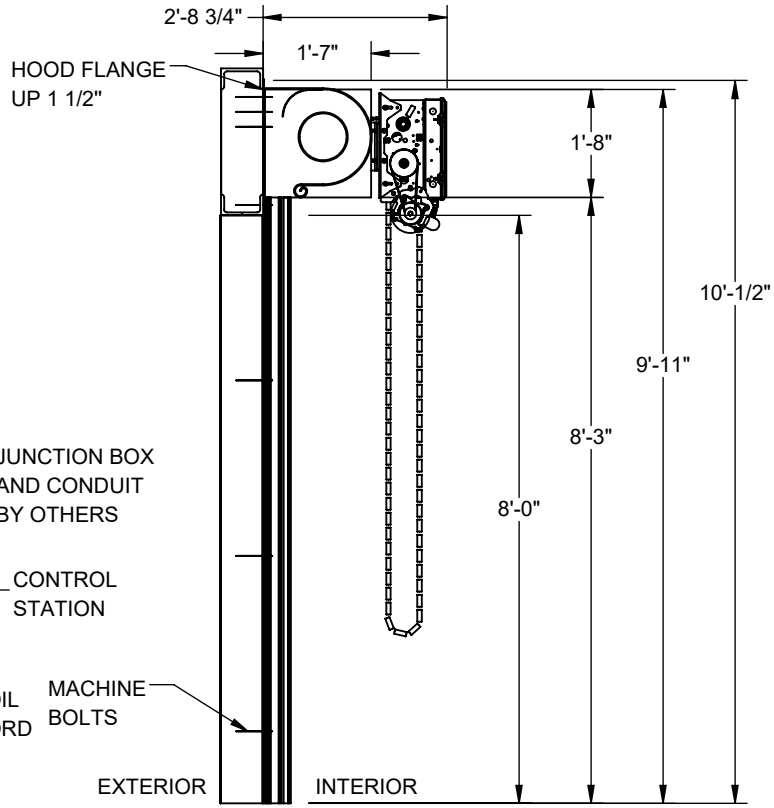
Viewed From Coil Side



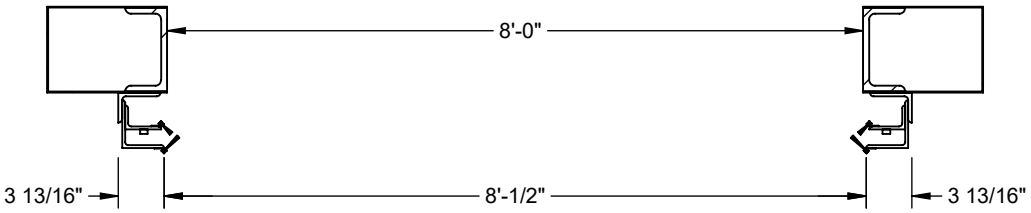
Job: CITY OF PORT ORANGE PUBLIC UTILITIES	Line: 2
Item: 625.RD	Description: 625, 8' 0" x 8' 0" Opening
Quote: SQNV002290-1	



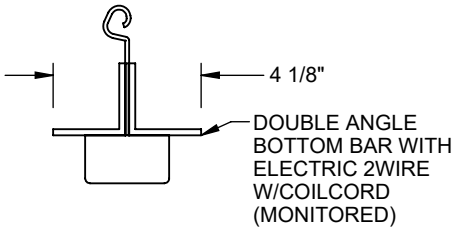
ELEVATION



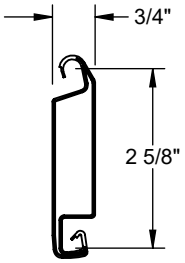
SECTION B-B



SECTION A-A



BOTTOM BAR SECTION



SLAT SECTION

MODEL 625 ROLLING SERVICE DOOR	**DOOR MARK:**	**OPENING WIDTH:** 8'-0"	**OPENING HEIGHT:** 8'-0"	**QUANTITY:** 2
The Genuine. The Original. OVERHEAD DOOR	**JOB NAME:** CITY OF PORT ORANGE PUBLIC UTILITIES	**NOTES:** SHOP DRAWINGS 8' X 8' DOORS		SHEET 1 OF 2
	ARCHITECT: CITY OF PORT ORANGE			**DATE:** 10/30/2024 07:42 AM EST
	CONTRACTOR: -			**QUOTE/ORDER#:** SQNV002290-1
	DISTRIBUTOR: Overhead Door Company of Orlando			**LINE #:** 2

RD_SD_FM_RH

SPECIFICATIONS	
CURTAIN	22 GA. STEEL, POWDERGUARD PREMIUM RAL TO BE DETERMINED
BACKCOVER	24 GA. STEEL, POWDERGUARD PREMIUM RAL TO BE DETERMINED
ENDLOCKS	CONTINUOUS WINDLOCK
BOTTOM BAR	DOUBLE ANGLE, STEEL, POWDERGUARD PREMIUM RAL, TO BE DETERMINED
LOCK	NONE
ROUND HOOD	24 GA. STEEL, POWDERGUARD PREMIUM RAL TO BE DETERMINED
FASCIA	NONE
GUIDES	STEEL, POWDERGUARD PREMIUM RAL TO BE DETERMINED
BRACKET	1/4" STEEL, POWDERGUARD PREMIUM RAL TO BE DETERMINED
PIPE	1" DRIVE SHAFT, 20,000 CYCLES SPRINGS
INTERLOCK(S)	NONE
DESIGN PRESSURE	41 PSF (FLORIDA BUILDING CODE) FL 742

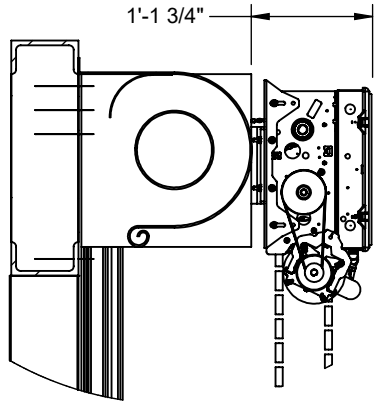
MOTOR UNIT

1/2 HP, 115/208/230V 1PHASE 60HZ,
10.0/5.0/5.0 FLA

RSX MOTOR OPERATOR, HOIST, 24 VDC DISC-TYPE BRAKE, ELECTRO-MECHANICAL LIMIT SWITCH ADJUSTMENT, ELECTRONIC CONTROL BOARD WITH LCD DISPLAY, ON-BOARD OPEN/CLOSE/STOP FUNCTION, BUILT IN RADIO RECEIVER, CYCLE COUNTER, MAXIMUM RUN TIMER, DELAY ON REVERSE, AUTO TENSIONING BELT, THERMAL OVERLOAD PROTECTION SYSTEM, CONTINUOUS DUTY MOTOR RATED 60 CYCLE PER HOUR, PUSH BUTTON (OPEN/CLOSE/STOP) , EDGE INTERFACE 2-WIRE.

ACCESSORIES

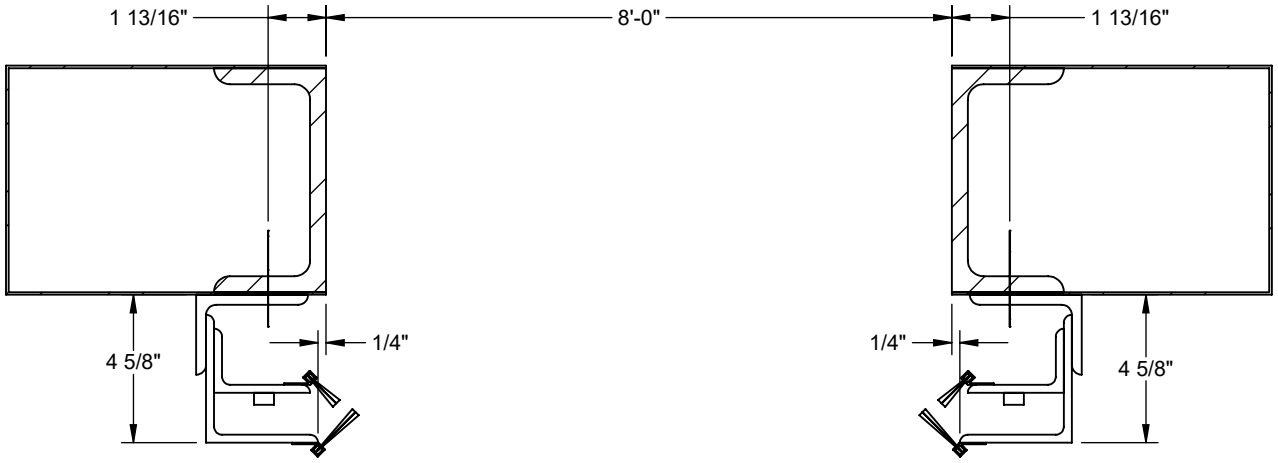
2-WIRE MONITORED EDGE.



MOTOR DETAIL

GUIDE DETAILS
STEEL ANGLES
WALL ANGLE
3-1/2x2-1/2x5/16
INNER ANGLE
3x2x1/4
OUTER ANGLE
4x3-1/2x1/4

WALL FASTENERS
MACHINE BOLTS
1/2-13, 18" ON CENTER



INTERIOR FACE MOUNT E GUIDE ON STEEL JAMB

EST. SHIPPING WEIGHT 1200 LBS				
MODEL 625 ROLLING SERVICE DOOR	**DOOR MARK:**	**OPENING WIDTH:** 8'-0"	**OPENING HEIGHT:** 8'-0"	**QUANTITY:** 2
The Genuine. The Original. OVERHEAD DOOR	**JOB NAME:** CITY OF PORT ORANGE PUBLIC UTILITIES	**NOTES:** SHOP DRAWINGS 8' X 8' DOORS		SHEET 2 OF 2
	ARCHITECT: CITY OF PORT ORANGE			**DATE:** 10/30/2024 07:42 AM EST
	CONTRACTOR: -			**QUOTE/ORDER#:** SQNV002290-1
	DISTRIBUTOR: Overhead Door Company of Orlando			**LINE #:** 2

RD_SD_FM_RH

625

STORMTITE™

INSULATED HEAVY-DUTY ROLLING SERVICE DOOR



ICC ES LISTED

THERMAL PROTECTION.
HEAVY-DUTY DESIGN.
AIR INFILTRATION PROTECTION.

OVERHEAD DOOR®

INDUSTRY LEADING
COMMERCIAL & INDUSTRIAL SOLUTIONS



Standard features at a glance

Maximum width$^{\Delta}$	30'4" (9246 mm)
Maximum height$^{\Delta}$	28'4" (8636 mm)
Curtain	24-gauge galvanized steel front 24-gauge galvanized steel back
Slat profile	Flat, insulated, type F-265i
Insulation	Foamed-in-place, CFC and HCFC-free polyurethane
R-value*	7.7 (1.35 W/Msq)
STC Rating	21
Finish	Gray, Tan, Brown or White
Hood	24-gauge galvanized steel
Wind load	20 psf
Standard mounting	Face-of-wall
Operation	Chain hoist
Standard spring	20,000 cycle
Weatherseals	Bottom, exterior curtain-side guide, interior hood baffle
Guides	Three structural steel angles; PowderGuard® Premium finish with black powder coat
Bottom bar	Primed steel with vinyl weatherseal
Lock	Padlockable chain keeper
Warranty	24-month limited; 3 years/20,000 cycles limited on Overhead Door™ door and operator system (when purchased together)

Cover image: *Model 625, finish in Tan*

Image above: *Model 625, finish in Tan*

Options

- Air infiltration package that meets requirements of IECC code, which includes: guide cover and cap; dual brush guide seal, lintel seal, bottom astragal
- Electric operator (RHX®, RSX®, RMX®) or crank operation
- Bottom sensing edge; sloping bottom bar
- Galvanized steel bottom bar angles and guides; insulated guides
- Between-jamb mounting
- Stainless steel or aluminum slats
- High-usage package
- High-wind load option (FBC, TDI, Dade)†
- Weatherseal for interior side guide
- Lintel seal
- Cylinder lock; slide bolts
- Exhaust ports
- Vision lites with uniformly spaced openings of 5/8"x 3" (16 mm x 76 mm) or 1" x 10" (25.4 mm x 254 mm)
- PowderGuard® Premium powder coat paint finish in approximately 200 standard colors, or color-matched to specification;
- PowderGuard® Zinc and PowderGuard® Textured finishes
- Special application doors:
  - Oversized doors to 1500 ft^2. (139.4 m^2)
  - Combination doors with grilles and/or with full or partial standard, perforated or fenestrated slats
  - Spark-resistant doors, craneway doors, pass doors

Some options may affect clearance dimensions.

† Wind Load options available to meet:
FBC - Florida Building Code
TDI - Texas Department of Insurance
Dade - Miami-Dade Building Code Compliance Office

* R-value is a measure of thermal efficiency. The higher the R-value the greater the insulating properties of the door. Overhead Door Corporation uses a calculated door section R-value for our insulated doors.

$^{\Delta}$ Maximum height and width are independent of each other and may vary based on slat profile, material and gauge.

Style, function and thermal efficiency.

When overall performance and thermal efficiency are as essential in a rolling service door as are versatile good looks, the Stormtite™ 625 meets specification and exceeds all expectations. This heavy-duty door features insulated slats in a variety of materials – galvanized steel, stainless steel or aluminum – and offers optional wind load protection up to 170 psf. Designed to fit openings up to 30'4" wide and 28'4" high (9246 mm x 8636 mm) and offered with a broad range of product options, the versatility and functionality of the Stormtite™ 625 ensures that your design requirements will be met with ease, functionality and style.



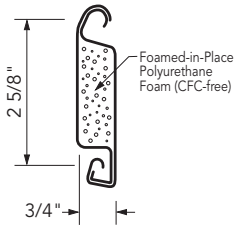
White finish. Installation and service: Overhead Door Company of Concord™

Slat data

F-265i slat

Slat	Opening width	Standard	Optional
F265i	Thru 30'4" (9246 mm)	24 ga.	22, 20, 18 ga. 22, 20 ga. ss .040" alum., 18 ga.

Slats are galvanized and painted, stainless steel (specify finish) or aluminum (specify finish). Gauges reflect front slat; back slat is 24-gauge on steel and stainless steel; 22-gauge on aluminum.



R-value* 7.7 (1.35 W/Msq)
U-value .13
Smoke generation = 10
Flame spread = 5
STC = 21

ICC ES LISTED

The IECC listed air infiltration option meets code requirements for an air infiltration rating lower than than 1.0 cfm/ft² for rolling steel doors.

This superior perimeter sealing system includes:

- Guide cover and cap
- Dual brush guide seal
- Lintel seal
- Bottom astragal

Finish options

Finish details	
Standard polyester base coat	Two-coat system with polyester based top coat.
PowderGuard® Premium powder coat	Weather resistant polyester powder coat available in approximately 200 colors; custom color match and EZ Clean treatment options available.
PowderGuard® Zinc finish	Zinc enriched powder coat provides excellent corrosion protection that outperforms both hot dipped and cold galvanized steel. Color selection from approximately 200 powder coat colors; custom color match also available.
PowderGuard® Textured finish	Industrial textured powder coat provides a thicker, more scratch resistant coat for added product protection.

Colors

White Tan Gray Brown

Actual colors may vary from brochure due to fluctuations in the printing process. Always request a color sample from your Overhead Door™ Distributor for accurate color matching.



Gray finish. Installation and service: Overhead Door Company of Huntsville™



Architect's Corner

A resource for architects, containing comprehensive technical and resource materials to support your project, including drawings and specifications for commercial doors.

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overheaddoor.com

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Christine Carasas

From: Overhead Door ohdorlando@aol.com <ohdorlando@aol.com>
Sent: Monday, November 11, 2024 8:35 AM
To: Wharton Smith Commercial Estimating
Subject: Overhead Door
Attachments: CITY OF PORT ORANGE PUBLIC UTILITIES NOV 24.pdf

Here is the bid for CITY OF PORT ORANGE PUBLIC UTILITIES

Thank you for choosing Overhead Door Company of Orlando
Chris Ballinger VP
407-830-5600
OHDORLANDO@AOL.COM
OHDORLANDO.COM

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!

Subcontractor Bid Form-General

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder: ACIS - ACOUSTICAL CEILINGS & INTERIOR SERVICES INC.

Scope of Work: ACOUSTICAL CEILINGS

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures: $ 62,577.00

Amount in Words: Sixty-two thousand five hundred and seventy-seven

(1.2) Alternates (Voluntary)

NONE	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $50,000)

Material/Equipment Types: Does not exceed limits

Amount: $

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1	NONE	$
2		$
3		$

(1.5) MWBE Participation

MWBE	$ 0
LDB	$ 0
VBE	$ 0

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %: 0 NONE

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)
N/A			

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	001	Dated:	11/7/24	RFI No.	Dated:
RFI No.	002	Dated:	11/11/24	RFI No.	Dated:
RFI No.		Dated:		RFI No.	Dated:

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	001	Dated:	10/22/24	WSI No.	004	Dated:	10/28/24
WSI No.	002	Dated:	10/24/24	WSI No.	005	Dated:	10/31/24
WSI No.	003	Dated:	10/24/24	WSI No.	006	Dated:	11/4/2024
					007		11/6/2024

(2.3) ASI (Architect's Supplemental Instructions) 008 11/8/2024

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.	Dated:	ASI No.	Dated:

(2.4) Addenda N/A

The Bidder acknowledges receipt of the following Addenda:

Addenda No.	Dated:	Addenda No.	Dated:
Addenda No.	Dated:	Addenda No.	Dated:

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

ACCOUSTICAL CEILINGS & INTERIOR SERVICES, INC.

Company Name

6203 ORANGE ROAD ORLANDO, FL 32810

Address (Street, City, State, Zip)

407-578-5104 acisceilings@cfl.rr.com

Phone Number **Email Address**

Type of Organization (Check One):

(✓) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of FLORIDA.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other N/A

SIGNATURE OF BIDDER

Bidder Name: ACIS, Inc

By: Jarod Williams

Printed Name: JAROD WILLIAMS

Title: VICE PRESIDENT

Dated: 11/12/2024

License No.:

ACIS
Acoustical Ceilings & Interior Services

Phone (407) 578-5104
E-mail: acisceilings@cfl.rr.com

6203 Orlando Road
Orlando, FL 32810

PROPOSAL NUMBER: 12604 **PAGE:** 1 OF 1 **DATE:** 11/12/2024

PROPOSAL SUBMITTED TO:

ATTN: **ESTIMATING**
WHARTON-SMITH INC.
750 MONROE ROAD
SANFORD, FL 32771

PHONE: **407-321-8410** **Email: Comest@whartonsmith.com**

JOB NAME / LOCATION:

PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY
4505 CLYDE MORRIS BLVD.
PORT ORANGE, FL 32129

SEC 095113 - ACOUSTICAL PANELS CEILINGS

SCOPE OF WORK:

1. Install approx. 8,824 sf ***A1*** acoustical ceilings.

Note: ***C2*** *, USG Ensemble Acoustical Drywall ceilings, in Corridor 151 is not included in this bid. Certification is required for installation and ACIS currently is not certified to perform work.*

MATERIALS:

A1
Grid: Armstrong Prelude XL 15/16" Aluminum Capped WA
Tile: Armstrong School Zone Fine Fissured 2' x 2' x 3/4" Angled Tegular **# 1820**

PRICING:

	PRICE
1. A1 Acoustical Ceilings	**$ 62,577.00**

Notes:
1. *Proposal is good for* ***90*** *days. The prices on acoustical ceilings materials are only good through* ***December 1 2025,*** *prices will increase thereafter.* ***Important:*** *Due to the current uncertainty in material prices, proposed prices above subject to increase at time of actual scheduled work. Due to scarcity in acoustical ceiling materials lead times are uncertain, and to be determined .*
2. *Work to be performed during* ***Normal Business Hours.***
3. *No batt insulation, above acoustical ceilings, included in bid.*
4. *Furnish 10%, up to 2 cartons, extra acoustical ceiling tiles for owner's stock.*
5. *Based on drawings dated 09-30-2024 and includes RFI's 1 & 2, and WSI's 1 to 8.*

ESTIMATOR JAROD WILLIAMS

Christine Carasas

From: ConstructConnect <DoNotReply@constructconnectmail.com>
Sent: Tuesday, November 12, 2024 9:54 AM
To: Wharton Smith Commercial Estimating
Subject: Received bid for Port Orange Public Utilities Field Ops Bldg.

A simpler, more effective bid process

You've received a bid from Acoustical Ceilings & Interior Services, Inc. via ConstructConnect

Port Orange Public Utilities Field Ops Bldg.

Project Details

Project Name	Port Orange Public Utilities Field Ops Bldg.
Bid Date	Nov 12, 2024 @ 02:00 PM ET
Project ID	6613997

View Project

Bid Details

Company	Acoustical Ceilings & Interior Services, Inc.
Bid Amount	$62,577
Submission Date	Nov 12, 2024 @ 09:53 AM ET
Description	
Bid Attachments	WHARTON-SMITH - PORT ORANGE PUBLIC UTILITIES.pdf WHARTON-SMITH - Port Orange Utilities Bid Form.pdf

Contact Details

Primary Contact	Jarod Williams
Email	acisceilings@cfl.rr.com
Phone	(407) 578-5104 ext.
Website	



Support Number: (877) 4CC-TOOL (422-8665)

Email: customerservice@constructconnect.com

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ACOUSTI ENGINEERING COMPANY OF FLORIDA
CGC 1527149 www.acousti.com

426 Gus Hip Boulevard Rockledge, FL 32955
(321) 636-4042

To:	***Wharton-Smith, Inc.***	Date:	**November 12, 2024**
Atten:	**John Gleason**	Address:	**4505 Clyde Morris Blvd, Port Orange, FL 32129 US**
Phone:	**(386) 986-0577 ext. 2303**	Plan Date:	**09/30/2024**
Email:	comest@whartonsmith.com	Plan Version:	**PERMIT/BID DOCUMENTS**
Job:	**Port Orange Public Utilities Field Ops Bldg**	Architect:	**Schenkel Shultz**

Thank you for allowing Acousti Engineering the opportunity of bidding this project for you. The pricing below is based on bid documents dated 09/30/2024 All work bid is per these documents unless otherwise noted in this proposal.

095113 - ACOUSTICAL PANEL CEILINGS	**$43,620.00**

BASE BID VALUE	**$43,620.00**

Scopes, terms, conditions, and qualifications as specifically outlined in Acousti's proposal shall be considered included and incorporates all conditions of said proposal with the clear understanding that they are part of the Agreement. Purchaser's acceptance of the intent of this proposal whether by this form or otherwise incorporates all conditions of this proposal. Subject to purchaser's acceptance by an authorized office or agent, within Thirty (30) says from date hereof. Acousti reserves the right to negotiate any and all terms and conditions of any contract offered by purchaser.

Respectfully submitted,
Acousti Engineering Company of Florida

Jimmy Tilton

Title Project Manager
e:mail: jimmytilton@acousti.com

ACOUSTI ENGINEERING COMPANY OF FLORIDA
CGC 1527149 www.acousti.com

426 Gus Hip Boulevard Rockledge, FL 32955
(321) 636-4042

BREAKOUT VALUES:

Spec Section	095113	Acoustical Panel Ceilings	$43,620.00

SCOPE OF WORK - 095100

1) Furnish & install Armstrong Fine Fissured (1821) 2'x2'x3/4" White, Class A, Beveled Tegular edge ceiling tile in exposed, White, Class A, Armstrong Suprafine XL 9/16" grid in areas as shown.

QUALIFICATIONS - UNLESS OTHERWISE NOTED ABOVE:

1) Final cleaning and/or vacuuming is excluded.
2) Protection of installed work is excluded.
3) NO removals, demolition or dumpsters included.
4) All work to be completed on Regular work hrs.
5) Shift, overtime, nights and/or weekend work is subject to up-charges.
6) P&P BOND is not included, if required add 3.0% to price.
7) Any participation in OCIP, CCIP and/or ODP programs and any CREDITS for such participation is excluded.
8) NO insulation included.
9) NO additional wires provided at light fixtures, etc.
10) Out of sequence work is EXCLUDED, and if required, will incur additional mobilization costs.
11) Finish caulking BELOW wall molding is EXCLUDED.
12) Caulking BEHIND/ABOVE wall molding is INCLUDED.

ACOUSTI ENGINEERING COMPANY OF FLORIDA
CGC 1527149

426 Gus Hip Boulevard Rockledge, FL 32955
(321) 636-4042

CONDITIONS & ACCEPTANCE

(1) So that we may ship material and organize our erection crew, purchaser shall notify us in writing at least four weeks before the building is ready for our work with work progressed to the extent that all our work can be done in one continuous operation.
(2) Purchaser shall make no charge against us for liquidated damages, clean-up, hoisting, watchman telephone, broken glass, light, rubbish removal, or insurance. We will remove only that rubbish caused by us and pay for breakage caused by the negligence of our men.
(3) Purchaser shall furnish no labor or materials for us on our account without our written order, prior to the action.
(4) This proposal is based upon all labor being performed during regular hours of work. You shall pay us all additional costs, including insurance and overhead costs, of any overtime work, that may be requested by purchaser or his agent.
(5) Purchaser shall bear the risk of any loss or damage to materials delivered to the premises or installed by us, whether such loss or damage results from theft, misuse, fire, flood, or any other cause except our own negligence, and the purchaser shall reimburse us for any such loss or damage.
(6) We shall not be liable for any damages or delays caused by strikes, lockouts, embargoes, fires, car shortage, floods, tornadoes, accidents, inability to obtain materials from our regular sources of supply, or other causes beyond our reasonable control, and the time for delivery of materials or doing the work hereunder shall be extended for the time of delay or reason of any said causes.
(7) Purchaser shall furnish to us, without charge, a sufficient quantity and flow of water and sufficient electrical service for our equipment at convenient electrical service for our equipment at convenient locations at working levels, and satisfactory storage space in the building from which we will not be required to remove our material except as required in our work.
(8) Purchaser shall furnish us with a complete set of plans, specifications, and addenda at least ten (10) weeks before building will be ready for our work.
(9) Purchaser shall furnish us with a progress schedule showing the coordination of the various trades at least ten (10) weeks before the schedule time for the commencement of work.
(10) Acousti Engineering Company of Florida assumes all liability for the collection and payment of Social Security and Unemployment Compensation Taxes on its employees.
(11) None of the material furnished under this contract shall be subjected to a temperature of higher than 140 degrees Fahrenheit.
(12) If this is a contract for a complete installation of our materials, we will pay all sales and/or use taxes in effect at the date of the Proposal. Any other or additional taxes will be paid by the Purchaser. If this is a contract for material sales only, purchaser will pay all sales and/or use taxes.
(13) Purchaser shall provide adequate protection for our finished work.

TERMS

(1) Payment of the aforementioned price, together with payment of any extras that may be agreed upon between us, shall be made by purchaser to us as follows: On or before the tenth (10th) day of each month, ninety per cent (90%) of the value of the materials delivered upon the premises and the work performed during the next preceding calendar month. Final payments shall be made within thirty (30) days after the completion of our work embodied in the proposal. If an account of delays by purchaser or other trades or for any cause beyond our reasonable control, we are unable to complete our work, purchaser shall pay us in full on or before the tenth (10th) day of the calendar month following the month in which the work was suspended, for all materials delivered or in transit, and work performed by us up to the time of suspension of the work. If payments are not made in accordance with the terms hereof, it is agreed that interest on will become due for the period of default, and at our election we may suspend work until such payments are made, and all costs or expenses incurred by us in collecting any sum due hereunder, whether by suit or otherwise, including reasonable attorney's fees shall be paid by purchaser. All provisions of this contract shall be construed in accord with the laws of the Florida.
(2) A performance bond or other bond, if desired by the purchaser, shall be provided at your expense.

There are no promises, agreements, or understandings, between purchaser and us, not contained in this agreement.

426 Gus Hip Boulevard Rockledge, FL 32955
(321) 636-4042

ACCEPTANCE

This proposal is subject to final approval by an authorized agent or officer of Acousti Engineering Company following acceptance by purchaser. Only when so accepted and finally approved shall this proposal constitute a contract between us.

ACCEPTED:
Contracting Company

Authorized Signature

Sign _____

Date _____

APPROVED:
Acousti Engineering Company

Authorized Signature (Acousti)

Sign _____

Date _____

Acousti Engineering Co. of FL

Prepared by Jimmy Tilton
11/12/2024 7:43 AM

Project Summary

Tab	#Rooms	#Stairs	Floor Area	Wall Area	Base Peri	#Doors	#Windows
034_A141A_REFLECTED CEILING PLAN -ADMINISTRATION	31	0	6,590.21 SF	17,752.00 SF	1972'5"	0	0
035_A141B_REFLECTED CEILING PLAN -WAREHOUSE	1	0	1,625.38 SF	1,624.50 SF	180'6"	0	0
Total 2 Tabs	**32**	**0**	**8,215.59 SF**	**19,376.50 SF**	**2152'11"**	**0**	**0**

Item Description	Usage	Linear Length	Net Area	Base Peri	Seam Length	Full; Split; Edge	Waste*
A1: Fine Fissured Bev Teg (1821) 24" x 24" SF	9,080.00 SF (1,008.89 SY) (2270PCs)		8,215.59 SF (912.84 SY)	2152'11"		2165; 105; 1821'3"	10.5%
A1: Suprafine XL Shaddow Mold (7889) 9/16" 0" LF	2,217.5 LF		2,152.9 LF				3.0%
2'x2' Light Fixture EA	106.0		106.0				0.0%
2'x2' HVAC EA	75.0		75.0				0.0%

* For roll products, the waste is waste ratio; for others, the waste is waste addon.



A1 REFLECTED CEILING PLAN AREA A

1/8" = 1'-0"

REFLECTED CEILING LEGEND

- A1 VARIES — 24" x 24" FINE FISSURED, TEGULAR EDGE, 0.70 NRC
- C1 VARIES — 5/8" GYPSUM BD ON 3-5/8" METAL STUD FRAMING. PROVIDE MOISTURE RESISTANT BOARD AND EPOXY PAINT AT ALL WET LOCATIONS
- C2 VARIES — SPECIALTY CEILING. SEE INTERIOR FINISH SCHEDULE, SHEET A160
- F2 VARIES — EXPOSED STRUCTURE WITH DRYFALL PAINT
- M1 VARIES — PRE-FINISHED EXTERIOR METAL SOFFIT CEILING SYSTEM. (B.D.D. WOOD GRAIN FINISHES SERIES, BY PAC-CLAD/PETERSEN A CARLISLE COMPANY OR SIMILAR APPROVED) COLOR: COPPER, COMPARABLE TO: SHERWIN WILLIAMS, SPICED CIDER SW 7702
- M2 VARIES — PRE-FINISHED EXTERIOR METAL SOFFIT CEILING SYSTEM. (B.D.D. PAC-CLAD/PETERSEN A CARLISLE COMPANY OR SIMILAR APPROVED) COLOR: GRAPHITE COMPARABLE TO: SHERWIN WILLIAMS, WEB GRAY SW 7075

CEILING GENERAL NOTES

1. ALL DIMENSIONS ARE TO THE CENTERLINE OF DEVICE, TYPICAL.
2. ALL SOFFIT/SCHED OPENINGS ARE TO ALIGN WITH THE FINISHED FACE OF ADJACENT WALLS, U.N.O
3. ALL DEVICES ARE TO BE CENTERED IN CEILING TILES WHERE APPLICABLE, UNLESS NOTED OTHERWISE
4. SEE CONSULTANT DOCUMENTS FOR THE LOCATIONS OF ALL WALL MOUNTED DEVICES. COORDINATE ALIGNMENT OF WALL DEVICES WITH EACH OTHER AND CEILING DEVICES WHERE POSSIBLE.
5. ALIGN DEVICES AS INDICATED WITH CENTERLINES
6. ALL CEILING HEIGHTS ARE TO THE FINISHED FACE OF THE CEILING PLANE.
7. ARCHITECTURAL ROPS DO NOT INDICATE ALL DEVICES IN THE CEILING/PROJECT. REFER TO MEP DOCUMENTS FOR ADDITIONAL DEVICES.
8. ALL STRUCTURE (INCLUDING BTW OF DECK), CONDUIT, HVAC DUCTWORK, EQUIPMENT SUPPORTS, CABLE TRAY, DEVICES, CEILING SUPPORT SYSTEMS, ETC ABOVE OPEN CLG AREAS TO BE PAINTED FLAT BLACK UNLESS NOT ALLOWED BY CODE OR OWNER'S STANDARDS. PAINT AND MAINTAIN ALL ITEMS MENTIONED ABOVE CORRESPONDING HEIGHTS NOTED IN RCP.
9. SEE METAL BUILDING SYSTEMS SPEC SECTION FOR PEMB (PRE-ENGINEERED METAL BUILDING) COMPONENTS FOR THIS PROJECT AND PROVIDE PRIMARY STRUCTURE "PRIMING" AS WELL AS SECONDARY STRUCTURE GALVANIZING (GI) TYP. AT WAREHOUSE AND COVERED PARKING PEMB)
10. PAINT ALL EXPOSED PRIMARY & SECONDARY PRE-MANUFACTURED METAL BUILDING FRAMING STRUCTURE; TYPICAL

KEYPLAN

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE
PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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www.schenkelshultz.com
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WWW.SCHENKELSHULTZ.COM/COPYRIGHT
SEE FOR POLICY AND INFORMATION
834 N. Orange Avenue,
Winter Park, FL 32789
voice 407-872-3322

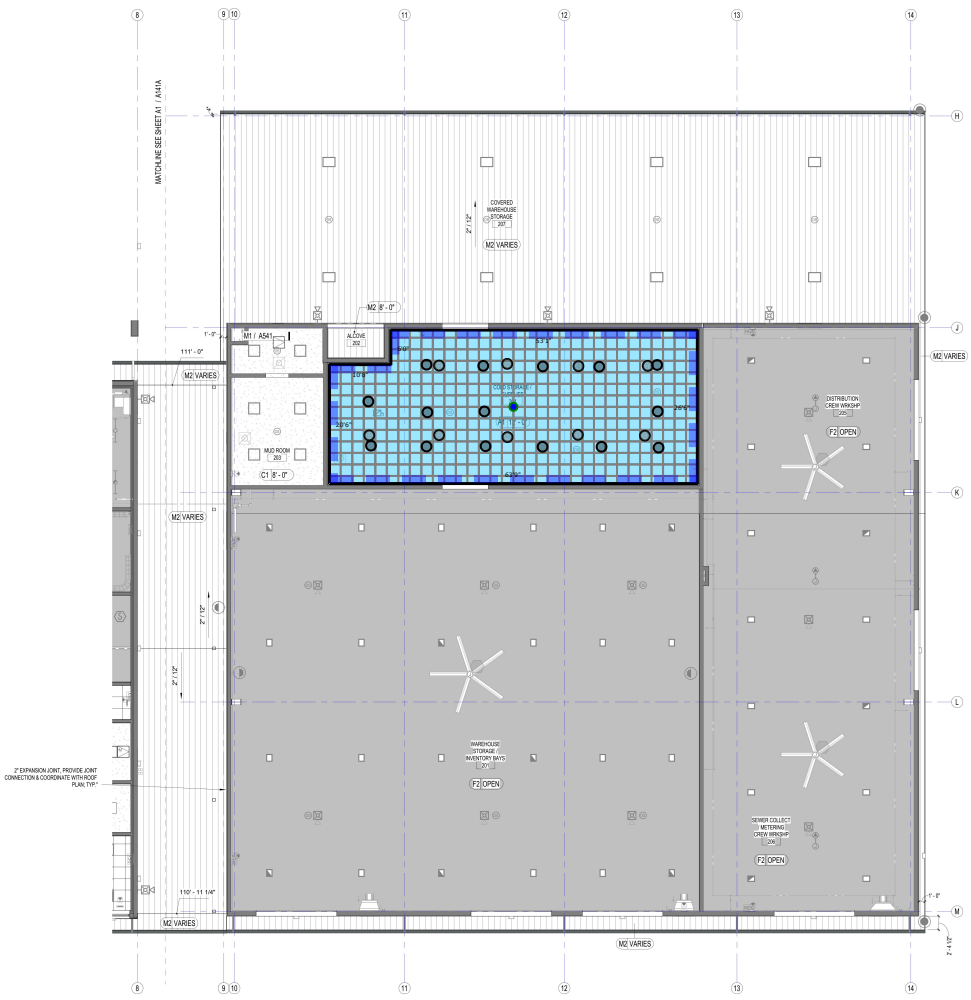
REVISIONS

MARK	DESCRIPTION	DATE
1	SITE PERMIT COORDINATION	XX/XX/2025

COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
DRAWN BY: IM/RMD

REFLECTED CEILING PLAN - ADMINISTRATION

A141A
PERMIT/BID DOCUMENTS


MATCHLINE SEE SHEET A1 / A141A
COVERED WAREHOUSE STORAGE 207
M2 VARIES
M2 8" - 0"
M1 / A541
ALCOVE 202
C1 8" - 0"
MUD ROOM 203
M2 VARIES
M2 VARIES
M2 VARIES

Christine Carasas

From: Jimmy Tilton <JimmyTilton@acousti.com>
Sent: Tuesday, November 12, 2024 8:33 AM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Public Utilities Field Ops Bldg - PROPOSAL
Attachments: Port Orange Public Utilities Field Ops Bldg - PROPOSAL - JT.pdf

John,

Please see attached.

If you have any questions regarding my proposal, please don't hesitate to contact me directly.

Thank you,

ACOUSTI.COM

JIMMY TILTON
ESTIMATOR

321.636.4042
321.298.1505
JimmyTilton@acousti.com

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Proposal

Southern Acoustics, Inc.

303 S. Laurel Ave
Sanford, FL. 32771
(407) 696-4448 FAX (407) 696-5290
E-mail: matt@soacoustics.com

DATE: November 12, 2024

PROPOSAL SUBMITTED TO: Wharton Smith
Email:

WORK TO BE PERFORMED AT: Port Orange Public Utilities Field Ops Bldg
ATTN:

We hereby propose to furnish all the materials and perform all the labor necessary for the completion of

Acoustical Ceilings:

Material:	2 x 2 Teg Armstrong Fine Fissured #1756 with 15/16" Grid
Scope:	Provide and Install Acoustical Ceilings per RCP
Area:	8,800 sf
Bid:	**$ 48,600.00**

Any alteration or deviation from above specifications involving extra costs, will be executed only upon written orders, and will become an extra charge over and above the estimate. All agreements are contingent upon strikes, accidents or delays beyond our control. Owner is to carry fire, tornado, and other necessary insurance upon above work.

Respectfully submitted,

Matt Tallacksen

Note – This proposal may be withdrawn by us if not accepted within 30 days.

ACCEPTANCE OF PROPOSAL

The above prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payment will be due 30 days net.

Accepted _____ Signature _____

Date _____ Signature _____

Proposal

Southern Acoustics, Inc.

303 S. Laurel Ave
Sanford, FL. 32771
(407) 696-4448 FAX (407) 696-5290
E-mail: matt@soacoustics.com

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Matt Tallacksen

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Accepted _____ Signature _____

Date _____ Signature _____

Christine Carasas

From: Matt Tallacksen <team@buildingconnected.com>
Sent: Tuesday, November 12, 2024 1:01 PM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Public Utilities Field Ops Bldg. - Southern A...
Attachments: Port Orange Public Utilities Field Ops Bldg - Wharton Smith.doc

Southern Acoustics, Inc.
303 Laurel Avenue, Sanford, FL 32771, United States of America

Bid value
$48,600.00

Proposal sent by:

Matt Tallacksen
Project Manager, Southern Acoustics, Inc. • matt@soacoustics.com • +1 407-696-4448

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Subcontractor Bid Form-General

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	A & W CONSTRUCTION SERVICES
Scope of Work:	ACOUSTICAL CEILINGS

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	$ 47,630.00
Amount in Words:	FORTY SEVEN THOUSAND SIX HUNDRED THIRTY DOLLARS & 00/100

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $50,000)

Material/Equipment Types:	
Amount:	$

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	1.75

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1	Dated:	11-7-24	RFI No.		Dated:	
RFI No.	2	Dated:	11-11-24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10/22/24	WSI No.	4	Dated:	10/28/24
WSI No.	2	Dated:	10/24/24	WSI No.	5	Dated:	10/31/24
WSI No.	3	Dated:	10/24/24	WSI No.	6	Dated:	11/4/24
					7		11/6/24
					8		11/8/24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

A & W CONSTRUCTION SERVICES

Company Name

810 FENTRESS CT #160, DAYTONA BEACH, FL 32117

Address (Street, City, State, Zip)

386-274-1515 MIKEB@A-W CONSTRUCTION.COM

Phone Number **Email Address**

Type of Organization (Check One):

(✓) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of FLORIDA.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: A & W CONSTRUCTION SERVICES

By: _____

Printed Name: MIKE BURKE

Title: PROJECT MANAGER

Dated: 11-12-24

License No.: CBC 045151

City of Port Orange
Public Utilities Field Operations Facility

Acoustical Ceilings
Bid Package

Prepared by Wharton-Smith (Construction Manager at Risk)

Issued 10/07/2024

All the Right Tools for Building Success!
Wharton-Smith, Inc
CONSTRUCTION GROUP

Wharton-Smith Contact:
Keri Strawder – Project Manager
kstrawder@whartonsmith.com

Architect: Schenkel Shultz

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SECTION 1 – INVITATION TO BID

Invitations were sent electronically via ConstructConnect platform

See also Bid Manual for additional invitation information

SECTION 2 – LIST OF BID DOCUMENTS

1. Bid Manual
2. Project Specifications – Issued for Bid – Dated September 30, 2024 (Volumes 1 &2)
3. Project Drawings – Issued for Bid – Dated September 30, 2024
4. Wharton-Smith Standard Subcontract with Bond
5. Wharton-Smith Team Player – Instructions for Subcontractor Pay Applications

SECTION 3 – INSTRUCTION TO BIDDERS

See Bid Manual

SECTION 4 – BID REQUIREMENTS AND CONDITIONS

See Bid Manual

SECTION 5 – BID PROPOSAL EVALUATION

5.1 GENERAL

5.1.1 Bid Proposals will be evaluated based upon review of the following:

A. Cost – The evaluation of this criterion will be based on the Bidder's total base bid, bid alternates, unit prices.

B. Value Engineering – This criterion measures the ability of the Bidder to identify potential areas of cost savings or improvements of the final project.

C. Bidder's ability to meet all other criteria outlined herein.

5.1.2 Reference the Instructions to Bidders section of this Bid Manual and the Bid Form for more information regarding detailed requirements of the Bid Proposals.

5.1.3 In evaluating Bids, Wharton-Smith, Inc. shall consider the submission of the Bidders, and whether or not the Bids comply with the prescribed requirements as outlined in these Instructions, the Bid Form, this Bid Manual, and all associated Owner and Bid Related documents provided with this Bid Package.

5.1.4 Wharton-Smith, Inc. may conduct such investigations and require supplemental information as it deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of the Bidders, proposed Subcontractors, proposed equipment and material suppliers, and other persons and organizations to provide the materials in accordance with the Contract Documents to Wharton-Smith, Inc.'s satisfaction within the prescribed time.

5.1.5 Bidder shall, upon request of Wharton-Smith, Inc., submit documentation evidencing its capability to execute the work properly within the time specified. This information must be received by Wharton-Smith, Inc. within ten (10) calendar days of Bidder receiving written request.

5.2 RECOMMENDATION AND APPROVAL OF RANKING

5.2.1 The CMAR will review all Bid Proposals that are received in conformance of the requirements herein and provide a recommendation to the Owner. The Owner, at its sole discretion, may accept the CMAR's recommendation or re-evaluate the Bid Proposals. The Owner will establish and approve the final recommended of award for the Bid Package. The Owner will be the sole judge of its own interests, the proposals, and the resulting agreements. The Owner's decision will be final.

5.3 AWARD OF CONTRACT

5.3.1 Award shall be based on products, equipment and materials named in the Contract Documents. Consideration of any decisions regarding substitution shall not be made until after Award of Contracts.

5.3.2 If the Contract is to be awarded, Wharton-Smith, Inc. will give the Bidder a Notice of Award after the Owner's agreement of the Bidder to receive Award.

5.3.3 The Awarded Bidder will be required to enter into a Purchase Order Agreement or Subcontract Agreement with Wharton-Smith, Inc. This agreement will contain the same terms and conditions as shown in the sample agreement provided in this Bid Manual. The Purchase Order or Subcontract will also contain the defined work scope as shown in this Bid Manual. Modifications to this Agreement will not be allowed.

SECTION 6 – SCOPE OF WORK

The Bidder shall utilize the information within this section of the Bid Manual to assist in development of the Bid Proposal. The outlined scopes herein are not intended to detail the complete scope of the Bid Package. The Bidder is responsible for reviewing the Contract Documents to understand the full scope and requirements.

The Subcontractor Is to furnish all labor, equipment, material, subcontracts, and supervision required to complete the Scope of Work generally described as the **ACOUSTICAL CEILING PACKAGE**, detailed herein, for the Public Utilities Field Operations Facility. All work shall be complete and in accordance with the Contract Documents. In the event of conflicts between the Scope of Work and other parts of the Contract Documents, this section shall take precedence.

6.1 WORK OVERVIEW

Provide complete, all required **Acoustical Ceilings** for the Project known as **City of Port Orange Public Utilities Field Operations Facility.**

The Work included in this Subcontract is project specific and outlines the general Scope of Work for this Subcontract, all in complete accordance with the Plans and Specifications as defined in Exhibit "C" attached hereto.

Other Specification Sections may form a part of this Subcontract, whether listed or not.

The Scope of this Subcontract includes, but is not necessarily limited to the furnishing and installation of the following Work by this Subcontractor.

1. Visitors - No one shall be admitted to the jobsite by the Subcontractor, except as necessary to perform the Work hereunder, without, in each instance, first obtaining the approval of the Contractor.
2. Replace Guardrails - This Subcontractor shall install, maintain and replace all required guardrails in accordance with OSHA Standards for the purpose of safety at all openings and suspended work at the locations not protected and where Subcontractor is performing work. Subcontractor is also responsible for all construction fencing, temporary walkways, overhead protection, signage, and/or barricades to perform work outside the boundaries of Contractor furnished construction fencing.
3. Ongoing Operations/Residential Environment/Parking - Without limitation of the foregoing, Subcontractor understands that the Work may be constructed near on-going business or facility operations and may be in and around private residences and neighborhoods. Subcontractor shall use its best efforts, in conformity with the applicable standard of care, to perform the services hereunder in a manner which will not interfere with the on-going business operations and residences. All construction employees are to enter and park in the construction parking area designated by Contractor. Subcontractors are responsible for all off-site parking of employees which may be required and busing to jobsite via route identified by Contractor. Busing of employees, jobsite vehicles or deliveries shall not be routed through surrounding neighborhoods.
4. Jobsite Storage - Subcontractor is aware of the existing site conditions and the limited space availability. On-site storage and staging of materials and equipment will be allowed, only as specifically approved by Contractor's Project Superintendent or Project Manager. All deliveries of Subcontractor will be coordinated through Contractor. If scheduled deliveries are not ready at appointed time, Contractor may refuse acceptance and deliveries will be rescheduled. All cost and/or delays associated with the refusal of deliveries will be the responsibility of the Subcontractor. Subcontractor has included in this Subcontract price, all off-site storage as may be required, including, but not limited to transportation of materials from staging area to site.
5. Phased Turnover - This Subcontractor acknowledges that the Project may have phased turnover in accordance with the Project Schedule and that several mobilizations may be required and are included as part of this Subcontract. Additionally, Subcontractor acknowledges that the Project may have multi-buildings and that concurrent work on each building will be required in order to complete some phases ahead of the Project Schedule and all costs for doing same are included.

6. Owner's Facilities - All Project employees are subject to the Owner's rules and regulations while employed within their property limits. Use of the Owner's other parking lots and facilities by this Project's workmen are not permitted.

7. Limitation of Noise/Hours of Work - Subcontractor shall comply with all city, county, state and local jurisdictional authorities' Noise and Hours of Work Regulations.

8. This Subcontractor shall preserve all benchmark stakes and other survey marks, regardless of location or purpose. In the event these items are removed or destroyed by the Subcontractor's employees or others working on its behalf, the Subcontractor shall bear the full replacement cost.

9. This Subcontractor shall be responsible for all flagmen and traffic control personnel as necessary to get trucks in and out of the Project site in a safe and effective manner.

10. This Subcontractor shall provide and install complete for a turn-key system, in strict accordance with the Contract Documents, all Acoustical Ceiling Panel Systems and Metal Suspension Systems, but not limited to, acoustical ceiling tile, insulation above lay-in acoustical ceilings, moisture resistant ceiling tile, grid, edge trim, runners, moldings, attachment devices, inserts, anchors, clips, wire hangers, capped grid, channels, lateral bracing and sealants in strict accordance with the contract documents.

11. This Subcontractor shall layout acoustical ceiling panel system in a manner that allows for border tile to be no less than half width tiles.

12. This Subcontractor shall provide all material in strict accordance with the Contract Documents specifically as it relates to product type, location, size and color.

13. This subcontractor shall furnish and install "C2" USG Ensemble Acoustical Ceiling where noted in strict accordance with the contract documents.

14. This Subcontractor shall provide ceiling tile for all Mechanical, Electrical, Plumbing and Fire Protection work in advance of above ceiling inspections at each building. This Subcontractor shall precut all ceiling tile as required for sprinkler heads, recessed lights, speakers, and all other devices being installed within the ceiling tile.

15. This Subcontractor shall install ceiling tile with undamaged edges and fit accurately into suspension system runners and edge moldings. This Subcontractor shall scribe and cut tile at borders and penetrations to provide a neat and precise fit.

16. This Subcontractor shall provide and install a minimum of four (4) wire hangers at each Fluorescent/LED light fixture. This Subcontractor includes coordination of light fixtures with the Electrical Subcontractor.

17. This Subcontractor shall coordinate with other Subcontractors for locations of hangers, sprinklers, lights, electrical boxes, grilles and all other items for proper installation of their work. It is specifically understood and agreed that there are to be no hangers in front of mechanical/electrical access doors.

18. This Subcontractor shall provide and install all required caulking/sealants between ceiling grid and adjacent material in accordance with the Contract Documents.

19. This Subcontractor acknowledges that all acoustical products are to be properly stacked on dunnage and protected so that the product remains free of moisture.

20. This Subcontractor shall coordinate with other subcontractors for locations of hangers, sprinklers, lights, electrical boxes, grilles, and any other item for proper installation of its work.

21. This Subcontractor shall provide acoustical sealant as required for this Scope of Work.

22. This Subcontractor shall be responsible for the correction of any unsightly gaps at acoustical ceiling wall mold. Acceptable corrections may include pulling walls and/or caulking gaps. Final acceptance to be received from the Architect.

23. This subcontractor shall install suspension system runners, so they are square and securely interlocked with one another. Remove and replace dented, bent or kinked members.

24. This subcontractor shall provide a finished installation of ceiling grid system in such a manner as to avoid using less than half width tiles at borders while conforming to layout as shown on RCP and Lighting Plans

25. Subcontractor shall provide cleaning and touch-up of acoustical ceiling panels and suspension system, leaving free of extraneous materials or marks. Clarification – Subcontractor is not responsible for damage from other trades.

26. This Subcontractor understands and acknowledges that all framing shall be supported from the structure and that no framing of any kind is to be supported from the metal roof deck above.

27. ~~This Subcontractor shall independently frame both sides of control and/or expansion joints. Control and/or expansion joints are not to be bridged with steel framing and/or furring members.~~

28. ~~This Subcontractor shall provide and install acoustical sealant at metal framed walls where required by the Contract Documents.~~

29. ~~This Subcontractor shall provide and install proper identification for metal framed rated wall assemblies including stenciling, stickers, tags, signs, and name plates.~~

30. ~~This Subcontractor includes buildouts, metal stud frame and drywall, of all vertical and horizontal piping chases to allow for complete concealment of piping as required by Contract Documents.~~

31. ~~This Subcontractor shall provide framing for and install all fire protection, plumbing, mechanical, and electrical access panels within their work. Panels are to be provided by others. Subcontractor has agreed to frame up to 60 access panels.~~

32. This Subcontractor shall provide and install all required Insulation within their scope of work in strict accordance with the Contract Documents and includes, but is not limited to, un-faced batt insulation, faced batt insulation, mineral wool insulation, and rigid insulation.

33. This Subcontractor understands that general lighting for construction is to be provided by the Contractor. If supplemental lighting is required to provide proper quality during finishing of gypsum board it is to be provided by this Subcontractor.

34. This Subcontractor shall provide multiple mobilizations and/or work force in multiple area as necessary to meet phasing and schedules for project

35. This Subcontractor shall provide adequate working platforms, walkways, scaffolding, railings, and safety rails as required; at all times work is taking place on site. It is this Subcontractor's responsibility to furnish, erect, brace, and dismantle all scaffold required to complete this Scope of Work. Inspection and tagging of all scaffold provided by this Subcontractor is to be completed on a daily basis prior to work commencing.

36. This Subcontractor shall provide all mockups required by the Contract Documents, the Contractor, the Designer and/or the Owner.

37. This subcontractor shall provide all submittals according to the contract documents including but not limited to product data, shop drawings, samples, operation and maintenance data, material certificates, field quality control reports, and warranties.

38. This Subcontractor shall provide all warranties as called for by the Contract Specifications.

39. The Subcontractor shall provide a list of all intended material and equipment to be purchased under the Owner Direct Material/Equipment Purchase Program no later than 10 days after the issuance of a Notice of Intent or execution of this Agreement, whichever comes first.

Other Items of Note:

A. Wharton-Smith will be utilizing a software called **Team Player** to process monthly pay applications. The fee for this service is $10.00 per Pay Application, regardless on the number of revisions in each month. Please review the Team Player Welcome Letter that has been included in the Bidding Documents which contains embedded links for training documentation and videos. This will be a requirement for all subcontractors on this project.

B. With respect to Article 22 of this Subcontract Agreement, the Owner will exercise the right to purchase materials directly as part of the Owner Direct Purchase Program. This Subcontractor shall actively participate in the Owner Direct Purchase Program for this Project Prior to the

Subcontractor's final payment, a final reconciliation of Owner Direct Purchases against this Subcontract will be performed. This does not apply to temporary fence.

C. On-Site Work Hours: Limit work to between 7 a.m. to 5 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.

D. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site. Subcontractor shall maintain list of approved screened personnel with Owner's representative.

6.2 BID PRICING / ALTERNATES

The bid pricing shall be broken out as follows and as indicated on the bid form. The City of Port Orange has the sole discretion to accept any, all, or none of the work items for this scope of work based on the bid pricing received. Subcontractor to price the work accordingly.

6.2.1 This bid does not include any bid alternates.

6.2.2 Retainage will be held at 5% for the duration of the Contract and will be released upon retainage release by the Owner.

6.3 CLARIFICATIONS

6.3.1 The Subcontractor will be responsible for protecting all new and existing work throughout the site from damage that could be caused by performing the Scope of Work. Any damage caused by Subcontractor is the responsibility of Subcontractor and Subcontractor will bear the costs of said damage.

6.3.2 The Subcontractor will be required to attend all project progress and coordination meetings as requested by Wharton-Smith, Inc. or the owner.

6.3.3 All materials must be submitted upon and approved prior to being sent to the jobsite, all non-approved items may be rejected and returned at the Subcontractor's cost.

6.3.4 Subcontractor is responsible to coordinate with the CMAR and all other Subcontractors as necessary.

6.3.5 Subcontractor will be responsible for all general notes indicated on the drawings that pertain to this scope of work.

6.3.6 Subcontractor will obtain all permits, licenses, certificates, and coordination efforts, or any such approvals of plans or specifications as may be required by federal, state and local laws, ordinances, rules and regulations, for the proper execution and completion of the work specified herein.

6.3.7 Subcontractor will be responsible for offloading all equipment deliveries and proper short-term and long-term storage requirements per the manufacturer's requirements. Provide all equipment necessary to offload and set equipment including cranes.

6.4 GENERAL REQUIREMENTS

6.4.1 The Subcontractor will be bound to the CMAR to the same extent the CMAR is bound to the Owner by the terms of the Contract Documents.

6.4.2 The Scope of Work shall comply with all Federal, State and Local Codes.

6.4.3 This is a lump sum agreement, including freight, incidental fees, and all applicable taxes. A schedule of values for submittals, materials, checkout, startup and closeout paperwork will be submitted with the return of the signed agreement for review and approval by the CMAR's Project Manager.

6.4.4 If requested by the CMAR, the Subcontractor will assist in cost loading of the project's master schedule. Schedule of Values will follow the cost loaded actives provided by Subcontractor.

6.4.5 No billing will be accepted without an approved Schedule of Values.

6.4.6 A detailed Schedule of Values must be provided within two (2) weeks of a contract being executed should your bid be accepted.

6.4.7 No escalation costs are permitted, pricing will remain firm through the project duration.

6.4.8 The Subcontractor is required to abide by the Wharton-Smith, Inc. safety program and OSHA standards. Excavation, confined space plans, and MSDS sheets will be required for all applicable work.

6.4.9 Subcontractor is responsible to develop and provide a site-specific safety plan for this scope of work.

A. Safety plan will list all potential hazards and competent persons who will be supervising the work.

6.4.10 Subcontractor will maintain an OSHA Certified competent person on site at all times while the work is conducted.

6.4.11 All Subcontractors will be required to follow security protocol of the City of Port Orange and Wharton-Smith at all times.

6.4.12 OSHA and the CMAR's safety standards will be followed at all times.

6.4.13 Proper PPE will be worn by any personnel on the jobsite, including but not limited to delivery drivers, startup and commissioning representatives, manufacturer's representatives, and other personnel.

6.4.14 Materials are to be released as required to maintain Schedule, but Subcontractor is to inform CMAR of material releases and deliveries. No item will be released for production without approval from the Engineer.

6.4.15 All equipment will be labeled and tagged in accordance with the Contract Documents.

6.4.16 Provide all management necessary to adequately support field activities and maintain the Project Schedule.

6.4.17 Fulltime and onsite supervision is required while any work by Subcontractor is being performed. If Subcontractor fails to do so, the CMAR will provide supervision and all costs will be back charged to Subcontractor. The Subcontractor's superintendent will be required to attend all requested progress, safety, scheduling, coordination, and quality control meetings. Meetings of other natures may be required as requested by Engineer, Owner, or the CMAR.

6.4.18 The Subcontractor will be required to coordinate with all other construction trades as required to complete this Scope of Work.

6.4.19 Anticipated (general) sequencing – Your crews may be interfacing with several other trades including mechanical, concrete, piping, and testing agencies. Reasonable time provisions need to be made for coordination and time for these trades to complete their work.

6.4.20 All deliveries will be made between 7am-3pm M-F; all deliveries will be escorted onto the site by WSI. A 72-hour notice to WSI's Superintendent will be required prior to any deliveries.

6.4.21 The Subcontractor may not utilize any area of the project site for storage without approval from the CMAR. If the Subcontractor plans to utilize storage space, the Subcontractor will submit, to the CMAR, a site plan detailing the areas being requested for storage.

6.4.22 An emergency contact list will be provided by the Subcontractor. This list will include at least one point of contact that is available 24 hours a day.

6.4.23 Furnish appropriate Material Safety & Data Sheets (MSDS) and warranty documentation with shop drawings for approval.

6.4.24 Subcontractor is required to coordinate with all applicable authorities as required

6.4.25 The Subcontractor utilizing an Employee Leasing Company for Workers Compensation Insurance coverage will not be allowed to use any Subcontractor on the project (i.e. no third-party subs)

6.4.26 It is the sole responsibility of the Subcontractor to secure any and all tools, materials, and equipment stored on the site. Wharton-Smith, nor the Owner, will be responsible for any theft, vandalism, or damage to the Subcontractors property. The Subcontractor is responsible for all security measures required to secure their resources.

6.4.27 Subcontractor will provide temporary generators as needed and fresh drinking water for their employees. Subcontractor is only responsible for their work and personnel.

6.4.28 The Subcontractor is responsible to follow all site plan details and to adhere to all specifications applicable to the Scope of Work items above.

6.4.29 All hazardous material will be properly disposed of at an offsite location.

6.4.30 The Subcontractor will be responsible to utilize available dumpsters for debris and daily clean-up. All areas will be left clean at the end of each day.

6.4.31 A representative of the Subcontractor knowledgeable of the work will be present at weekly coordination meetings with the General Contractor.

6.4.32 Subcontractor is to provide Daily Reports.

6.4.33 A Superintendent (not Foreman) must be present at all times the Subcontractor's crews are onsite.

6.4.34 Pre-Mobilization Jobsite QC/QA Conference - Subcontractor to participate in WSI Quality Control Plan as outlined in the Subcontract Agreement. Subcontractor's Project Superintendent and or Foremen will attend Quality Control Meetings as deemed necessary by WSI including a minimum of one (1) pre-mobilization meeting to be held in advance of Subcontractor's mobilization on site.

6.4.35 Subcontractor must have approval for additional work (not included in this Scope) in writing by an authorized W/S representative prior to proceeding with said work.

6.4.36 No claim for extra services rendered or materials furnished will be valid by either party unless agreed to in writing by both parties.

6.5 PROJECT SCHEDULE

6.5.1 The Subcontractor is to provide a detailed schedule for the Scope of Work with the submission of bid. The Subcontractor will coordinate with the CMAR to ensure the detailed schedule conforms to the overall Project Schedule. The Subcontractor will update this Scope of Work Schedule each month and provide a written update to the CMAR.

6.5.2 The Subcontractor will account for not working on holidays and still plan for the Scope of Work to be completed per the overall Project Schedule. Holidays will include those observed by the Owner, the CMAR, and the Subcontractor. The CMAR or Owner observes the following holidays:

A. New Year's Day

B. Martin Luther King Day

C. President's Day

D. Memorial Day

E. Independence Day

F. Labor Day

G. Thanksgiving

H. Day after Thanksgiving

I. Christmas Eve

J. Christmas Day

6.6 SUBMITTAL REQUIREMENTS

6.6.1 The Subcontractor will provide submittal documentation as required within the Contract Documents. Upon execution of this Agreement the Subcontractor will provide a list of anticipated submittals for the Scope of Work. The Subcontractor will provide any additional submittal documentation requested for any materials or services related to the Scope of Work.

6.6.2 All submittals which have any deviation will be supplied with a letter addressing all deviations.

6.6.3 All submittals will be provided with a cover page listing the following information:

A. Project name

B. Submittal title

C. Relevant specification sections

a. Specification sections, with addendum updates included, are to have each paragraph check-marked to indicate specification compliance. Check marks shall denote full compliance with a paragraph as a whole. Any deviation shall be clearly marked by an "X" and numbered to indicate a requested deviation. If deviations from the specifications are indicated, and therefore requested, each deviation shall be underlined and denoted by a unique number in the margin to the right of the identified paragraph, referenced to a detailed written explanation of the reasons requesting the deviation. The remaining portions of the paragraph not underlined will signify compliance with the specifications. Failure to include a copy of the marked-up specification sections along with justifications for any requested deviations to the specification requirements shall be cause for return of the entire submittal with no further review.

D. Subcontractor's contact information

E. Manufacturer's contact information

6.6.4 All submittals will include the following information for each individual piece of equipment or fabrication:

A. Complete model number

B. The tag number of each per the Contract Documents (if applicable)

C. List of major components

D. Specification section (if varied from the submittal prime specification section)

6.6.5 It is the Subcontractor's sole responsibility to ensure submittals are complete and accurate for the complete scope of this agreement. Coordination of submittal information from others working under the Subcontractor is the sole responsibility of the Subcontractor. Subcontractor will not provide submittals with any items marked out of scope or by others if such items are part of the scope of this agreement.

6.6.6 Revised submittals will include a comment response document, this document will respond to every comment in writing and reference the location of all corrections within the revised submittal. Revised submittals will be at no additional cost to the Purchaser.

6.6.7 The Subcontractor may be responsible for any costs incurred by the CMAR due to excessive submittal revisions.

6.7 RECORD DOCUMENTS

6.7.1 The Subcontractor will maintain accurate and current as-built documents. These documents will meet the requirements within the Contract Documents. All survey information will be certified by a licensed surveyor.

6.7.2 Prior to approval of the Subcontractor's monthly pay application, the CMAR may elect to review the Subcontractor's as-built documents. If these documents are found to be inaccurate or not current, up to the date of the pay application, the CMAR may reject the pay application until the Subcontractor provides accurate and current as-built documents. Subcontractor will not be entitled for any additional costs, fees, or other compensation due to rejected pay applications and delayed payments as a result of Subcontractor's failure to provide accurate and current as-built documents.

6.7.3 After completion of the Scope of Work, the Subcontractor will provide complete and final as-built documents within two (2) weeks. As-built documents will be provided as detailed in the Contract Documents

6.8 INSURANCE

6.8.1 Subcontractor will provide the minimum insurance limits required to meet the requirements in this purchase order and all the requirements detailed within the Contract Documents. A sample insurance document is included within the Contract Documents for additional reference.

6.8.2 The Subcontractor will maintain a worker's compensation insurance policy for the complete scope of services. The Subcontractor will not utilize a Professional Employer Organization (PEO) to provide workers compensation insurance.

A&W CONSTRUCTION Services, Inc.
P.O. BOX 11377 • Daytona Beach, FL 32117-1377 • 386/274-1515 • fax: 386/274-1818

To: Wharton-Smith Construction
Attn: James Manyette
From: Mike Burke
Date: 11/12/24
RE: PO Public Utilites Field Ops Bldg

Exclusions:

DIVISION 05 - METALS
05 50 00 METAL FABRICATIONS
05 75 10 DECORATIVE FORMED METAL

DIVISION 06 - WOOD AND PLASTICS
06 10 53 MISCELLANEOUS ROUGH CARPENTRY
06 40 23 INTERIOR ARCHITECTURAL WOODWORK
06 64 00 PLASTIC PANELING

DIVISION 07 - THERMAL AND MOISTURE PROTECTION
07 13 26 SELF-ADHERING SHEET MEMBRANE WATERPROOFING
07 21 19 FOAMED-IN-PLACE INSULATION
07 25 00 AIR AND WATER BARRIERS
07 42 13.13 FORMED METAL WALL PANELS
07 42 93 METAL SOFFIT PANELS
07 62 00 SHEET METAL FLASHING AND TRIM

DIVISION 09 - FINISHES
09 77 19 DECORATIVE WALL PANELS

DIVISION 10 - SPECIALTIES
10 26 00 WALL PROTECTION

ID-PLASTIC LAMINATE SCHEDULE

FINISH CODE	MANUFACTURER	STYLE NO.
PL-1	WILSONART	PLASTIC LAMINATE

IDS-MISC SCHEDULE

CG	INPRO CORPORATION	STAINLESS STEE CORNER GUARDS
DP-1	INTERLAM	DECORATIVE PANEL
DP-2	MDC	1/2" THICK ACRYLIC LOGO
FRP-1	MDC WALLCOVERING	DIMENSION WALLS

Christine Carasas

From: Mike Burke <mikeb@a-wconstruction.com>
Sent: Tuesday, November 12, 2024 4:45 PM
To: Wharton Smith Commercial Estimating
Cc: Josh Blubaugh
Subject: Bid Proposal: PO Public Utilites Field Ops Bldg
Attachments: A&W COPO - 09 29 00 Drywall Bid Package.pdf; A&W COPO - 09 51 13 Acoustical Bid Package.pdf

Good afternoon - attached is our bid for the PO Public Utilites Field Ops Bldg, please let me know if you have any questions.

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!

Thanks,
Mike Burke

810 Fentress Crt, STE 160
Daytona Beach Fl, 32117
386-274-1515
mikeb@a-wconstruction.com
A&W Construction Services, Inc.

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	A&W CONSTRUCTION SERVICES
Scope of Work:	DRYWALL

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	$ 631,290.00
Amount in Words:	SIX HUNDRED THIRTY ONE THOUSAND TWO HUNDRED NINTY DOLLARS & 00/100

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $50,000)

Material/Equipment Types:	
Amount:	$

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	1.75

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1	Dated:	11-7-24	RFI No.		Dated:	
RFI No.	2	Dated:	11-11-24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10/22/24	WSI No.	4	Dated:	10/28/24
WSI No.	2	Dated:	10/24/24	WSI No.	5	Dated:	10/31/24
WSI No.	3	Dated:	10/24/24	WSI No.	6	Dated:	11/4/24
					7		11/6/24

(2.3) ASI (Architect's Supplemental Instructions)

8 11/8/24

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

A & W CONSTRUCTION SERVICES

Company Name

810 FENTRESS CT #160, DAYTONA BEACH, FL 32117

Address (Street, City, State, Zip)

386-274-1515 MIKEB@A-W CONSTRUCTION.COM

Phone Number **Email Address**

Type of Organization (Check One):

(✓) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of FLORIDA.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: A & W CONSTRUCTION SERVICES

By: _____

Printed Name: MIKE BURKE

Title: PROJECT MANAGER

Dated: 11-12-24

License No.: CBC045151

A&W CONSTRUCTION Services, Inc.
P.O. BOX 11377 • Daytona Beach, FL 32117-1377 • 386/274-1515 • fax: 386/274-1818

To: Wharton-Smith Construction
Attn: James Manyette
From: Mike Burke
Date: 11/12/24
RE: PO Public Utilites Field Ops Bldg

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DIVISION 05 - METALS
05 50 00 METAL FABRICATIONS
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ID-PLASTIC LAMINATE SCHEDULE

FINISH CODE	MANUFACTURER	STYLE NO.
PL-1	WILSONART	PLASTIC LAMINATE

IDS-MISC SCHEDULE

CG	INPRO CORPORATION	STAINLESS STEE CORNER GUARDS
DP-1	INTERLAM	DECORATIVE PANEL
DP-2	MDC	1/2" THICK ACRYLIC LOGO
FRP-1	MDC WALLCOVERING	DIMENSION WALLS

City of Port Orange
Public Utilities Field Operations Facility

Drywall Bid Package

Prepared by Wharton-Smith (Construction Manager at Risk)

Issued 10/07/2024

All the Right Tools for Building Success!
Wharton-Smith, Inc
CONSTRUCTION GROUP

Wharton-Smith Contact:
Keri Strawder – Project Manager
kstrawder@whartonsmith.com

Architect: Schenkel Shultz

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SECTION 1 – INVITATION TO BID

Invitations were sent electronically via ConstructConnect platform

See also Bid Manual for additional invitation information

SECTION 2 – LIST OF BID DOCUMENTS

1. Bid Manual
2. Project Specifications – Issued for Bid – Dated September 30, 2024 (Volumes 1 &2)
3. Project Drawings – Issued for Bid – Dated September 30, 2024
4. Wharton-Smith Standard Subcontract with Bond
5. Wharton-Smith Team Player – Instructions for Subcontractor Pay Applications

SECTION 3 – INSTRUCTION TO BIDDERS

See Bid Manual

SECTION 4 – BID REQUIREMENTS AND CONDITIONS

See Bid Manual

SECTION 5 – BID PROPOSAL EVALUATION

5.1 GENERAL

5.1.1 Bid Proposals will be evaluated based upon review of the following:

A. Cost – The evaluation of this criterion will be based on the Bidder's total base bid, bid alternates, unit prices.

B. Value Engineering – This criterion measures the ability of the Bidder to identify potential areas of cost savings or improvements of the final project.

C. Bidder's ability to meet all other criteria outlined herein.

5.1.2 Reference the Instructions to Bidders section of this Bid Manual and the Bid Form for more information regarding detailed requirements of the Bid Proposals.

5.1.3 In evaluating Bids, Wharton-Smith, Inc. shall consider the submission of the Bidders, and whether or not the Bids comply with the prescribed requirements as outlined in these Instructions, the Bid Form, this Bid Manual, and all associated Owner and Bid Related documents provided with this Bid Package.

5.1.4 Wharton-Smith, Inc. may conduct such investigations and require supplemental information as it deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of the Bidders, proposed Subcontractors, proposed equipment and material suppliers, and other persons and organizations to provide the materials in accordance with the Contract Documents to Wharton-Smith, Inc.'s satisfaction within the prescribed time.

5.1.5 Bidder shall, upon request of Wharton-Smith, Inc., submit documentation evidencing its capability to execute the work properly within the time specified. This information must be received by Wharton-Smith, Inc. within ten (10) calendar days of Bidder receiving written request.

5.2 RECOMMENDATION AND APPROVAL OF RANKING

5.2.1 The CMAR will review all Bid Proposals that are received in conformance of the requirements herein and provide a recommendation to the Owner. The Owner, at its sole discretion, may accept the CMAR's recommendation or re-evaluate the Bid Proposals. The Owner will establish and approve the final recommended of award for the Bid Package. The Owner will be the sole judge of its own interests, the proposals, and the resulting agreements. The Owner's decision will be final.

5.3 AWARD OF CONTRACT

5.3.1 Award shall be based on products, equipment and materials named in the Contract Documents. Consideration of any decisions regarding substitution shall not be made until after Award of Contracts.

5.3.2 If the Contract is to be awarded, Wharton-Smith, Inc. will give the Bidder a Notice of Award after the Owner's agreement of the Bidder to receive Award.

5.3.3 The Awarded Bidder will be required to enter into a Purchase Order Agreement or Subcontract Agreement with Wharton-Smith, Inc. This agreement will contain the same terms and conditions as shown in the sample agreement provided in this Bid Manual. The Purchase Order or Subcontract will also contain the defined work scope as shown in this Bid Manual. Modifications to this Agreement will not be allowed.

SECTION 6 – SCOPE OF WORK

The Bidder shall utilize the information within this section of the Bid Manual to assist in development of the Bid Proposal. The outlined scopes herein are not intended to detail the complete scope of the Bid Package. The Bidder is responsible for reviewing the Contract Documents to understand the full scope and requirements.

The Subcontractor is to furnish all labor, equipment, material, subcontracts, and supervision required to complete the Scope of Work generally described as the **METAL FRAMING, DRYWALL AND INSULATION**, detailed herein, for the Public Utilities Field Operations Facility. All work shall be complete and in accordance with the Contract Documents. In the event of conflicts between the Scope of Work and other parts of the Contract Documents, this section shall take precedence.

6.1 WORK OVERVIEW

Provide complete, all required **Metal Framing, Drywall, and Insulation** for the Project known as **City of Port Orange Public Utilities Field Operations Facility.**

The Work included in this Subcontract is project specific and outlines the general Scope of Work for this Subcontract, all in complete accordance with the Plans and Specifications as defined in Exhibit "C" attached hereto.

Other Specification Sections may form a part of this Subcontract, whether listed or not.

The Scope of this Subcontract includes, but is not necessarily limited to the furnishing and installation of the following Work by this Subcontractor.

1. Visitors - No one shall be admitted to the jobsite by the Subcontractor, except as necessary to perform the Work hereunder, without, in each instance, first obtaining the approval of the Contractor.
2. Replace Guardrails - This Subcontractor shall install, maintain and replace all required guardrails in accordance with OSHA Standards for the purpose of safety at all openings and suspended work at the locations not protected and where Subcontractor is performing work. Subcontractor is also responsible for all construction fencing, temporary walkways, overhead protection, signage, and/or barricades to perform work outside the boundaries of Contractor furnished construction fencing.
3. Ongoing Operations/Residential Environment/Parking - Without limitation of the foregoing, Subcontractor understands that the Work may be constructed near on-going business or facility operations and may be in and around private residences and neighborhoods. Subcontractor shall use its best efforts, in conformity with the applicable standard of care, to perform the services hereunder in a manner which will not interfere with the on-going business operations and residences. All construction employees are to enter and park in the construction parking area designated by Contractor. Subcontractors are responsible for all off-site parking of employees which may be required and busing to jobsite via route identified by Contractor. Busing of employees, jobsite vehicles or deliveries shall not be routed through surrounding neighborhoods.
4. Jobsite Storage - Subcontractor is aware of the existing site conditions and the limited space availability. On-site storage and staging of materials and equipment will be allowed, only as specifically approved by Contractor's Project Superintendent or Project Manager. All deliveries of Subcontractor will be coordinated through Contractor. If scheduled deliveries are not ready at appointed time, Contractor may refuse acceptance and deliveries will be rescheduled. All cost and/or delays associated with the refusal of deliveries will be the responsibility of the Subcontractor. Subcontractor has included in this Subcontract price, all off-site storage as may be required, including, but not limited to transportation of materials from staging area to site.
5. Phased Turnover - This Subcontractor acknowledges that the Project may have phased turnover in accordance with the Project Schedule and that several mobilizations may be required and are included as part of this Subcontract. Additionally, Subcontractor acknowledges that the Project may have multi-buildings and that concurrent work on each building will be required in order to complete some phases ahead of the Project Schedule and all costs for doing same are included.

6. Owner's Facilities - All Project employees are subject to the Owner's rules and regulations while employed within their property limits. Use of the Owner's other parking lots and facilities by this Project's workmen are not permitted.

7. Limitation of Noise/Hours of Work - Subcontractor shall comply with all city, county, state and local jurisdictional authorities' Noise and Hours of Work Regulations.

8. This Subcontractor shall preserve all benchmark stakes and other survey marks, regardless of location or purpose. In the event these items are removed or destroyed by the Subcontractor's employees or others working on its behalf, the Subcontractor shall bear the full replacement cost.

9. This Subcontractor shall be responsible for all flagmen and traffic control personnel as necessary to get trucks in and out of the Project site in a safe and effective manner.

10. This subcontractor shall provide all Gypsum Board, Metal Framing, Plastering, Batt Insulation, and ~~Rough Carpentry~~ in strict accordance with the contract documents, complete and fully functioning to the designer's intent, specifically including all details sections and notes contained within the Contract Documents, also including but not necessarily limited to the following:

11. This Subcontractor shall provide and install all **Gypsum Board Assemblies** complete including, but not limited to, all walls, bulkheads, soffits, ceilings, metal stud framing, track, anchors, furring, shims, metal suspended ceilings, metal suspended soffits, hangers, wires, channels, grid suspension system for gypsum board ceilings, tile backer panels, gypsum board, gypsum sheathing, cementitious tile backing board, trim, joint tape, joint compound, acoustical insulation, acoustical sealants, smoke and/or fire sealants, fasteners, isolation strips, adhesive, and all miscellaneous accessories required in strict accordance with the contract documents.

12. This Subcontractor shall provide finish or gypsum wall board as required by Contract Documents. Finish must be a level 4 finish and meet ASTM C840 standards.

13. This Subcontractor shall coordinate the sequencing of installation of gypsum board products with the required trade inspections within each wall cavity.

14. This Subcontractor shall be responsible for constructing all gypsum assemblies in a manner that meets or exceeds the STC ratings for each partition as defined on the Contract Documents

15. This Subcontractor shall be responsible for constructing all gypsum assemblies in a manner that maintains fire ratings at all top of wall conditions, bottom of wall conditions, and/or components recessed in the assemblies. All penetrations are to be sealed by appropriate trade Subcontractors.

16. This Subcontractor shall be responsible for providing and installing all safing and/or caulking as required to maintain fire/smoke/sound ratings at the top of drywall walls in strict accordance with the top of wall conditions detailed on the Contract Documents.

17. This Subcontractor shall be responsible for constructing all gypsum assemblies in a manner that meets or exceeds the finish level indicated on the Contract Documents.

18. This Subcontractor shall provide all cut, patch, repairs, and point up of all gypsum assemblies as required to accommodate penetrations through their work by other trades

19. This Subcontractor shall provide and install all wallboard at mechanical and electrical rooms using Mold Tough as directed by the Contractor's Superintendent to allow for these rooms to be hung prior to dry in of the roof system.

20. This Subcontractor shall provide a gap of ¼" around all penetrations through their work in all fire walls.

21. This Subcontractor shall install all gypsum board 5/8" above finished floor to prevent wicking.

22. This Subcontractor shall provide touchup of gypsum board partitions both prior to and after priming of the walls as needed to provide required level 4 wall finish. All touchup work after priming is to be completed immediately after priming is complete allowing the Painting Subcontractor to maintain their workflow. If damage is caused by another party subcontractor has carried 24 manhours to repair unforeseen damages.

23. This Subcontractor shall provide all material in strict accordance with the Contract Documents specifically as it relates to product type, location, size and color.

24. This Subcontractor shall coordinate with other Subcontractors for locations of hangers, sprinklers, lights, electrical boxes, grilles and all other items for proper installation of their work.

25. This Subcontractor shall coordinate with other subcontractors for locations of hangers, sprinklers, lights, electrical boxes, grilles, and any other item for proper installation of its work.

26. This Subcontractor shall independently frame both sides of control and/or expansion joints. Control and/or expansion joints are not to be bridged with steel framing and/or furring members.

27. This Subcontractor shall provide and install proper identification for metal framed rated wall assemblies including stenciling, stickers, tags, signs, and name plates.

28. This Subcontractor includes buildouts, metal stud frame and drywall, of all vertical and horizontal piping chases to allow for complete concealment of piping as required by Contract Documents.

29. This Subcontractor shall provide framing for and install all fire protection, plumbing, mechanical, and electrical access panels within their work. Panels are to be provided by others. Subcontractor has agreed to frame up to 60 access panels.

30. This Subcontractor shall provide and install all insulation required within their work including, but not limited to, gypsum walls, gypsum ceilings, metal furred walls, and exterior walls. Insulation is to be installed in strict accordance with the Contract Documents and includes, but is not limited to, un-faced batt insulation, faced batt insulation, mineral wool insulation, and rigid insulation.

31. This Subcontractor includes all framing and drywall work necessary to incorporate items called to be recessed into the metal stud framed walls, including but not limited to, fire extinguisher cabinets, hand dryers, paper towel dispensers, and waste receptacles. It is agreed and understood that 'five siding' of these recessed openings is included in this Scope of Work should it be required to maintain the wall rating specified at that location.

32. This Subcontractor shall provide and install all supplementary wood and metal framing, blocking, flat metal backing, and bracing in metal framed partitions to support hollow metal door frames, aluminum storefronts, fixtures, equipment, casework, trim, toilet partitions, urinal screens, toilet accessories, hardware, grab bars, mechanical and electrical devices, television brackets, marker boards, tackboards, smartboards, and all other items required to be built into or supported on metal framed partitions. All supplementary framing is to be coordinated with other trades confirming type, location, and elevation.

33. This Subcontractor shall receive, assist in inventorying, and install all hollow metal door and hollow metal window frames within metal stud framed walls in strict accordance with the Contract Documents. All hollow metal frames within metal stud framed walls are to be installed plumb, level, and square and are to be oriented and braced as required to ensure that the frames do not move or deflect during the installation of other trades' work.

34. This Subcontractor shall utilize wood spreaders to set door frames in lieu of the hollow metal spreaders provided. All costs associated with wood spreaders are included in this Subcontract.

35. This subcontractor shall Install all door frames in framed walls in accordance with Section 08 11 13.

36. This Subcontractor shall utilize stud framing members at all hollow metal door and hollow metal window frames in strict accordance with the Contract Documents. This Subcontractor shall install hollow metal frames called to be installed behind all sound control doors using mineral wool insulation in strict accordance with the Contract Documents.

37. ~~This Subcontractor shall provide and install all Fiberglass Reinforced Plastic Paneling (FRP) complete including, but not limited to all walls, bulkheads, soffits, trim accessories, adhesive, sealants, corner trim, anchors, furring, shims, smoke and/or fire sealants, fasteners, and all miscellaneous accessories required in strict accordance with the contract documents.~~

38. This Subcontractor understands that general lighting for construction is to be provided by the Contractor. If supplemental lighting is required to provide proper quality during finishing of gypsum board it is to be provided by this Subcontractor.

39. This Subcontractor shall provide multiple mobilizations and/or work force in multiple area as necessary to meet phasing and schedules for project

40. This Subcontractor shall provide adequate working platforms, walkways, scaffolding, railings, and safety rails as required; at all times work is taking place on site. It is this Subcontractor's responsibility to furnish, erect, brace, and dismantle all scaffold required to complete this Scope of Work. Inspection and tagging of all scaffold provided by this Subcontractor is to be completed on a daily basis prior to work commencing.

41. This Subcontractor acknowledges that all gypsum board and hollow metal door and window frames are to be properly stacked on dunnage and protected so that the product remains free of moisture.

42. This Subcontractor shall provide all mockups required by the Contract Documents, the Contractor, the Designer and/or the Owner.

43. This subcontractor shall provide all submittals according to the contract documents including but not limited to product data, shop drawings, samples, operation and maintenance data, material certificates, field quality control reports, and warranties.

44. This Subcontractor shall provide all warranties as called for by the Contract Specifications.

45. The Subcontractor shall provide a list of all intended material and equipment to be purchased under the Owner Direct Material/Equipment Purchase Program no later than 10 days after the issuance of a Notice of Intent or execution of this Agreement, whichever comes first.

Other Items of Note:

A. Wharton-Smith will be utilizing a software called **Team Player** to process monthly pay applications. The fee for this service is $10.00 per Pay Application, regardless on the number of revisions in each month. Please review the Team Player Welcome Letter that has been included in the Bidding Documents which contains embedded links for training documentation and videos. This will be a requirement for all subcontractors on this project.

B. With respect to Article 22 of this Subcontract Agreement, the Owner will exercise the right to purchase materials directly as part of the Owner Direct Purchase Program. This Subcontractor shall actively participate in the Owner Direct Purchase Program for this Project Prior to the Subcontractor's final payment, a final reconciliation of Owner Direct Purchases against this Subcontract will be performed. This does not apply to temporary fence.

C. On-Site Work Hours: Limit work to between 7 a.m. to 5 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.

D. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site. Subcontractor shall maintain list of approved screened personnel with Owner's representative.

6.2 BID PRICING / ALTERNATES

The bid pricing shall be broken out as follows and as indicated on the bid form. The City of Port Orange has the sole discretion to accept any, all, or none of the work items for this scope of work based on the bid pricing received. Subcontractor to price the work accordingly.

6.2.1 This bid does not include any bid alternates.

6.2.2 Retainage will be held at 5% for the duration of the Contract and will be released upon retainage release by the Owner.

6.3 CLARIFICATIONS

6.3.1 The Subcontractor will be responsible for protecting all new and existing work throughout the site from damage that could be caused by performing the Scope of Work. Any damage caused by Subcontractor is the responsibility of Subcontractor and Subcontractor will bear the costs of said damage.

6.3.2 The Subcontractor will be required to attend all project progress and coordination meetings as requested by Wharton-Smith, Inc. or the owner.

6.3.3 All materials must be submitted upon and approved prior to being sent to the jobsite, all non-approved items may be rejected and returned at the Subcontractor's cost.

6.3.4 Subcontractor is responsible to coordinate with the CMAR and all other Subcontractors as necessary.

6.3.5 Subcontractor will be responsible for all general notes indicated on the drawings that pertain to this scope of work.

6.3.6 Subcontractor will obtain all permits, licenses, certificates, and coordination efforts, or any such approvals of plans or specifications as may be required by federal, state and local laws, ordinances, rules and regulations, for the proper execution and completion of the work specified herein.

6.3.7 Subcontractor will be responsible for offloading all equipment deliveries and proper short-term and long-term storage requirements per the manufacturer's requirements. Provide all equipment necessary to offload and set equipment including cranes.

6.4 GENERAL REQUIREMENTS

6.4.1 The Subcontractor will be bound to the CMAR to the same extent the CMAR is bound to the Owner by the terms of the Contract Documents.

6.4.2 The Scope of Work shall comply with all Federal, State and Local Codes.

6.4.3 This is a lump sum agreement, including freight, incidental fees, and all applicable taxes. A schedule of values for submittals, materials, checkout, startup and closeout paperwork will be submitted with the return of the signed agreement for review and approval by the CMAR's Project Manager.

6.4.4 If requested by the CMAR, the Subcontractor will assist in cost loading of the project's master schedule. Schedule of Values will follow the cost loaded actives provided by Subcontractor.

6.4.5 No billing will be accepted without an approved Schedule of Values.

6.4.6 A detailed Schedule of Values must be provided within two (2) weeks of a contract being executed should your bid be accepted.

6.4.7 No escalation costs are permitted, pricing will remain firm through the project duration.

6.4.8 The Subcontractor is required to abide by the Wharton-Smith, Inc. safety program and OSHA standards. Excavation, confined space plans, and MSDS sheets will be required for all applicable work.

6.4.9 Subcontractor is responsible to develop and provide a site-specific safety plan for this scope of work.

A. Safety plan will list all potential hazards and competent persons who will be supervising the work.

6.4.10 Subcontractor will maintain an OSHA Certified competent person on site at all times while the work is conducted.

6.4.11 All Subcontractors will be required to follow security protocol of the City of Port Orange and Wharton-Smith at all times.

6.4.12 OSHA and the CMAR's safety standards will be followed at all times.

6.4.13 Proper PPE will be worn by any personnel on the jobsite, including but not limited to delivery drivers, startup and commissioning representatives, manufacturer's representatives, and other personnel.

6.4.14 Materials are to be released as required to maintain Schedule, but Subcontractor is to inform CMAR of material releases and deliveries. No item will be released for production without approval from the Engineer.

6.4.15 All equipment will be labeled and tagged in accordance with the Contract Documents.

6.4.16 Provide all management necessary to adequately support field activities and maintain the Project Schedule.

6.4.17 Fulltime and onsite supervision is required while any work by Subcontractor is being performed. If Subcontractor fails to do so, the CMAR will provide supervision and all costs will be back charged to Subcontractor. The Subcontractor's superintendent will be required to attend all requested progress, safety, scheduling, coordination, and quality control meetings. Meetings of other natures may be required as requested by Engineer, Owner, or the CMAR.

6.4.18 The Subcontractor will be required to coordinate with all other construction trades as required to complete this Scope of Work.

6.4.19 Anticipated (general) sequencing – Your crews may be interfacing with several other trades including mechanical, concrete, piping, and testing agencies. Reasonable time provisions need to be made for coordination and time for these trades to complete their work.

6.4.20 All deliveries will be made between 7am-3pm M-F; all deliveries will be escorted onto the site by WSI. A 72-hour notice to WSI's Superintendent will be required prior to any deliveries.

6.4.21 The Subcontractor may not utilize any area of the project site for storage without approval from the CMAR. If the Subcontractor plans to utilize storage space, the Subcontractor will submit, to the CMAR, a site plan detailing the areas being requested for storage.

6.4.22 An emergency contact list will be provided by the Subcontractor. This list will include at least one point of contact that is available 24 hours a day.

6.4.23 Furnish appropriate Material Safety & Data Sheets (MSDS) and warranty documentation with shop drawings for approval.

6.4.24 Subcontractor is required to coordinate with all applicable authorities as required

6.4.25 The Subcontractor utilizing an Employee Leasing Company for Workers Compensation Insurance coverage will not be allowed to use any Subcontractor on the project (i.e. no third-party subs)

6.4.26 It is the sole responsibility of the Subcontractor to secure any and all tools, materials, and equipment stored on the site. Wharton-Smith, nor the Owner, will be responsible for any theft, vandalism, or damage to the Subcontractors property. The Subcontractor is responsible for all security measures required to secure their resources.

6.4.27 Subcontractor will provide temporary generators as needed and fresh drinking water for their employees. Subcontractor is only responsible for their work and personnel.

6.4.28 The Subcontractor is responsible to follow all site plan details and to adhere to all specifications applicable to the Scope of Work items above.

6.4.29 All hazardous material will be properly disposed of at an offsite location.

6.4.30 The Subcontractor will be responsible to utilize available dumpsters for debris and daily clean-up. All areas will be left clean at the end of each day.

6.4.31 A representative of the Subcontractor knowledgeable of the work will be present at weekly coordination meetings with the General Contractor.

6.4.32 Subcontractor is to provide Daily Reports.

6.4.33 A Superintendent (not Foreman) must be present at all times the Subcontractor's crews are onsite.

6.4.34 Pre-Mobilization Jobsite QC/QA Conference - Subcontractor to participate in WSI Quality Control Plan as outlined in the Subcontract Agreement. Subcontractor's Project Superintendent and or Foremen will attend Quality Control Meetings as deemed necessary by WSI including a minimum of one (1) pre-mobilization meeting to be held in advance of Subcontractor's mobilization on site.

6.4.35 Subcontractor must have approval for additional work (not included in this Scope) in writing by an authorized W/S representative prior to proceeding with said work.

6.4.36 No claim for extra services rendered or materials furnished will be valid by either party unless agreed to in writing by both parties.

6.5 PROJECT SCHEDULE

6.5.1 The Subcontractor is to provide a detailed schedule for the Scope of Work with the submission of bid. The Subcontractor will coordinate with the CMAR to ensure the detailed schedule conforms to the overall Project Schedule. The Subcontractor will update this Scope of Work Schedule each month and provide a written update to the CMAR.

6.5.2 The Subcontractor will account for not working on holidays and still plan for the Scope of Work to be completed per the overall Project Schedule. Holidays will include those observed by the Owner, the CMAR, and the Subcontractor. The CMAR or Owner observes the following holidays:

A. New Year's Day
B. Martin Luther King Day
C. President's Day
D. Memorial Day
E. Independence Day
F. Labor Day
G. Thanksgiving
H. Day after Thanksgiving
I. Christmas Eve
J. Christmas Day

6.6 SUBMITTAL REQUIREMENTS

6.6.1 The Subcontractor will provide submittal documentation as required within the Contract Documents. Upon execution of this Agreement the Subcontractor will provide a list of anticipated submittals for the Scope of Work. The Subcontractor will provide any additional submittal documentation requested for any materials or services related to the Scope of Work.

6.6.2 All submittals which have any deviation will be supplied with a letter addressing all deviations.

6.6.3 All submittals will be provided with a cover page listing the following information:

A. Project name
B. Submittal title
C. Relevant specification sections
    a. Specification sections, with addendum updates included, are to have each paragraph check-marked to indicate specification compliance. Check marks shall denote full compliance with a paragraph as a whole. Any deviation shall be clearly marked by an "X" and numbered to indicate

a requested deviation. If deviations from the specifications are indicated, and therefore requested, each deviation shall be underlined and denoted by a unique number in the margin to the right of the identified paragraph, referenced to a detailed written explanation of the reasons requesting the deviation. The remaining portions of the paragraph not underlined will signify compliance with the specifications. Failure to include a copy of the marked-up specification sections along with justifications for any requested deviations to the specification requirements shall be cause for return of the entire submittal with no further review.

D. Subcontractor's contact information

E. Manufacturer's contact information

6.6.4 All submittals will include the following information for each individual piece of equipment or fabrication:

A. Complete model number

B. The tag number of each per the Contract Documents (if applicable)

C. List of major components

D. Specification section (if varied from the submittal prime specification section)

6.6.5 It is the Subcontractor's sole responsibility to ensure submittals are complete and accurate for the complete scope of this agreement. Coordination of submittal information from others working under the Subcontractor is the sole responsibility of the Subcontractor. Subcontractor will not provide submittals with any items marked out of scope or by others if such items are part of the scope of this agreement.

6.6.6 Revised submittals will include a comment response document, this document will respond to every comment in writing and reference the location of all corrections within the revised submittal. Revised submittals will be at no additional cost to the Purchaser.

6.6.7 The Subcontractor may be responsible for any costs incurred by the CMAR due to excessive submittal revisions.

6.7 RECORD DOCUMENTS

6.7.1 The Subcontractor will maintain accurate and current as-built documents. These documents will meet the requirements within the Contract Documents. All survey information will be certified by a licensed surveyor.

6.7.2 Prior to approval of the Subcontractor's monthly pay application, the CMAR may elect to review the Subcontractor's as-built documents. If these documents are found to be inaccurate or not current, up to the date of the pay application, the CMAR may reject the pay application until the Subcontractor provides accurate and current as-built documents. Subcontractor will not be entitled for any additional costs, fees, or other compensation due to rejected pay applications and delayed payments as a result of Subcontractor's failure to provide accurate and current as-built documents.

6.7.3 After completion of the Scope of Work, the Subcontractor will provide complete and final as-built documents within two (2) weeks. As-built documents will be provided as detailed in the Contract Documents

6.8 INSURANCE

6.8.1 Subcontractor will provide the minimum insurance limits required to meet the requirements in this purchase order and all the requirements detailed within the Contract Documents. A sample insurance document is included within the Contract Documents for additional reference.

6.8.2 The Subcontractor will maintain a worker's compensation insurance policy for the complete scope of services. The Subcontractor will not utilize a Professional Employer Organization (PEO) to provide workers compensation insurance.

Christine Carasas

From: Mike Burke <mikeb@a-wconstruction.com>
Sent: Tuesday, November 12, 2024 4:45 PM
To: Wharton Smith Commercial Estimating
Cc: Josh Blubaugh
Subject: Bid Proposal: PO Public Utilites Field Ops Bldg
Attachments: A&W COPO - 09 29 00 Drywall Bid Package.pdf; A&W COPO - 09 51 13 Acoustical Bid Package.pdf

Good afternoon - attached is our bid for the PO Public Utilites Field Ops Bldg, please let me know if you have any questions.

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!

Thanks,
Mike Burke

810 Fentress Crt, STE 160
Daytona Beach Fl, 32117
386-274-1515
mikeb@a-wconstruction.com
A&W Construction Services, Inc.

BID PROPOSAL

DATE: 11/12/24

PROJECT: Port Orange Public Utilities

CONTRACTOR: Wharton Smith

ARCHITECT: Schenkel Shultz

DOCUMENTS DATE: 9/30/2024

Annapurna Construction is pleased to propose furnishing of labor and materials in accordance with the plans and specifications for the following scope of work subject to the qualifications as outlined below:

METAL STUD FRAMING:

- Exterior framing to be 16 ga G60 material of size and spacing as shown on Architectural drawings – any changes per approved shop drawings will be subject to appropriate pricing
- Exclude eave framing/soffit system
- Interior framing to be per manufacturer limiting height tables based on L/240 @ 5 PSF
- Deflection track at head of walls terminating at structure – Exclude fire track
- All interior ceilings to be framed with drywall suspension system
- Installation of hollow metal door frames in metal stud walls included – Material to be supplied by others
- All HMF Openings to have double jamb studs at each side of opening – Size and gauge to match wall framing

GYPSUM DRYWALL:

- Typical gypsum board throughout to be 5/8" type X drywall
- Ceiling Type C2 – USG Ensemble Acoustic drywall ceiling included – Standard Ensemble White color
- Tile backer to be 5/8” glass mat gypsum tile backer board
- Shower locations to have 5/8” cement board
- Exterior sheathing to be 5/8” glass mat gypsum sheathing
- Level 4 finish at exposed gypsum.
- Level 1 finish included at concealed gypsum.

INSULATION:

- Typical Insulation to be unfaced fiberglass batts
- Wall type WA2 to have 3” semi-rigid board insulation per specification

ACOUSTICAL CEILINGS:

- Acoustic Tiles to be equal to Armstrong Fine Fissured #1756
- Grid to be standard 15/16”

INCLUSIONS AND CLARIFICATIONS:

- Applicable taxes and insurance.
- Clean-up and recycling to dumpsters on site (provided by G.C.)
- Scaffold, and lifts for our work except at elevator shaft
- GC to remove window for material stocking to the floor

PROJECT SPECIFIC QUALIFICATIONS :

- Excludes any engineering/shop drawings
- Exclude FRP
- Exclude Unistrut
- Parking to be provided on site
- Wall ratings are based on partition type details.
- STC ratings assumed to be met by construction details – No additional materials for STC requirements included.
- General Conditions figured per provided schedule. Any delays not the fault of Annapurna Construction will result in additional General Conditions costs.
- Proposal is valid for 30 days from the above date.

EXCLUSIONS:

- Building Department Permit Filing Fees
- Temporary power, water, lighting & humidity control. GC to provide
- Building Expansion Joints.
- Mold and/or air pollutant insurance coverage.
- No sealing of penetrations from other trades.
- No finish caulking.
- Texture
- Waterproofing of any kind
- Demo.
- EIFS/Brick/Stone
- Liquidated Damages unless specifically discussed and detailed in this proposal

LUMP SUM BASE BID: $606,543.00

Add for P&P Bond ……..... $ 12,131.00

Thank you for the opportunity to bid on this project. Price is valid for thirty days. Please call if you need additional pricing or to review the scope of work in further detail.

Respectfully,

ANNAPURNA CONSTRUCTION



Jeff Albright
VP of Business Development
jeff@annapurnaconstruction.com
407-374-4608 – Cell

ACCEPTED:

_____
Authorized Company Representative

Christine Carasas

From: Jeff Albright <jeff@annapurnaconstruction.com>
Sent: Tuesday, November 12, 2024 12:11 PM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Public Utilities Field Operations Faciity
Attachments: Annapurna Construction Bid Proposal - Port Orange Public Utilities.pdf

Please let me know if you have any questions.



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599 Maguire Road Suite A
Ocoee, Florida 34761

General Contractor: Wharton Smith

Contact: James Manyett

Email: comest@whartonsmith.com

11/11/2024

RE: City of Port Orange Utilities Field

Good afternoon,

Thank you for the opportunity to be part of this project. Attached you will find our quote for the project mentioned above. Please take a moment to review this proposal, which has been prepared accordingly to follow the specifications. I look forward to hearing your response and hope to work with you and with your team.

Should there be any questions, do not hesitate to contact me at your earliest convenience.

Sincerely,

Lucia Martinez
Office: 407-614-8286 Ext. 109
Email: lucia@ajflooring.com
AJ Flooring Specialist Services Inc.
599 Maguire Road Suite A
Ocoee, FL 34761

599 Maguire Road Suite A
Ocoee, Florida 34761

General Contractor: Wharton Smith

Contact: James Manyett

Email: comest@whartonsmith.com

11/11/2024

RE: City of Port Orange Utilities Field

TILE/RESILIENT FLOORING				
CODE	DESCRIPTION	QTY	UNIT	AMOUNT
PTF-1	F&I/ MNF: DALTILE/STYLE: ENLITE/COLOR: CLARITY EL62/SIZE: 15"x30"	397	SF	$ 4,311.81
PTF-2	F&I/MNF: DALTILE/STYLE: KEYSTONE/COLOR: UPTOW TAUPE SPECKLE D 202/SIZE: 2"x2"	38	SF	$ 871.28
PTW-1	F&I/MNF: TILEBAR/STYLE: LINEA PLANE LINK/COLOR: WHITE GLAZED/SIZE: 12"x24"	672	SF	$ 6,663.43
PTW-2	F&I/MNF: TILEBAR/STYLE: MAYA CHEVRON/COLOR: SAGE POLISHED/SIZE: 7"X4"	141	SF	$ 4,111.16
PTB-1	F&I/MNF: SCHLUTER/STYLE: DILEX-AHK/COLOR: ACBG BRUSHED CHROME	147	LF	$ 1,446.27
CPT-1	F&I/ SHAW CONTRACT/STYLE: TRANSFROM 5T308/COLOR: 05595 UNTAMED/SIZE: 9"X36"	141	SY	$ 6,675.15
LVT-1	F&I/MNF: PATCRAFT/STYLE: SPLITWOOD 1466V/COLOR: ALMOND GOLD V2/SIZ: 9"x60"	1207	SF	$ 8,220.82
RB-1	F&I/MNF: TARKETT/STYLE: TRADITIONAL RUBBER BASE/COLOR: 48 GREY/SIZE: 4"	3487	LF	$ 8,218.42
EPX-1	F&I/ EPOXY FLOOR ALLOWANCE @$5.50/SF	419	SF	$ 6,055.86
EPX-1 BASE	F&I/ EPOXY FLOOR ALLOWANCE @$5.50/LF	103	LF	$ 1,134.16
SC-1	F&I/ SEALED CONCRETE ALLOWANCE @$.80/SF Increased .90/sf to cover polishing -jrm	17839	SF	$ 61,454.78
SC-2	F&I/ SEALED CONCRETE ALLOWANCE @$.80/SF	735	SF	$ 2,640.89
WD-1	F&I/ WOOD BASE	141	LF	$ 946.95
MISC.	F&I/ PRE-FABRICATED MARBLE THRESHOLD ALLOWANCE	4	EA	$ 632.50
MISC.	F&I/ TRANSITION LVT TO PTF	3	LF	$ 221.25
MISC.	F&I/ TRANSITION CARPET TO SC	6	LF	$ 201.64
MISC.	F&I/ WALL TRIMS	8	EA	$ 807.30
MISC.	MINOR FLOOR PREP (NO LEVELING OR PRIMER, SKIM COAT ONLY)	21474	SF	$ 4,453.00
MISC.	MOISTURE TEST	1	EA	$ 2,875.00
MISC.	MUDBED	422	SF	$ 3,049.68
MISC.	WATERPROOFING SCHLUTER KERDI MEMBRANE 8MIL	530	SF	$ 2,410.78
MISC.	NOBLE COMPANY CHORALOY 240	40	SF	$ 787.75
MISC.	FLOOR PROTECTION WITH KRAFT PAPER	21908	SF	$ 4,471.81
MISC.	DELIVERY, STORAGE AND HANDLING	5	WEEKS	$ 14,375.00

Sincerely,

Sub-total	$	147,036.70
Tax	$	3,551.36
Total	**$**	**150,588.06**

KS:
Include all moisture mitigation (if needed) as an allowance

Lucia Martinez
Office: 407-614-8286 Ext. 109
Email: lucia@ajflooring.com
AJ Flooring Specialist Services Inc.
599 Maguire Road Suite A
Ocoee, FL 34761

599 Maguire Road Suite A
Ocoee, Florida 34761

General Contractor: Wharton Smith

Contact: James Manyett

Email: comest@whartonsmith.com

11/11/2024

RE: City of Port Orange Utilities Field

SUMMARY				
TILE / RESILIENT FLOORING			$	150,588.06
INSURANCE			$	1,687.13
TEXTURA			$	274.10
		Total	**$**	**152,549.28**

Sincerely,

Lucia Martinez
Office: 407-614-8286 Ext. 109
Email: lucia@ajflooring.com
AJ Flooring Specialist Services Inc.
599 Maguire Road Suite A
Ocoee, FL 34761

599 Maguire Road Suite A
Ocoee, Florida 34761

General Contractor: Wharton Smith

Contact: James Manyett

Email: comest@whartonsmith.com

11/11/2024

RE: City of Port Orange Utilities Field

ALTERNATIVE				
CODE	DESCRIPTION	QTY	UNIT	AMMOUNT
BOND				$ 3,966.28

Sincerely,

Lucia Martinez
Office: 407-614-8286 Ext. 109
Email: lucia@ajflooring.com
AJ Flooring Specialist Services Inc.
599 Maguire Road Suite A
Ocoee, FL 34761

Christine Carasas

From: Lucia Martinez <Lucia@ajflooring.com>
Sent: Tuesday, November 12, 2024 4:23 PM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Utilities - Bid
Attachments: Outlook-_Users_AJF; City of Port Orange Utilities Field.pdf

Good afternoon James,

I hope you are doing well.

Please see attached the bid proposal for the project mentioned above.

Let me know if you have any questions or comments.

Best regards,

Lucia Martinez | Estimator

Office: 407-614-8286 Ext. 109

Email: lucia@ajflooring.com

AJ Flooring Specialist Services Inc.

599 Maguire Road, Suite A

Ocoee, FL 34761

http://www.ajflooring.com | Facebook





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CERTIFIED FINISHES
3718 Mercy Star Court, Ste. 130 | Orlando, FL 32808
Phone: 407.459.8870

Proposal

Attn: **JAMES MANYETTE**
From: Todd Goosen
Estimator: Todd Goosen
Admin:
Revision #:
Date: 11/13/2024 *Bid Due Date:* 11/5/2024
Plan Date: *Addendum :*

To	*Project*
WHARTON SMITH ORLANDO PO BOX 471028 LAKE MONROE, FL 327471028 Phone:	Port Orange Public Utilities OP's Bldg Port Orange, FL

BASE BID

				Quantity		Unit Price	Line Total
1	**PTF-1** **Thinset Over Crack Isolation, Epoxy Grout** DAL-TILE ENLITE 15X30	CLARITY / EL62		469.50	SF	8.111	3,808.00
2	**PTF-2** **Mudset Over Waterproofing, Epoxy Grout** DAL-TILE KEYSTONE 2X2	UPTOWN TAUPE SPECKLE / D202		48.00	SF	10.708	514.00
3	**PTW-1** **Thinset, Epoxy Grout** TILE BAR LINEA PLANE LINK 12X24	WHITE		651.00	SF	10.757	7,003.00
4	**PTW-2** **Thinset, Epoxy Grout** TILE BAR MAYA CHEVRON 7X4	SAGE POLISHED		153.60	SF	28.932	4,444.00
5	**PTB-1** SCHLUTER® SYSTEMS DILEX- AHK 1S 80 ACGB	BRUSHED CHROME		15.00	EA	55.467	832.00
6	**PTB-1 INSIDE CORNER TRIM** SCHLUTER® SYSTEMS DILEX I90/ AHK 1S ACGB	BRUSHED CHROME		40.00	EA	26.000	1,040.00
7	**PTB-1 OUTSIDE CORNER TRIM** SCHLUTER® SYSTEMS DILEX E90/ AHK 1S ACGB	BRUSHED CHROME		40.00	EA	26.000	1,040.00
8	**PTB-1 CONNECTOR** SCHLUTER® SYSTEMS V/AHK	N/A		20.00	EA	4.000	80.00
9	**TILE WALL TRIM** SCHLUTER® SYSTEMS JOLLY J 80 ACGB	BRUSHED CHROME		12.00	EA	26.667	320.00
10	**SHOWER CURB** **Allowance: Basis of cost is Dal Tile 6" x 36" Double Bevel, White Cararra** TBD TBD	TBD		4.00	EACH	180.000	720.00

11	**WATERPROOFING / CRACK ISOLATION** **Under All Floor Tile**					
	MAPEI ® WATERSTOP 3.5G - CRACK ISO/WATERPROOFING	N/A	4.00	EA	320.000	1,280.00
12	**MORTAR BED AT SHOWER FLOORS** **Under PTF-2 Only, Sloped to Drain**					
	MAPEI ® 4-1 - MUDBED	55 LB	22.00	EA	33.000	726.00
13	**THINSET MORTAR FOR FLOOR AND WALL TILE**					
	MAPEI ® KERAFLEX SG - GRAY - EXTRA SMOOTH L&H TILE MORTAR	50 LB	36.00	EA	16.000	576.00
14	**GROUT FOR PTF-1** **Crossover CBP**					
	MAPEI ® KERAPOXY CQ	TBD	2.00	EA	452.000	904.00
15	**GROUT FOR PTF-2** **Crossover CBP**					
	MAPEI ® KERAPOXY CQ	TBD	2.00	EA	198.000	396.00
16	**GROUT FOR PTW-1** **Crossover CBP**					
	MAPEI ® KERAPOXY CQ	TBD	2.00	EA	572.000	1,144.00
17	**GROUT FOR PTW-2** **Crossover CBP**					
	MAPEI ® KERAPOXY CQ	TBD	2.00	EA	265.000	530.00
18	**CAULKING**					
	MAPEI ® MAPESIL - T	TBD	12.00	EA	29.000	348.00
19	**TRANSITION - TILE TO LVT / CONC**					
	SCHLUTER® SYSTEMS RENO U AU 80 ATGB	BRUSHED CHROME	5.00	EA	39.000	195.00
20	**CPT-1**					
	SHAW COMMERCIAL CARPETS TRANSFORM TILE	UNTAMED / 05595	160.00	SY	47.706	7,633.00
21	**LVT-1**					
	PATCRAFT SPLITWOOD	ALMOND GOLD	1,372.50	SF	6.290	8,633.00
22	**MINOR FLOOR PREP**					
	SCHONOX SCHÖNOX SL	10lb / G	14.00	EA	55.000	770.00
23	**ADHESIVE FOR CPT TILE AND LVT**					
	TAYLOR DYNAMIC	4 GAL	4.00	4GAL	124.000	496.00
24	**RB-1** **Preformed Corners are Specifically Excluded**					
	JOHNSONITE® 4" RUBBER COVE BASE - 120 LF COILS - 1/8"	GREY / 48	3,480.00	LF	1.691	5,884.00
25	**ADHESIVE FOR RUBBER BASE**					
	MAPEI ® ECO-575 - 28oz CARTRIDGE BASE ADHESIVE	N/A	60.00	EA	7.000	420.00
26	**TRANSITION LVT TO CONC**					
	JOHNSONITE® SSR-XX-B	GREY / 48	35.00	LF	2.514	88.00

27	**FLOOR PROTECTION**					
	PROFLEX PROSHEILD	300 SF ROLL	12.00	EA	112.000	1,344.00
28	**GENERAL CONDITIONS**					
	`Certified Finishes FL General Conditions	N/A	1.00	LS	6,300.000	6,300.00

TOTAL (APPLICABLE TAX INCLUDED) **$57,468.00**

ADD ALTS

			Quantity		*Unit Price*	*Line Total*
1	**PTF-1 - 5% ATTIC STOCK**					
	DAL-TILE ENLITE 15X30	CLARITY / EL62	24.00	SF	3.750	90.00
2	**PTF-2 - 5% ATTIC STOCK (INCLUDED IN BASE BID QUANTITY)**					
	DAL-TILE KEYSTONE 2X2	UPTOWN TAUPE SPECKLE / D202	1.00	SF	0.000	0.00
3	**PTW-1 - 5% ATTIC STOCK**					
	TILE BAR LINEA PLANE LINK 12X24	WHITE	33.00	SF	6.364	210.00
4	**PTW-2 - 5% ATTIC STOCK**					
	TILE BAR MAYA CHEVRON 7X4	SAGE POLISHED	8.00	SF	22.500	180.00
5	**CPT-1 - 10% ATTIC STOCK**					
	SHAW COMMERCIAL CARPETS TRANSFORM TILE	UNTAMED / 05595	15.00	SY	43.333	650.00
6	**MOISTURE MITIGATION (IF REQD)**					
	`Certified Finishes FL Allowance SF	TBD	2,700.00	SF	7.000	18,900.00 ✓

TOTAL (APPLICABLE TAX INCLUDED) **$20,030.00**

Certified Finishes, Inc. will furnish, deliver, and install the above material in accordance with all transmitted plans, specifications and general conditions for the listed price. The price includes all applicable freight and taxes, unless otherwise noted. Unless specifically included in this proposal: excludes all demolition, repair or take-up of existing flooring; excludes vacuuming, damp mopping, buffing, waxing or floor protection; excludes floor floating, leveling or repair; excludes sealing of floor, cleaning or removal of oil, grease, solvents, paints, plaster or other foreign substances; excludes asbestos control/abatement; includes no attic stock of material beyond installation coverage; includes work only during regular hours and for a single phase job; excludes any furniture movement; excludes any addenda beyond the base bid; Per CRI-104-96, 6.3 site conditions: The owner or general contractor must submit to the flooring contractor a written report on moisture and surface alkalinity of the slab to determine its suitability as a substrate for the material to be installed. Floor preparation will be billed on a time and material basis at $75.00 per man-hour plus the cost of the materials. Client is subject to payment for stored materials. Certified Finishes, Inc. will not accept charge backs of damage or cleaning without the option to inspect claim(s) to repair or without the option to make arrangements for acceptable repairs at their expense. Certified Finishes, Inc. is not responsible for any claims that might result from product delivery date changes beyond their control. If a manufacturer requires a deposit to manufacture/ship certain items, client will pay that amount. This proposal is valid for forty-five (45) days. Full payment is due ten (10) days from receipt of invoice unless otherwise specified.

WARRANTY DOES NOT INCLUDE ANY MOISTURE RELATED SUBFLOOR FAILURES

Certified Finishes Central Florida **WHARTON SMITH ORLANDO**

Signed: _____ ***Signed:*** _____

Todd Goosen

Proposed Installation Start Date: _____

Colin Parenton

From: Jonathan Helms <jhelms@certifiedfinishes.com>
Sent: Wednesday, November 13, 2024 11:41 AM
To: Todd Goosen; Colin Parenton
Subject: Re: Port Orange Public Utilities Field Ops Bldg. - Wharton-Smith, Inc.

Colin,

Todd meant that we did not price the Epoxy or Sealed Concrete.

Also, we have included part-time supervision for the duration of the project in lieu of full-time supervision.

CERTIFIED FINISHES

JONATHAN HELMS
Project Manager
jhelms@certifiedfinishes.com | m. 407.375.3550
3718 Mercy Star Ct. Ste 130, Orlando, FL 32808

From: Todd Goosen <TGoosen@certifiedfinishes.com>
Sent: Wednesday, November 13, 2024 11:34 AM
To: Colin Parenton <cparenton@whartonsmith.com>
Cc: Jonathan Helms <jhelms@certifiedfinishes.com>
Subject: RE: Port Orange Public Utilities Field Ops Bldg. - Wharton-Smith, Inc.

Colin,

Please see attached. Let us know if you have any questions. We did price the Epoxy, or Sealed Conc.

CERTIFIED FINISHES

TODD GOOSEN
PreConstruction Manager

tgoosen@certifiedfinishes.com | m. 407.271.7162
3718 Mercy Star Ct. Ste 130, Orlando, FL 32808

WARNING!: WIRE FRAUD IS REAL: YOU MUST CALL OUR OFFICE TO VERBALLY CONFIRM WIRE INSTRUCTIONS RECEIVED VIA EMAIL PRIOR TO SENDING FUNDS.

From: Colin Parenton <cparenton@whartonsmith.com>
Sent: Wednesday, November 13, 2024 8:59 AM
To: Todd Goosen <TGoosen@certifiedfinishes.com>
Subject: Port Orange Public Utilities Field Ops Bldg. - Wharton-Smith, Inc.

Hey Todd,

Hope you're doing well. We only received 1 flooring proposal on bid day (yesterday) for the Port Orange Public Utilities, and we were hoping you could get us a late proposal for that either later this week or early next week. I just resent the ITB so let me know if you're interested. Here is what we would like you to pick up:

Carpet
CPT-1 - Shaw Transform Tile
Resiliant Flooring
LVT-1 - Patcraft Splitwood
Tile Flooring
PTF-1 - Daltile Enlite 15"x30"
PTF-2 - Daltile Keystones 2"x2"
PTW-1 - Tile Bar Glazed Ceramic 12''x24''
PTW-2 - Tile Bar Glazed Ceramic 12''x24'' & Polished Glass Moisaic Tile 7''x4''
Bases:
WD-1 - Wood Base 6'' H
RB-1 - Tarkett Traditional 4'' H
PTF-1 - Daltile Clarity EL62 Porcelain Floor Tile
PTB-1 - Schluter Cover Base and Trim
Concrete Floor Finishes
SC-1 - Integral Colored Polished Concrete
SC-2 - Seal Concrete
Epoxy Floor
EPX-1 - Sikafloor Pour Epoxy Decodur-Quartz FX
EPX-1 - Sikafloor Pour Epoxy Decodur-Quartz FX Base Paint
Floor Protection
Floor Prep - minor
Waterproofing
Moisture Testing
Transitions

Thank you,

PK Flooring, Inc.
19 E. 17th Street St. Cloud, FL 34769
www.PKFlooringInc.com
(407) 957-9801

PK Flooring, Inc.

Estimate Date: 11/12/2024
Expired Date: 12/12/2024

488 - Port Orange Public Utilities Bid Proposal

Prepared For:

Contact:
James Manyette
(407) 321-8410
jmanyette@whartonsmith.com

Jobsite:
750 Monroe Road, Sanford, FL 32771

Prepared by:

Lathan Murphy
407-957-9801 Ext 104
lathan@pkflooringinc.com

Scope of work

Exclusions(-)

1. **Moisture Mitigation**
2. **Cleaning services or application of wax/sealers**
3. **Excessive floor prep/Self leveling**
4. **Demolition**
5. **2nd or 3rd Shift work**

Project Notes

- Per specs page 09 30 00 - 2 "1.7 Extra Material." Proposal includes 5% attic stock for hard tile / grout.

- Per specs page 09 30 00 - 3 2.3 note B. Proposal includes waterproofing membrane on all sloaped areas recieving hard tile.

- Per specs page 09 30 00 - 4 2.5 note B. Epoxy grout included in proposal.

- Per specs page 09 30 00 -6 3.4 note B all tile assumes 1/8" grout joints.

- Proposal includes transitions between differing floor types.

SKU/Item No.
 # 488 - Port Orange Public Utilities
Carpet to concrete Description: CTA XX J
CPT-1- Description: 9"X36" Shaw/Transform Tile 5T308/05595 Untamed-
Dilex-AHK Inside Corner Description: I 90/AHK 1S/ACGB
Epoxy Grout Description: Grout Epoxy CBP CEG-Lite 2 gal
Epoxy Grout Part A- Description: Part A 335 Winter Gray
Freight Description:
LVT-1- Description: 9"X60" Patcraft/Splitwood 1466V/Almond Gold V2-
Mudbed Labor Description:
Mudbed Material 4 to 1 Mix Description:
PTB-1- Description: AHK 1S 100 ACGB-
PTF-1 Cut base Description: 15"X30" Daltile/Clarity AL62/Matte-
PTF-1- Description: 15"X30" Daltile/Clarity AL62/Matte-
PTF-2- Description: 2"X2" Daltile/Keystones/Uptown Taupe SPC D202/Mosaic-

SKU/Item No.
PTW-1- Description: 12"X24" Tilebar/Linea Plan Link/White/Glossy-
PTW-2 Description: 7"X4" Tile bar/Maya Chevron/sage/Glass Mosaic-
PTW-2-Backsplashes- Description: 7"X4" Tile bar/Maya Chevron/sage/Glass Mosaic-
RB-1- Description: 4" Tarkett/Rubber/48 grey/Coved-
Tile to Sealed Concrete Description: RENO-U-ABGB
Vinyl to 0" Description: SSR XX B
Waterproofing Description: Mapei Aqua Defense
Waterproofing Labor Description:
Waterproofing Tape- Description:

Summary

Subtotal	$67,572.36

US$67,572.36

Accepted By

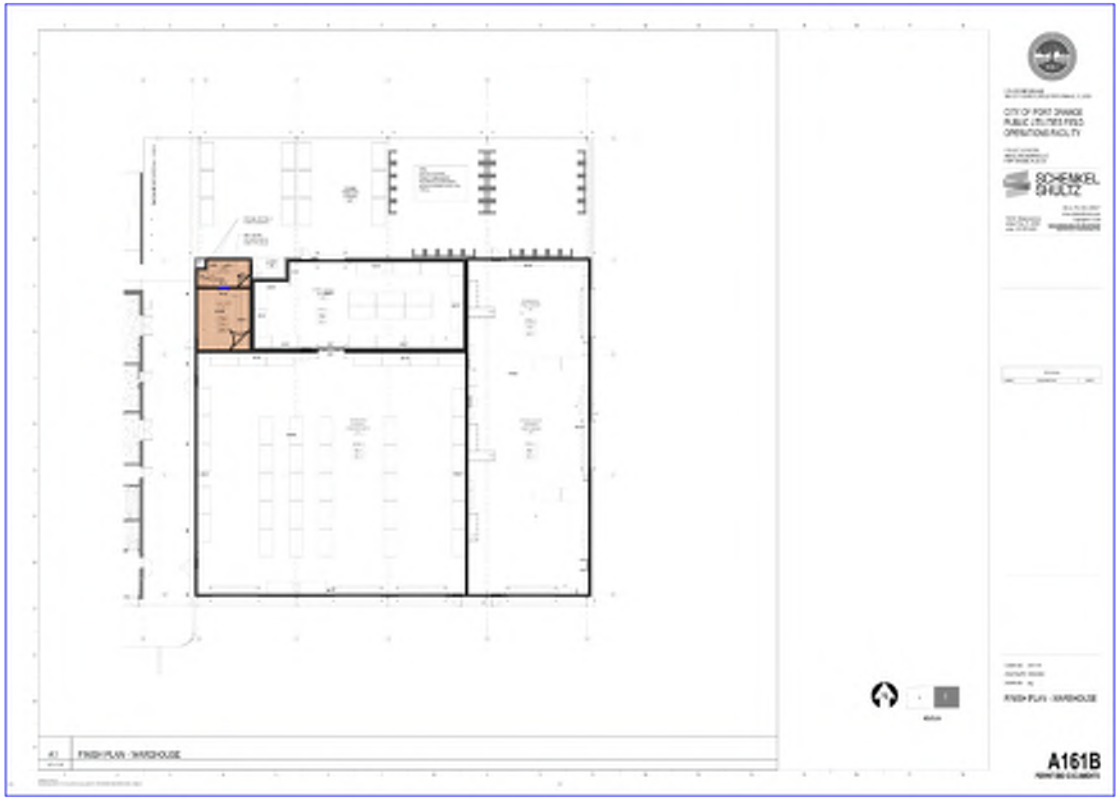
Date

Diagrams

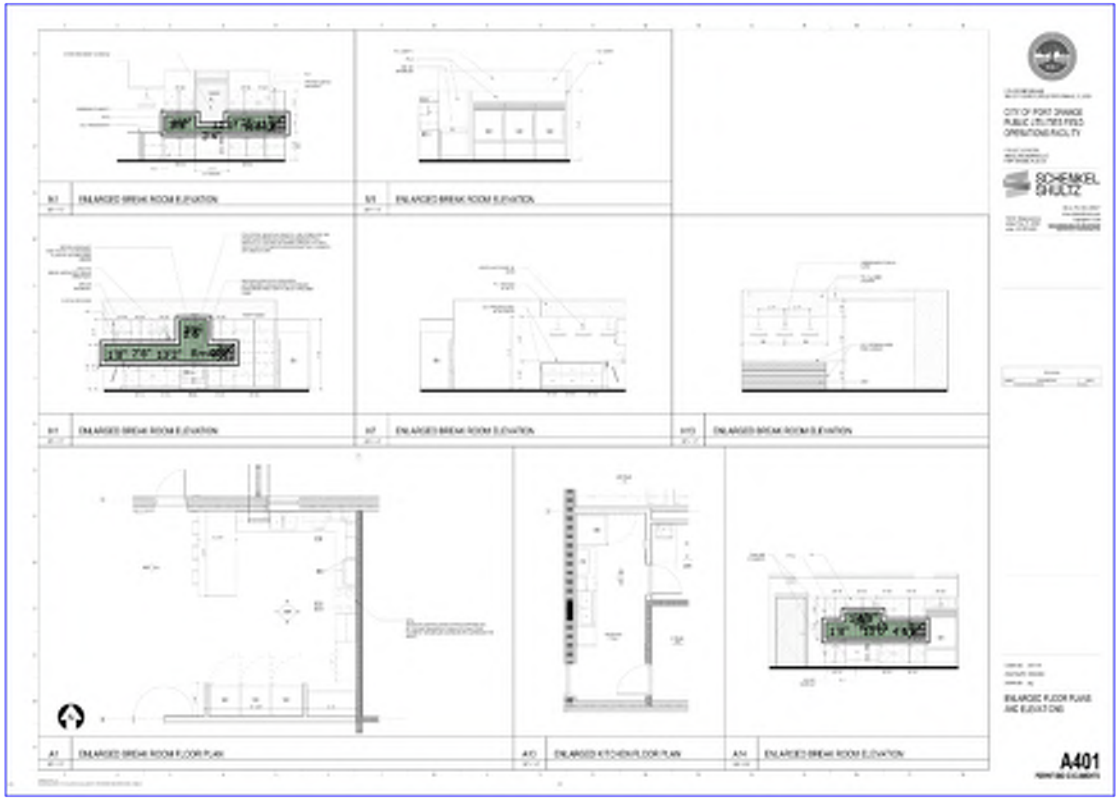
Finish Plan Admin



Finish Plan Warehouse



Elevations



James Manyette

From: Lathan Murphy <lathan@pkflooringinc.com>
Sent: Tuesday, November 12, 2024 11:16 AM
To: James Manyette
Subject: Bid Port Orange Public Utilities from PK Flooring, Inc.

Dear James Manyette,

Please click the button below to view your Bid on a secure webpage.

Bid Amount

$67,572.36

Bid # **Port Orange Public Utilities**

Estimate Date **11/12/2024**

View Bid

The link expires after 30 days.

Lathan Murphy

Estimator

PK Flooring, Inc.

Office: 407-957-9801 Ext. 104

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Partnership. Expertise. Service.

Est. 1996

Date: 11-12-2024
Name: John Gleason
Email: **comest@whartonsmith.com**
Company: Wharton-Smith Construction
Address: 750 Monroe Rd., Sanford, FL 32771
Phone: 407-321-8410

Reference: Port Orange Public Utilities Field Ops Bldg

Dear: John

Please find below our bid on the above referenced project.

This proposal reflects furnishing labor and material to complete the painting work following professional industry standards as set forth by the PCA (Painting Contractors Association) and the AIA (American Institute of Architects), https://www.pcapainted.org/wp-content/uploads/2021/08/2021-Complete-Industry-Standards-Document.pdf

Base Bid: $155,564.00

****All quotes are valid for a period of 30 days from the date the quotation. Unless specifically stated otherwise, all quotations are based on costs of labor, materials, and fuel at the date of the quotation and is subject to price variation ****

Thank you for inviting us to bid on this project, please contact us with any questions.

Sincerely,

Edward J. Dolan Sr

Senior Esimator

Port Orange Public Utilities Field Ops Bldg

SCOPE OF WORK

BASE PROPOSAL

The following scope of work adheres to the project specifications as Qualified below with the stipulations of the Exclusions listed. The base proposal reflects furnishing labor and material to complete the painting work following professional standards as set forth by the PDCA (Painting and Decorating Contractors of America), now known as the PCA (Painting Contractors Association) and the AIA (American Institute of Architects) for this project as follows:

All Sherwin Williams Product Lines

Base Scope

Drywall walls

- One coat Pro Mar 200 zero VOC latex primer
- Two coats SW Scuff Tuff enamel
- Two coats Pro Industrial water based Catalyzed epoxy
- Accent walls

CMU walls

- One coat Pro Industrial heavy duty block filler
- Two coats Pro Mar 200 zero VOC latex
- Two coats Pro Industrial water-based Catalyzed epoxy eggshell

Drywall ceilings and soffits

- One coat Pro Mar 200 primer
- Two coats of Pro Mar 200 flat
- Two coats Pro-Industrial water based Catalyzed epoxy semi-gloss

Exposed ceilings

- Two coats latex Dryfall

Concrete Floors SC-2

- Damp mop & Two coats clarishield water based natural look

Hollow metal doors and frames

- One coat Procryl primer
- Two coats Pro Industrial water based Catalyzed epoxy semi-gloss

Exterior

bollards

- One coat Procryl primer
- Two coats Pro Industrial water based Catalyzed epoxy semi-gloss

Exposed steel columns and support beams

- One coat Macropoxy 646 epoxy primer
- Two coats of Acrolon 218 HS semi gloss

CMU & Cement Plaster

- Pressure wash areas to be painted
- One coat Loxon Block surfacer
- Two coat Sherwin Williams Loxon XP

Interior Painter's Caulking (defined as PDCA P11 and implied requirements)

- Siliconized (paintable) Acrylic Latex Caulk
- Caulk applied to enhance the aesthetic appearance of surfaces
- Gaps caulked are dissimilar "field painted" (or painted) surfaces, limited to voids of 1/8" or less.
- Gaps of certain painted hollow metal members to painted wall surfaces
- Gap at window perimeter in units only. (only gap painted to unpainted or "prefinished" dissimilar surface included)
- Gaps between painted wood and/or wood composite materials and painted wall such as; gypsum drywall, plaster or other similar surface.

Scope of Work Based on Plans/Drawings Dated:

- **09-30-2024**

Additional Scope

Add Alternates:

SPECIFIC EXCLUSIONS:

We understand the following surfaces are to receive no work or specifically exclude from our scope:

- Bondo work (allowance can be carried if specifically directed)
- SC-1
- EPX-1
- PTE
- FRP
- Patching, rubbing, filling of bugholes or chemical cleaning tiltwall
- Scaffolding Costs if Required (see above boom qualification), all Hoisting
- All Site Work including but not limited to: fencing, walls and metal substrates.
- All Roof Metals
- Pipes, Color Coding Pipes, all MEP Stenciling, Striping and Signage

- All touch up of nuts, bolts, weld and corrosion (by steel erector)
- Intumescent and Fire Retardant Coatings
- Caulking for Waterproofing Purposes and all other Waterproofing
- Caulking floor to wall joint condition, caulking requiring backing rod, and to minimize movement of joints or voids, caulking integral color or prefinished building materials.
- Division 7 joint sealants (this section doesn't include painter's caulk, unless it is specifically called out in specification 099000, painting or in the plans)
- Caulking the following areas: tubs to tile, vinyl flooring to baseboard, expansion joints, casework/cabinetry, countertops, prefinished door/window frames, prefinished trim, natural or stained wood, ceramic tile, wallcovering, rigid vinyl wallcovering, seamless floors, floor surfaces, vinyl base, ceiling grid, acoustical tile, electrical or mechanical cover plates, HVAC registers, or grilles, shoe molding etc. All Gaps between painted and unpainted or prefinished dissimilar items, unless explicitly address in scope of work.
- All drywall QC, including but not limited spackling and patching
- Parking Costs

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Dunkman Paint & Wallcovering
Scope of Work:	09 9000

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	$ 155,564.00
Amount in Words:	One hundred fifty five thousand five hundred sixty four

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	
Amount:	$

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation 100%

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %: 2	

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.		Dated:		WSI No.		Dated:	
WSI No.		Dated:		WSI No.		Dated:	
WSI No.		Dated:		WSI No.		Dated:	

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Dunkman Paint & Wallcovering

Company Name

1370 Pine Way Sanford,FL

Address (Street, City, State, Zip)

407-323-9935

Phone Number **Email Address**

Type of Organization (Check One):

( ) Corporation ( ) Sole Proprietorship * LLC
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of _____.

Subcontractor's Minority Certification, if applicable:

( )MBE (X)WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Dunkman Paint & Wallcovering

By: Edward Dolan Sr

Printed Name: _____

Title: Senior Estimator

Dated: 11-12-24

License No.: _____

Christine Carasas

From: Ed Dolan <team@buildingconnected.com>
Sent: Tuesday, November 12, 2024 1:57 PM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Public Utilities Field Ops Bldg. - Dunkman Pa...
Attachments: Port Orange Public Field Ops Bldg Quote.pdf

Dunkman Paint & Wallcovering, LLC
1370 Pine Way, Sanford, FL 32773 US

Bid value
$155,564.00

Proposal sent by:

Ed Dolan
Sr. Estimator, Dunkman Paint & Wallcovering, LLC • edolan@dunkmanpaint.com • +1 407-323-9935

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421 Gold Medal Ct.
Longwood, FL 32750
Phone: 407-331-3805
Fax: 407-331-4019

Percopo Coatings Company

- *Painting & Coatings*
- *Seamless flooring*
- *Special Finishes*
- *Waterproofing*
- *Wall coverings*
- *Restoration & Repair*
- *Project Management*

November 13, 2024

James Manyette
750 Monroe Rd
Sanford, FL 32771

Re: Port Orange Public Utilities Field Ops Bldg; Paint/Flooring:

Dear James,

Please find below our pricing for the above referenced project per the plans and specifications and in accordance with the scope of work listed:

SCOPE OF WORK:

- Paint GWB Walls/Ceilings
- Paint GWB Walls/Ceilings (Epoxy)
- Paint Exposed Ceiling to Deck (Multi-Surface)
- Paint HM Doors and Frames
- Exterior Stucco Painted
- Sealed Concrete ✓
- Pipe Bollards Painted
- Paint Exterior Exposed Steel
- Integral Colored Polished Concrete (priced separately below)
- Epoxy Flooring w/Integral 4" Cove Base (priced separately below)
- Includes all access & hoisting
- Includes all paint related prep and protection

Total Cost Painting:	$ 117,208.00
Total Cost Polished Concrete Flooring:	$ 73,880.00
Total Cost Epoxy Flooring:	$ 14,146.00

If you have any questions, please call me @ 407-331-3805. Thank you for this opportunity.

Sincerely,

Sid Moore

Sid Moore
Senior Estimator / Project Executive
Percopo Coatings Company
Cc: B1240-2024 Bid file

Christine Carasas

From: Jason Bender <jbender@pccusa.com>
Sent: Wednesday, November 13, 2024 4:06 PM
To: Wharton Smith Commercial Estimating
Cc: Sid Moore
Subject: Port Orange Public Utilities Field Ops Bldg
Attachments: Bid Letter to Wharton Smith.pdf

Hey James –

Here is our bid letter for your review. Please let us know if you need anything else.

Thanks so much,

Jason

Percopo Coatings Company

Jason Bender
Estimating Engineer
Percopo Coatings Company
Serving the Southeastern USA with Offices in: *Sarasota | Orlando | Tampa*
Office 407-349-1140
Follow us on LinkedIn *Follow us on Facebook* *Follow us on Instagram*

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Subcontractor Bid Form-General

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	WESTON COATINGS GROUP, INC
Scope of Work:	DIVISION 9 PAINTING

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	$ 212,000
Amount in Words:	TWO HUNDRED, TWELVE THOUSAND DOLLARS AND ZERO CENTS

(1.2) Alternates (Voluntary)

2% DISCOUNT AVAILABLE - SEE PAYMENT TERMS ON PROPOSAL	$ (4,240.00)
SUBSTITUTE SPEC'D TNEMEC COATINGS WITH PPG, SW, OR EQUAL	$ T.B.D.
SUBSTITUTE SPEC'D SCUFFTUFF WITH PPG, SW, OR EQUAL	$ T.B.D.

(1.3) Owner Direct Purchase (value of all purchases exceeding $50,000)

Material/Equipment Types:	PAINTING AND MATERIALS
Amount:	$ TO FOLLOW

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1-15	Dated:	11/7/24	RFI No.		Dated:	
RFI No.	1-24	Dated:	11/11/24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10/22/24	WSI No.	5	Dated:	10/31/24
WSI No.	2	Dated:	10/24/24	WSI No.	6	Dated:	11/4/24
WSI No.	3	Dated:	10/24/24	WSI No.	7	Dated:	11/6/24
	4		10/28/24		8		11/8/24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

Wharton-Smith, Inc.
CONSTRUCTION GROUP

PART 3: BIDDER INFORMATION

WESTON COATINGS GROUP, INC.

Company Name

1901 MASON AVENUE, SUITE 106, DAYTONA BEACH, FLORIDA 32117

Address (Street, City, State, Zip)

386/274-3278 billy@westoncoatings.com

Phone Number **Email Address**

Type of Organization (Check One):

(x) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of FLORIDA.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: WESTON COATINGS GROUP, INC.
By: Billy Christmas
Printed Name: BILLY CHRISTMAS
Title: SENIOR ESTIMATOR/VICE PRESIDENT
Dated: 11/12/24
License No.: CGC 1527211

WHARTON-SMITH, INC.
750 MONROE ROAD
SANFORD, FLORIDA 32771
407/321-8410 - OFFICE

ATTI ESTIMATING
comest@whartonsmith.com

WESTON COATINGS GROUP, INC.
1901 MASON AVENUE - SUITE 106
DAYTONA BEACH, FLORIDA 32117
386/274-3278 - OFFICE
386/274-3279 - FAX
Prepared by ---> billy@westoncoatings.com
ean@westoncoatings.com
mauricio@westoncoatings.com
Please direct all bid invitations to ---> bids@westoncoatings.com

RE: PORT ORANGE PUBLIC UTILITIES OPERATIONS FACILITY
PORT ORANGE, FLORIDA

Bid Date:	1/12/2024
Architect:	SCHENKEL SHULTZ
Addendums:	THRU WSI'S 8; RFI'S 1-24 ACKNOWLEDGED
Plan Date:	9/30/2024
Notes:	BID USING SHERWIN WILLIAMS, PPG, OR EQUAL
DATE OF PROPOSAL:	1/12/2024

AREA	WORK SCOPE ITEM

PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY - DIVISION 9 PAINTING BUDGET:

GYPSUM CEILINGS - SW SCUFF TUFF ENAMEL - ONE COAT DRYWALL PRIMER, TWO COATS FINISH
- GENERAL AREAS
- RESTROOMS

EXPOSED CEILING AREAS - OVERHEAD STEEL STRUCTURE - TNEMEC - 1 COAT TNEMEC SERIES 115, TWO COATS FINISH
- TYPE F2 - EXPOSED CEILING AREAS - PAINTED DRYFALL

GYPSUM WALLS - SW SCUFF TUFF ENAMEL - ONE COAT DRYWALL PRIMER, TWO COATS FINISH - DENOTED AS PTI-G - GENERAL WALL COLOR
- WALL HEIGHTS TO 10' 0"
- WALL HEIGHTS TO 14' 8"
- WALL HEIGHTS TO 7' 6"
- WALL HEIGHTS TO 8' 0"
- WALL HEIGHTS TO 9' 0"
- WALL HEIGHTS TO 9' 0"

GYPSUM WALLS - SW SCUFF TUFF ENAMEL - ONE COAT DRYWALL PRIMER, TWO COATS FINISH - DENOTED AS PTI-A - ACCENT WALL COLOR
- WALL HEIGHTS TO 10' 0"
- WALL HEIGHTS TO 9' 0"

GYPSUM WALLS - PRO INDUSTRIAL WATERBASED CATALYZED EPOXY - ONE COAT PRIMER, TWO COATS FINISH - DENOTED AS PTE-X - GENERAL WALL COLOR
- WALL HEIGHTS TO 10' 0"
- WALL HEIGHTS TO 12' 0"
- WALL HEIGHTS TO 17' 0"
- WALL HEIGHTS TO 7' 6"
- WALL HEIGHTS TO 9' 0"
- WALL HEIGHTS TO 9' 0"

GYPSUM WALLS - PRO INDUSTRIAL WATERBASED CATALYZED EPOXY - ONE COAT PRIMER, TWO COATS FINISH - DENOTED AS PTE-X - ACCENT WALL COLOR
- WALL HEIGHTS TO 10' 0"

CMU WALLS - PRO INDUSTRIAL WATERBASED CATALYZED EPOXY - ONE COAT MASONRY BLOCKFILLER PRIMER, TWO COATS FINISH - DENOTED AS PTE-X
- WALL HEIGHTS TO 12' 0"
- WALL HEIGHTS TO 8' 0"

HOLLOW METAL DOORS AND FRAMES - - PRO INDUSTRIAL WATERBASED CATALYZED EPOXY - ONE COAT RUST INHIBITIVE METAL PRIMER, TWO COATS FINISH
- HOLLOW METAL DOOR FRAMES DOUBLE WIDTH
- HOLLOW METAL DOOR FRAMES SINGLE WIDTH
- TYPE F - HOLLOW METAL DOORS
- TYPE G - HOLLOW METAL DOORS
- TYPE G2 - HOLLOW METAL DOORS
- WOOD DOORS - PREFINISHED BY OTHERS
- STEEL ROLL UP DOORS - PREFINISHED BY OTHERS

CONCRETE FLOORS
- N/A AT THIS TIME

INTERIOR STEEL ACCESSORIES
- PEMB STEEL STRUCTURE AT WAREHOUSE STORAGE

WHARTON-SMITH, INC.
750 MONROE ROAD
SANFORD, FLORIDA 32771
407/321-8410 - OFFICE

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comest@whartonsmith.com

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Prepared by ---> billy@westoncoatings.com
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Please direct all bid invitations to ---> bids@westoncoatings.com

RE: PORT ORANGE PUBLIC UTILITIES OPERATIONS FACILITY
PORT ORANGE, FLORIDA

Bid Date:	1/12/2024
Architect:	SCHENKEL SHULTZ
Addendums:	THRU WSI'S 8; RFI'S 1-24 ACKNOWLEDGED
Plan Date:	9/30/2024
Notes:	BID USING SHERWIN WILLIAMS, PPG, OR EQUAL
DATE OF PROPOSAL:	1/12/2024

AREA	WORK SCOPE ITEM
EXTERIOR ELEVATIONS	
	EXTERIOR STUCCO - LOXON XP - ONE COAT MASONRY PRIMER, TWO COATS FINISH
EXTERIOR STEEL ACCESSORIES - TNEMEC - ONE COAT SERIES 66 POLYAMIDE EPOXY, ONE COAT SERIES 1095 SEMI GLOSS ACRYLIC POLYURETHANE	
	STEEL PIPE BOLLARDS
	PEMB STEEL STRUCTURE AT COVERED WAREHOUSE
	PEMB STEEL STRUCTURE AT PARKING
	TYPE F2 - EXTERIOR COVERED PARKING
MISC	
	MOBILIZATIONS
	EQUIPMENT RENTAL - INTERIOR SCISSOR LIFT
	EQUIPMENT RENTAL - EXTERIOR BOOM LIFT

$212,338.44

PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY - DIVISION 9 PAINTING BUDGET: $212,000.00

BOND COST IF REQUIRED: $5,300.00

PAYMENT TERMS DISCOUNT: TO RECEIVE MONTHLY PROGRESS PAYMENTS AND ALSO TO REDUCE RETAINIAGE FROM 10% TO 5% ONCE 50% COMPLETED 2% -$4,240.00

NOTES:
ALTERNATE VALUE ENGINEERING OPTIONS AVAILABLE TO SUBSTITUE SPECIFIED TNEMEC PRODUCTS WITH SW OR PPG PRODUCTS
ALTERNATE VALUE ENGINEERING OPTIONS AVAILABLE TO SUBSTITUE SPECIFIED SW SCUFFTUFF PRODUCTS WITH OTHER SW OR PPG PRODUCTS

WHARTON-SMITH, INC.
750 MONROE ROAD
SANFORD, FLORIDA 32771
407/321-8410 - OFFICE

ATTI ESTIMATING
comest@whartonsmith.com

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1901 MASON AVENUE - SUITE 106
DAYTONA BEACH, FLORIDA 32117
386/274-3278 - OFFICE
386/274-3279 - FAX
Prepared by —> billy@westoncoatings.com
ean@westoncoatings.com
mauricio@westoncoatings.com
Please direct all bid invitations to —> bids@westoncoatings.com

RE: PORT ORANGE PUBLIC UTILITIES OPERATIONS FACILITY

PORT ORANGE, FLORIDA

Bid Date:	1/12/2024
Architect:	SCHENKEL SHULTZ
Addendums:	THRU WSI'S 8; RFI'S 1-24 ACKNOWLEDGED
Plan Date:	9/30/2024
Notes:	BID USING SHERWIN WILLIAMS, PPG, OR EQUAL
DATE OF PROPOSAL:	1/12/2024

AREA	WORK SCOPE ITEM

EXCLUSIONS:

STAINING/FINISHING OF WOOD SUBSTRATES AT THIS TIME
CONCRETE FLOORS - SEALING, PAINTING - BY OTHERS
DIVISION 7 SEALANTS - BY OTHERS
NO PAINTING M.E.P. PIPING AT THIS TIME
STENCILING OF FIRE RATED WALLS - BY OTHERS
CAULKING OF WINDOWS - BY OTHERS
NO WALLCOVERINGS AT THIS TIME
CAULKING OF HOLLOW METAL DOOR FRAMES INCLUDED - HOWEVER CAULKING OF WINDOW SILLS/STOOLS, TOILET ACCESSORIES, FIRE EXTINGUISHER CABINETS, FIRE DEPARTMENT VALVE CABINETS, ETC - BY OTHERS
NO TEXTURED COATINGS AT THIS TIME
EXTERIOR CMU WALLS - COLOR INTEGRATED SPLIT FACED CMU - BY OTHERS

BOILERPLATE VERBIAGE:

- **All work to be completed in a tradesman like manner according to standard practices. Any alterations or deviations from the enclosed specifications will be executed only upon written request and will become an extra charge over and above the quote. This proposal is subject to acceptance with (90) ninety days and is void thereafter at the discretion of Weston Coatings Group, Inc.**

- **We hereby propose to furnish labor, necessary equipment, materials, and proper insurance's (limited of liability $2,000,000-$2,000,000) complete in accordance with the enclosed specifications.**

- **This proposal only includes two colors on the interior of the building, one standard color on the wall and one standard color on the trim. On the exterior, one standard color for the base or body and one standard color for the trim. All other colors will be extra charge.**

- **We would like a minimum of ten (10) day notice of all scheduled work pertaining to our contract.**
- **This proposal is for normal working hours, Monday through Friday. Any request to work on Saturday will be time and a half (no Sundays).**
- **Punch – (1) General Contractor, (2) Owner**
- **This proposal includes two punch-outs, one for the general contractor and one for the owner.**
- **Wallcovering prices are valid for sixty (60) days from proposal date noted above**
- **This proposal is valid for ninety (90) days from proposal date noted above.**

Christine Carasas

From: Billy Christmas <billy@westoncoatings.com>
Sent: Tuesday, November 12, 2024 7:52 PM
To: James Manyette; Wharton Smith Commercial Estimating
Cc: Ean Clay
Subject: WHARTON SMITH - PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY - DIVISION 9 PAINTING BUDGET - 241112
Attachments: WHARTON SMITH - PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY - DIVISION 9 PAINTING BUDGET AND BID FORM - 241112.pdf

Importance: High

James,

Please see attached for your review and approval.

If there are any questions or clarifications, please feel free to call.

Sincerely,

Billy Christmas | **Senior Estimator** | billy@westoncoatings.com
Weston Coatings Group, Inc. | **Birmingham, Alabama**
386/689-0060 Cell

Daytona Beach | **Birmingham** | Johnson City | Jacksonville | Fort Myers

Please direct all bid invitations to **bids@westoncoatings.com**

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Bradleigh Applications, Inc.

Serving the Mid-Atlantic & Florida Regions Since 1980

Providing - Stucco, EIFS, Air Vapor Barriers,
Venetian, Veneer and Traditional Plasters,
Acoustic Plaster, Spray Acoustic, and more.

Stucco / AVB Bid Proposal - 11/12/2024

Wharton Smith, Inc.
750 Monroe Road, Sanford, FL 32771
Attn: James Manyette - comest@whartonsmith.com

Project: **Port Orange Public Utilities Field Ops Bldg. - 4505 Clyde Morris Blvd, Port Orange, FL 32129**

Dear James,
Bradleigh Applications, Inc. proposes to furnish and install the scope below at the above referenced project, based on the architectural plans dated 9/30/2024 and subject to the following inclusions and exclusions:

INCLUSIONS:

1) **Scope #1 - 5/8" Stucco Direct Apply to CMU @ Warehouse**
   a. Prosoco R-Guard CAT-5 Fluid Applied AVB direct applied to CMU (w/Fast Flash treatment @ openings) w/Stucco Prime to allow for direct bond stucco.
   b. 5/8" Vinyl beads.
   c. 5/8" Stucco Quikrete FRS Factory premix stucco cement mix.
   d. Stucco sand float texture (ready for paint by others).
2) **Scope #2 – AVB Direct Apply to CMU behind metal panels, Split Face Block.**
   a. Prosoco R-Guard CAT-5 Fluid Applied AVB direct applied to existing CMU/Precast substrate, w/Fast Flash @ openings.
3) **Scope # 3 – AVB Direct Apply to Sheathing Substrate @ Soffits.**
   a. Prosoco R-Guard CAT-5 Fluid Applied AVB applied to existing substrate.
4) Means of access is based on a lift & baker scaffold (for our use only).
5) One (1) mobilization has been included in our price.
6) Sales tax.

EXCLUSIONS:

1) Any scope on Admin. Bldg. East Elevation (L1/A201).
2) Bullnose Corer beads/trim.
3) All metal flashings and copings (to be furnished and installed by others, unless noted above).
4) Caulking (to be furnished and installed by others, unless noted above).
5) Prefinished aluminum flashing at window heads and bottom of Stucco/brick transition.
6) Framing & approved substrate (to be furnished and installed by others).
7) Liquid applied air/moisture barrier or Tyvek (unless noted above).
8) Galvanized beads, FRY or zinc lath accessories (unless noted above).
9) Any acrylic finish (painting by others).
10) Composite clean-up crew.
11) Dumpsters, restroom, potable water and 120 electric service is required and to be supplied and maintained by others.
12) Wage scale, Permits, Special Hiring requirements, MBE, & other requirements.
13) Bond (Add 2.5% if required)

Our base price for the Scope of Work described above is $93,965.

Sincerely,
Bill Dick
President of Bradleigh Applications, Inc.
Celebrating Over 40 Years of Excellence Since 1980

Christine Carasas

From: Jeff Bridges
Sent: Tuesday, November 12, 2024 3:59 PM
To: Wharton Smith Commercial Estimating
Subject: FW: Port Orange Public Utilities Field Ops Bldg.- Stucco/AVB proposal.
Attachments: Port Orange Public Utilities Field Ops Bldg._Wharton Smith_11-12-24.pdf

Jeff Bridges | Preconstruction Services Manager – Commercial
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771
Office: (407) 321-8410 | Cell: (407) 408-5660

From: Chip Robart <Chip@bradleighapplications.com>
Sent: Tuesday, November 12, 2024 3:19 PM
To: James Manyette <jmanyette@whartonsmith.com>
Cc: Eric Pickens <eric@bradleighapplications.com>; Adriana Salazar <Adriana@bradleighapplications.com>; Gena Capstick <gcapstick@bradleighapplications.com>; Courtney Micucci <courtney@bradleighapplications.com>; Jeff Bridges <jbridges@whartonsmith.com>
Subject: Port Orange Public Utilities Field Ops Bldg.- Stucco/AVB proposal.

James-

Attached is our proposal for the Stucco & AVB scope.

Let me know if you have any questions.

Thanks!

Chip Robart
Sr. Project Manager/Estimator
Bradleigh Applications, Inc.

Mailing Address:
2144 Priest Bridge Court | Suite 6 | Crofton, MD 21114

Florida Address:
131 S. Bradshaw Rd. | Apopka, FL 32703
Cell: 352-408-0766
Direct: 240-856-4399

chip@bradleighapplications.com
www.bradleighapplications.com

Air Barrier, EIFS, Stucco, Veneer & Venetian Plaster, Architectural Coatings, Acoustical Plaster, BASWAphon, Star Silent, Pyrok.

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Acoustic Plaster, Spray Acoustic, and more.

Stucco / AVB Bid Proposal - 11/14/2024_Rev-1

Wharton Smith, Inc.
750 Monroe Road, Sanford, FL 32771
Attn: James Manyette - jmanyette@whartonsmith.com
Project: **Port Orange Public Utilities Field Ops Bldg. - 4505 Clyde Morris Blvd, Port Orange, FL 32129**

Dear James,
Bradleigh Applications, Inc. proposes to furnish and install the scope below at the above referenced project, based on the architectural plans dated 9/30/2024 and subject to the following inclusions and exclusions:

INCLUSIONS:

1) **Scope #1 - 5/8" Stucco Direct Apply to CMU @ Warehouse (Approx. 2,765-SF) & Admin. Bldg. East Elevation (L1/A201) only (Appprox. 1,305-SF).**
    a. Prosoco R-Guard CAT-5 Fluid Applied AVB direct applied to CMU (w/Fast Flash treatment @ openings) w/Stucco Prime to allow for direct bond stucco.
    b. 5/8" Vinyl beads.
    c. 5/8" Stucco Quikrete FRS Factory premix stucco cement mix.
    d. Stucco sand float texture (ready for paint by others).
2) Means of access based on a lift & scaffold (for our use only).
3) One (1) mobilization has been included in our price.
4) Sales tax.

EXCLUSIONS:

1) Bullnose Corer beads/trim.
2) All metal flashings and copings (to be furnished and installed by others, unless noted above).
3) Caulking (to be furnished and installed by others, unless noted above).
4) Prefinished aluminum flashing at window heads and bottom of Stucco/brick transition.
5) Framing & approved substrate (to be furnished and installed by others).
6) Liquid applied air/moisture barrier or Tyvek (unless noted above).
7) Galvanized beads, FRY or zinc lath accessories (unless noted above).
8) Any acrylic finish (painting by others).
9) Composite clean-up crew.
10) Dumpsters, restroom, potable water and 120 electric service is required and to be supplied and maintained by others.
11) Wage scale, Permits, Special Hiring requirements, MBE, & other requirements.
12) Bond (Add 2.5% if required)

Our base price for the Scope of Work described above is $64,552.

Sincerely,
Bill Dick
President of Bradleigh Applications, Inc.
Celebrating Over 40 Years of Excellence Since 1980

Christine Carasas

From: Jeff Bridges
Sent: Thursday, November 14, 2024 4:13 PM
To: Wharton Smith Commercial Estimating
Cc: James Manyette
Subject: FW: Port Orange Public Utilities Field Ops. Bldg.- Stucco Proposal Rev-1
Attachments: Port Orange Public Utilities Field Ops Bldg._Wharton Smith_11-14-24_Rev-1.pdf

09_Stucco_Bradleigh Applications_R1

Jeff Bridges | Preconstruction Services Manager – Commercial
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771
Office: (407) 321-8410 | Cell: (407) 408-5660

From: Chip Robart <Chip@bradleighapplications.com>
Sent: Thursday, November 14, 2024 3:48 PM
To: Jeff Bridges <jbridges@whartonsmith.com>; James Manyette <jmanyette@whartonsmith.com>
Cc: Eric Pickens <eric@bradleighapplications.com>; Adriana Salazar <Adriana@bradleighapplications.com>; Gena Capstick <gcapstick@bradleighapplications.com>; Courtney Micucci <courtney@bradleighapplications.com>
Subject: Port Orange Public Utilities Field Ops. Bldg.- Stucco Proposal Rev-1

Hey Guys-

Revised proposal attached, for the Stucco Scope only (including AVB behind stucco only).

Let me know if you have any questions.

Thanks!

Chip Robart
Sr. Project Manager/Estimator
Bradleigh Applications, Inc.

Mailing Address:
2144 Priest Bridge Court | Suite 6 | Crofton, MD 21114

Florida Address:
131 S. Bradshaw Rd. | Apopka, FL 32703
Cell: 352-408-0766
Direct: 240-856-4399

chip@bradleighapplications.com
www.bradleighapplications.com

Air Barrier, EIFS, Stucco, Veneer & Venetian Plaster, Architectural Coatings, Acoustical Plaster, BASWAphon, Star Silent, Pyrok.

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PROPOSAL

Client Information

PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

Scope of Work (Labor, material, access)

STUCCO SCOPE:

1. Provide, erect, and dismantle scaffold for our scope.
2. Install Sto gold coat (fluid applied air and moisture barrier) over substrates receiving stucco.
3. Attach a vinyl weep screed at base of substrate walls.
4. Attach vinyl stucco trims e,g, casing beads, X1 corner beads, 1” wide reveals.
5. Attach G60 3.4 weight paper-backed diamond lath over substrates.
6. Apply 7/8” " thick 3 coat fiber reinforced natural gray pre-blended C-150 stucco over framed substrates and render to a sand floated" texture.

Cost

$63,500.00 prints date 9/30/24

Exclusions

Split-faced block, framing/sheathing, engineering, caulking, sealants, flashings, blocking, soffits, painting, acrylic or elastomeric coatings over stucco, integral colored stucco, metal panels-ceilings-soffits, insulation and weather barrier behind metal panels, interior scope, insulation, ceiling scope, site structures scope, planters, property walls, signage, dumpster and transformer enclosures, wash down ramp, storage bin areas, scope at parking structures.

Conley Minott – Owner
E: conley@cammplasters.com
P: 407-810-8094

November 9, 2024

Christine Carasas

From: ConstructConnect <DoNotReply@constructconnectmail.com>
Sent: Saturday, November 9, 2024 5:20 PM
To: Wharton Smith Commercial Estimating
Subject: Received bid for Port Orange Public Utilities Field Ops Bldg.

A simpler, more effective bid process

You've received a bid from CAMM Plasters LLC via ConstructConnect

Port Orange Public Utilities Field Ops Bldg.

Project Details

Project Name	Port Orange Public Utilities Field Ops Bldg.
Bid Date	Nov 12, 2024 @ 02:00 PM ET
Project ID	6613997

View Project

Bid Details

Company	CAMM Plasters LLC
Bid Amount	$63,500
Submission Date	Nov 09, 2024 @ 05:20 PM ET
Description	stucco proposal
Bid Attachments	PORT ORANGE PUBLIC UTILITIES Proposal.pdf

Contact Details

Primary Contact	Conley Minott

Email conley@cammplasters.com
Phone (407) 810-8094
Website



Support Number: (877) 4CC-TOOL (422-8665)

Email: customerservice@constructconnect.com

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Reyes Stucco Inc (SU 126)
Cocoa FL 32926
(321)576-3537
www.ReyesStucco.com
reyesstucco9@gmail.com

08 Nov. 2024

Proposal submitted: Wharton-Smith Inc
Job Site: Port Orange Public Utilities Bldg.

We hereby submit specifications and estimates for: “Stucco”

The following price is for the exterior of the building--
The price includes:

- Material provided by Reyes Stucco Inc
- Labor/Work
- Bonding agent Adhesive
- Waterproof material
- Black Paper to cover the floor and Window Guard to cover windows; if necessary - Scaffolds

Scope Of Work: Stucco

- Install Metal Lath
- Install corner bead
- Apply Bonding adhesive agent
- Apply scratch coat
- Apply second coat
- Apply final coat to exterior walls
- No color in stucco mix
- Sand Finish Texture
- Clean up daily

We propose hereby to furnish material and labor-- complete in accordance with the above specifications, for the sum of: $39,500.00

All material is guaranteed to be specified. All work is to be completed in a workmanlike manner according to standard practices. Any alteration or deviation from above specifications involving extra costs will be executed only upon written orders, and will become an extra charge over and above the estimate. our workers are fully covered by Workman's Compensation Insurance.

Christine Carasas

From: Jorge Reyes <reyesstucco9@gmail.com>
Sent: Friday, November 8, 2024 6:25 PM
To: Wharton Smith Commercial Estimating
Subject: Reyes Stucco Inc- Port Orange Public Utilities Bid
Attachments: Wharton-Smith Port Orange Public Utilities .pdf

Good afternoon,

Here is our bid for this project. Thank you.

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Christine Carasas

From: Jeff Bridges
Sent: Friday, November 15, 2024 1:29 PM
To: Wharton Smith Commercial Estimating
Cc: James Manyette
Subject: FW: Port Orange Public Works Building

09_Stucco_Reyes Stucco_R1

Jeff Bridges | Preconstruction Services Manager – Commercial
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771
Office: (407) 321-8410 | Cell: (407) 408-5660

From: Jorge Reyes <reyesstucco9@gmail.com>
Sent: Friday, November 15, 2024 11:52 AM
To: Jeff Bridges <jbridges@whartonsmith.com>
Subject: Re: Port Orange Public Works Building

Wharton-Smith Port Orange Public…

Here you go. Let me know if you need anything else.

Jorge Reyes Jr
Project Manager
Reyes Stucco Inc
(321)576-3537

On Thu, Nov 14, 2024 at 15:21 Jeff Bridges <jbridges@whartonsmith.com> wrote:

> Only behind your work.

Don’t forget to pick up the stucco at the elevations for the breezeway #200 between the 2 buildings.

Jeff Bridges | Preconstruction Services Manager – Commercial

Wharton-Smith, Inc. | Construction Group of Choice |
www.whartonsmith.com

750 Monroe Road, Sanford, FL 32771

Office: (407) 321-8410 | Cell: (407) 408-5660

From: Jorge Reyes <reyesstucco9@gmail.com>
Sent: Thursday, November 14, 2024 1:11 PM
To: Jeff Bridges <jbridges@whartonsmith.com>
Subject: Re: Port Orange Public Works Building

Jeff, let me look into it. Do we need to include applying r guard on the whole building? We only have priced as applying it on only stucco areas.

Jorge Reyes Jr
Project Manager
Reyes Stucco Inc
(321)576-3537

On Wed, Nov 13, 2024 at 21:47 Jorge Reyes <reyesstucco9@gmail.com> wrote:

> Good afternoon,

Here is revised pricing with 5/8” stucco, R guard AVB and additional east side elevation potential work.

PDF

Wharton-Smith Port Orange Public…

Jorge Reyes Jr
Project Manager
Reyes Stucco Inc
(321)576-3537

On Wed, Nov 13, 2024 at 06:10 Jeff Bridges <jbridges@whartonsmith.com> wrote:

> Yes please include the AVB and I didn't see any other options in the plans or specs, so price it with the R-Guard.
>
> Thank you, Jorge.
>
> Jeff Bridges
>
> 407-408-5660

From: Jorge Reyes <reyesstucco9@gmail.com>
Sent: Tuesday, November 12, 2024 4:34:34 PM
To: Jeff Bridges <jbridges@whartonsmith.com>
Subject: Re: Port Orange Public Works Building

Good afternoon,

We need to adjust our pricing then. We have it priced as lath installed. We did not include AVB, does it have to be R guard or can a similar product be used? I can take a look at the east elevation and separate pricing for that part as it is not decided yet.

Jorge Reyes Jr
Project Manager
Reyes Stucco Inc
(321)576-3537

On Tue, Nov 12, 2024 at 16:30 Jeff Bridges <jbridges@whartonsmith.com> wrote:

> Scope questions / comeback items:
>
> Need answers or clarifications to the items listed below.
>
> 1. Confirm that you are including and proposing the Prosoco R-Guard AVB behind stucco
> 2. Stucco is 5/8” and not 7/8”, so lath is not needed
> 3. Need an add for the east elevation that shows up on L1/A201.
>
>   a. It is not called out and we are not sure at this point what it is.

Jeff Bridges | Preconstruction Services Manager – Commercial

Wharton-Smith, Inc. | Construction Group of Choice |
www.whartonsmith.com

750 Monroe Road, Sanford, FL 32771

Office: (407) 321-8410 | Cell: (407) 408-5660

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Milcarsky's Appliance Centre
Superior Selection.....Superior Service

QUOTE

1180 Emma Oaks Trail, Unit 1038
Lake Mary, FL 32746
(407) 830-6800

Invoice Date	Invoice Number
11/15/2024	**Q00014072**
Schedule Date	Page
	1 of 1

Bill To: **WHARTON**

WHARTON SMITH
750 MONROE RD
SANFORD, FL 32771

Ship To: **WHARTON**

WHARTON SMITH, PORT ORANGE UTILITIE
UNDEFINED UNDEFINED
PT ORANGE, FL 32123

Salesperson	Terms	Customer P.O.	Reference	Printed Date
JAY MORRIS	10 DAY ACCOUNT			11/15/2024

QTY	Brand	Model	Description	Price	Ext Price
4	GE	GFE24JYKFS	GE(R) ENERGY STAR(R) 23.6 CU. FT. FRENCH-DOOR REFR	2,600.00	10,400.00
1	GE	GRS500PVSS	GE(R) 30 SLIDE-IN ELECTRIC RANGE WITH CRISP MODE	800.00	800.00
3	GE	PES7227SLSS	GE PROFILE(TM) 2.2 CU. FT. COUNTERTOP SENSOR MICRO	459.00	1,377.00
2	SPEED	TC5003WN	TC5 TOP LOAD WASHER WITH SPEED QUEEN(R) CLASSIC CL	1,349.00	2,698.00
2	SPEED	DC5003WE	DC5 SANITIZING ELECTRIC DRYER WITH EXTENDED TUMBLE ** INSTALL FOR COMMERCIAL ICEMAKER NOT INCLUDED IN INSTALL PRICE IT WILL NEED TO BE SOURCED THROUGH WHARTON SMITH**	1,349.00	2,698.00
2		SO	KMD355MAJ	4,270.00	8,540.00
2	HOS	BD500SF	30" W ICE STORAGE BIN, SS EXTERIOR	1,800.00	3,600.00
2		SO	H932051	320.00	640.00
4		REF-KIT	REF WATER CONNECTION KIT	20.00	80.00
1		RANGE CORD	POWER CORD FOR RANGE	22.00	22.00
1		MAC-INSTALL	INSTALLATION & DELIVERY	499.00	499.00

EXTENDED WARRANTY ☐ **YES** ☒ **NO** **REMOVAL OF OLD UNITS** ☐ **YES** ☒ **NO**

Terms and Conditions

* Federal Law provides that the buyer shall give the seller an opportunity to make necessary repairs to merchandise. Customer agrees to accept service in accordance with the terms of the manufacturer's warranty. Replacement will only be allowed under the terms of the manufacturer's warranty and Customer Service department.
* Quoted prices are good for 14 days, unless otherwise stated in the quote or invoice.
* Quoted installation charges are based on a "standard" installation (i.e., not requiring any modifications to complete the installation at initial delivery). Any modifications to appliances, cabinetry, electrical or plumbing will incur additional charges and will be quoted at that time based on time, materials and complexity and may need to be completed at a later date.
* Standard delivery is also based on a first-floor delivery of not more than six steps. Additional charges will apply in excess of that and may require a lull or crane and/or subcontractor to set the appliances in place at your expense.
* If, for any reason, we are unable to complete the delivery and/or installation at the scheduled time, additional fees will be charged for a return trip and mileage.
* Milcarsky's reserves the right to refuse any installation if our employee determines that it is unsafe to attempt the delivery or installation or risks damage to your home and its contents.
* The customer or agent authorized by the customer must sign for all products. Products will not be left without a signature and confirmation that product was received in good condition. All authorized agents must be a minimum of 18 years of age.
* Customer is responsible to ensure that all tradespeople associated with their project have product specifications and are made aware of any changes and that customer has verified that products selected meet customer needs, requirements, size, features, color, electrical, cabinetry, ventilation and local and federal building code requirements.
* All orders must be paid in full at time of order. Payment in full will guarantee pricing but does not imply that Milcarsky's is physically holding product in its warehouse. Less than full payment at order placement does not lock in pricing. Payment in full is required before delivery. A monthly late fee of 1.5% will be applied to ALL overdue invoices.
* A minimum 14-day lead time is required before scheduling delivery.
* Once your order is "complete", you will have 30 days to take delivery or storage fees will apply
* All authorized returns and cancellations are subject to a 35% restocking fee and must be in un-opened, original box.
* Special-order items are to be paid in full when the order is placed and are not returnable.
* Open box and outlet models are sold as-is unless otherwise stated.
* No returns are allowed on trim kits, accessories, duct covers, ventilation or auxiliary items or kits.

By signing below, customer has acknowledged above information and confirms order with no changes.

SUBTOTAL	**$31,354.00**
SALES TAX 6.50	**$2,038.01**
TOTAL	**$33,392.01**
AMOUNT RECEIVED	**$0.00**
BALANCE DUE	**$33,392.01**

Customer Signature _____ **Date** _____

Milcarsky's Appliance Centre'

Superior Selection.....Superior Service

Specifications for Project

UNDEFINED UNDEFINED

WHARTON SMITH

UNDEFINED UNDEFINED
PT ORANGE, FL 32123

Salesperson

Jay Morris

jay.morris@milcarsky.com

REMINDER: To ensure a smooth project it is the responsibility of the homeowner / purchaser of appliances for this project to share all the attached specifications to ensure the cabinet provider, contractor, or any other tradesperson have all the information required to complete their work accurately.

Specifications are subject to change. If any tradesperson has questions regarding the attached specifications please contact our sales associate.

Powered by SteelCod

UNDEFINED UNDEFINED

WHARTON SMITH

UNDEFINED UNDEFINED
PT ORANGE, FL 32123



Milcarsky's Appliance Centre'
milcarsky.com

Jay Morris
407 830 6800 Ext 136

Quote **Q00014072**
Version 1.1

Fri, Nov 15, 2024
1:56 PM EST

enterprise.steelcod.com/sp/msky/TLDLCKS1

Contents *Page no.*

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GE ENERGY STAR 23.6 Cu. Ft. French-Door Refrigerator

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GE Range
30" Slide-In Electric Range

PES7227SLSS 10-11
GE Microwave
GE Profile 2.2 Cu. Ft. Countertop Sensor Microwave Oven

TC5003WN 12-14
SpeedQueen Washer
Top Load Washer

DC5003WE 15-18
SpeedQueen Dryer
Electric Dryer

BD500SF 19-20

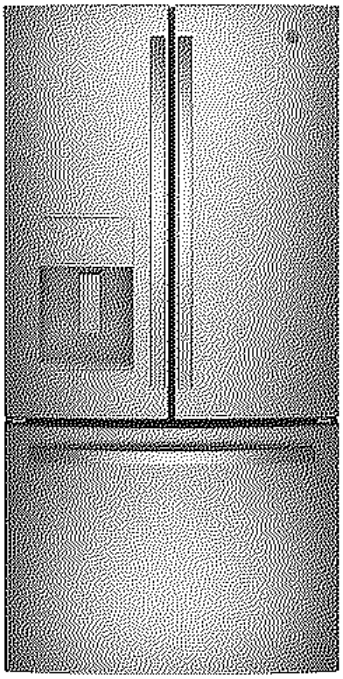
Note about page numbers:
Because the original manufacturer's documents are not altered in any way, the page numbers displayed on the page may not correspond to the page number within this package.

All specifications are intended for initial planning purposes only.
Manufacturers reserve the right to change specifications at any time without notice. Always consult the installation instructions found on the manufacturer's website or included with the appliances before installation.

Hoshizaki Refrigeration

Note about page numbers:
Because the original manufacturer's documents are not altered in any way, the page numbers displayed on the page may not correspond to the page number within this package.

All specifications are intended for initial planning purposes only.
Manufacturers reserve the right to change specifications at any time without notice. Always consult the installation instructions found on the manufacturer’s website or included with the appliances before installation.



Model#: GFE24JYKFS

GE® ENERGY STAR® 23.6 Cu. Ft. French-Door Refrigerator

Approx Dimensions (HxDxW):
69 7/8 in X 37 1/2 in X 32 3/4 in

- Fingerprint Resistant Stainless - Easily wipe away smudges and fingerprints for a look that's always sparkling clean
- 33" width - A compact design fits in smaller spaces, yet still offers the large storage capacity of a French-door refrigerator
- Space-saving icemaker - Located on the door with integrated bins to create more usable storage space
- External controls with child lock and door alarm - Eliminates the guesswork in setting refrigerator temperatures; conveniently displayed on the dispenser
- LED lighting - Find exactly what you've been looking for under crisp, clear lighting
- Two humidity-controlled drawers and full-width drawer - Create the right environment for keeping fruits and vegetables fresh, while easily storing wider items like a party platter or a sheet cake

Warranty Information:

- Parts Warranty : Limited 1-year entire appliance
- Labor Warranty : Limited 1-year entire appliance
- Warranty Notes : See written warranty for full details

Also Available in:
GFE24JGKWW - White
GFE24JMKES - Fingerprint Resistant Slate
GFE24JGKBB - Black
GFE24JBLTS - Fingerprint Resistant Black Stainless

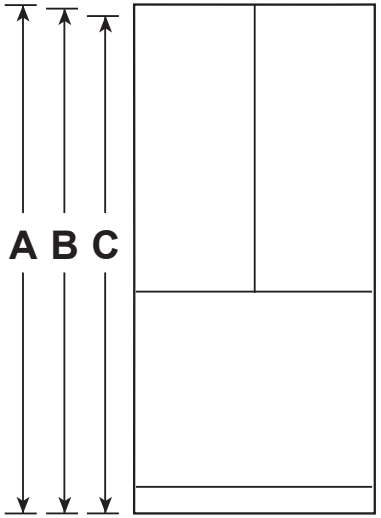
GFE24JMK/JYK/JGK

GE® ENERGY STAR® 23.6 Cu. Ft. French-Door Refrigerator

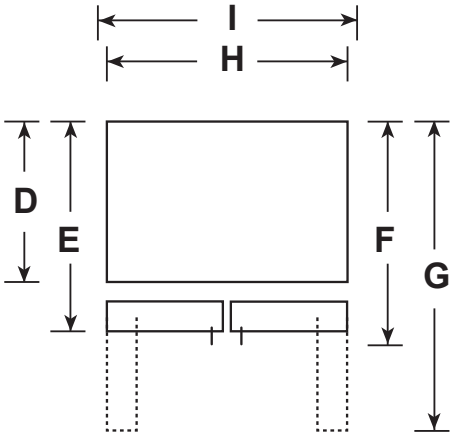
DIMENSIONS AND INSTALLATION INFORMATION (IN INCHES)

OVERALL DIMENSIONS	Height to top of door (in.) **A**	**69-7/8**
	Height to top of hinge (in.) **B**	**69-3/4**
	Height to top of case (in.) **C**	**68-5/8**
	Case depth without door (in.) **D**	**30-5/8**
	Case depth less door handle (in.) **E**	**35**
	Case depth with door handle (in.) **F**	**37-1/2**
	Depth with fresh food door open 90˚ (in.) **G**	**48-3/8**
	Width (in.) **H**	**32-3/4**
	Width with door open 90˚ inc. door handle (in.) **I**	**40-7/8**
AIR CLEARANCES	Each side (in.)	**1/8**
	Top (in.)	**1**
	Back (in.)	**2**

FRONT VIEW



TOP VIEW



Listed by Underwriters Laboratories

As an ENERGY STAR® partner, GE has determined that this product meets the ENERGY STAR guidelines for energy efficiency.

GE APPLIANCES

For answers to your Monogram, GE Café™, GE Profile™ or GE Appliances product questions, visit our website at geappliances.com or call GE Answer Center® Service, 800.626.2000.

Specification Revised 8/21

GE APPLIANCES
a Haier company



GRS500PVSS

GE 30" Slide-In Electric Range

Trim Kit	Optional | JXFILLR1BB
Color Appearance	Stainless Steel
Control Knobs	Stainless Steel Appearance
Handle Color	Stainless Steel
Oven Door Features	Big View Oven Window | Clearview Glass Door | Stainless Overlay
Total Capacity (cubic feet)	5.30 cu ft
Configuration	Range with Storage Drawer
Control Location	Front
Control Type	Cap Touch Controls
Cooking Technology	Traditional
Cooktop Burner Type	Radiant | Smoothtop
Cooktop Surface	Black Ceramic Glass
Cooktop Type	Radiant Smoothtop
Drawer Type	Storage
Element - Center	6" 80W Warming Zone
Element - Left Front	9"/6" 3100W Power Boil
Element - Left Rear	6" 1200W
Element - Right Front	9"/6" 3100W Power Boil

Specifications are subject to change without warning. Specifications are intended for initial planning purposes and any final planning, cabinet & countertop cutouts, etc. should be calculated using the manufacturer's installation guide or actual appliance.

Element - Right Rear	6" 1200W
Express Preheat	Yes
Fuel Type	Electric
Heating Element "ON" Indicator Light	1
Hot Surface Indicator Lights	1
Interior Oven Light	1 Light
OU Certified	OU/CRC Enhanced Shabbos Mode, when used with Shabbos Keeper, sold separately
Oven Cleaning Type	Self-Clean with Steam Clean Option
Oven Control Features	Certified Sabbath Mode | Hi / Low Broil | Oven "ON" Light | Cook Time | Timer | Warm Mode
Oven Cooking Modes	Bake | High Broil | Low Broil | Crisp Mode
Oven Features	4-Pass Bake Element | 4-Pass Broil Element
Oven Interior	Black Enamel
Oven Rack Features	2 Nickel Racks
Oven Rack Positions (Single or Upper/Lower)	6
Product Type	Slide-In Single Oven
Sabbath Mode	Yes
Amp Rating at 208V	40
Amp Rating at 240V	40
Bake Wattage	2585W
Broiler Wattage	3410W
KW Rating at 208V	9.1
KW Rating at 240V	12.1
Labor Warranty	Limited 1-year entire appliance
Parts Warranty	Limited 1-year entire appliance
Warranty Notes	See written warranty for full details
Approximate Shipping Weight	157 lb
Cabinet Width	30 in
Depth with Door Open	48 1/4 in
Depth Without Handle	26 1/4 in
Height to Cooking Surface (in.)	35 5/8 - 36 1/2

Specifications are subject to change without warning. Specifications are intended for initial planning purposes and any final planning, cabinet & countertop cutouts, etc. should be calculated using the manufacturer's installation guide or actual appliance.

Height to Top of Rear Vent Trim	36 5/8 in
Net Weight	147 lb
Oven Interior Dimensions (W x H x D) (in.)	24-1/8 x 19-1/4 x 19-1/2
Overall Depth	28 5/8 in
Overall Height	37 1/8 in
Overall Width	30 in

Specifications are subject to change without warning. Specifications are intended for initial planning purposes and any final planning, cabinet & countertop cutouts, etc. should be calculated using the manufacturer's installation guide or actual appliance.

GRS500PV

GE® 500 Series 30" Slide-in Electric Range

DIMENSIONS AND INSTALLATION INFORMATION (IN INCHES)

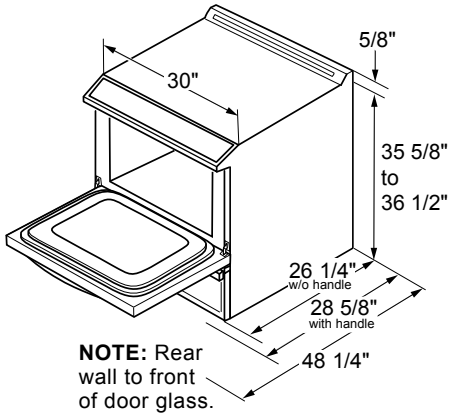
RECEPTACLE LOCATIONS: Locally approved flexible service cord or conduit must be used because terminals are not accessible after range installation. See shaded area in drawing for location of electrical outlet box. Recommended outlet locations allow range to be installed directly against rear wall.

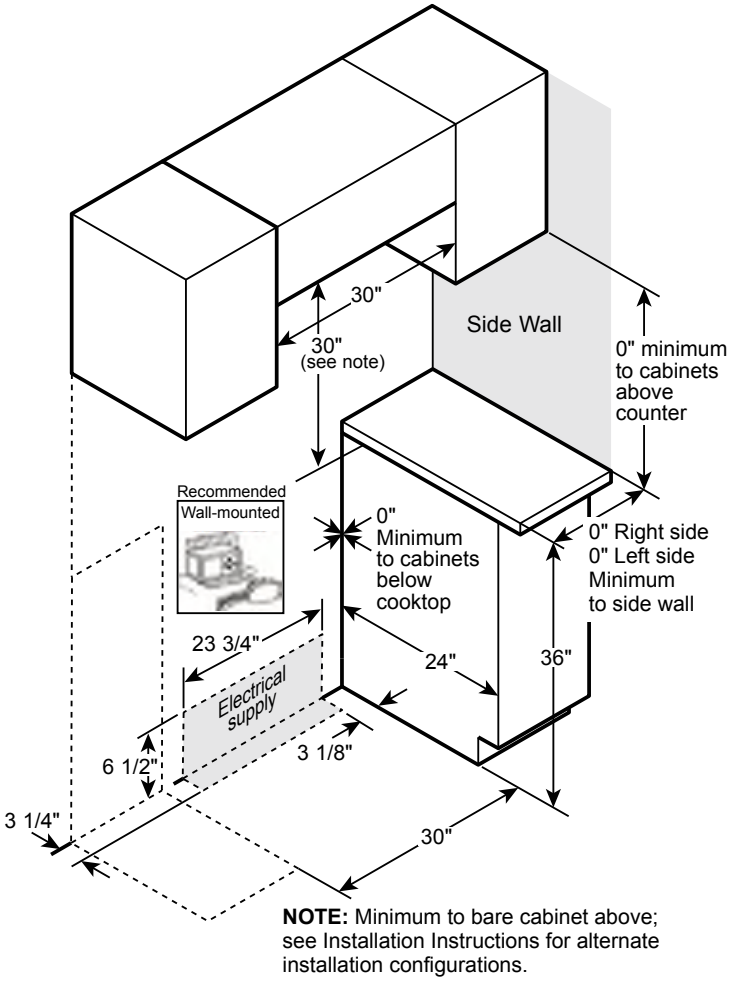
NOTE: This appliance has been approved for 0" spacing to adjacent surfaces above the cooktop. However, a 6" minimum spacing to surfaces less than 15" above the cooktop and adjacent cabinet is recommended to reduce exposure to steam, grease splatter and heat.

INSTALLATION INFORMATION: Before installing, consult installation instructions for current dimensional data and additional requirements.

KW RATING	
240V	12.1
208V	9.1
BREAKER SIZE	
240V	40 Amps†
208V	40 Amps†

†**NOTE:** Check local codes for required breaker size.





GE APPLIANCES

For answers to your Monogram, Café™, GE Profile™ or GE Appliances product questions, visit our website at geappliances.com or call GE Answer Center® Service, 800.626.2000.

GE APPLIANCES FIT GUARANTEE

Listed by Underwriters Laboratories

ADA COMPLIANT

All GE ranges are equipped with an Anti-Tip device. The installation of this device is an important, required step in the installation of the range.

Specification Revised 12/23

GE APPLIANCES
a Haier company

Model#: PES7227SLSS

GE Profile™ 2.2 Cu. Ft. Countertop Sensor Microwave Oven



Approx Dimensions (HxDxW):
14 in X 19 3/4 in X 24 1/8 in

- 2.2 cu. ft. capacity - 1100 watts (IEC-705 test procedure)
- Sensor cooking controls - Automatically adjusts time and power for delicious cooking results
- Weight and time defrost - Simply enter the weight of the food, and the oven automatically sets the optimal defrosting time and power level or set your desired time for defrosting
- Extra-large 16" turntable - Rotates food throughout the cycle and accommodates large cookware
- Instant On controls - One-touch instant operation
- Control lockout - Helps prevent accidental activation
- "Add 30 seconds" button - Add 30 seconds of microwave cooking time

Warranty Information:

- Parts Warranty : Limited 1-year entire appliance
- Labor Warranty : Limited 1-year entire appliance
- Warranty Notes : See written warranty for full details

Also Available in:
PES7227DLBB - Black
PES7227DLWW - White
PES7227ELES - Slate
PES7227BLTS - Black Stainless
PES7227FMDS - Black Slate

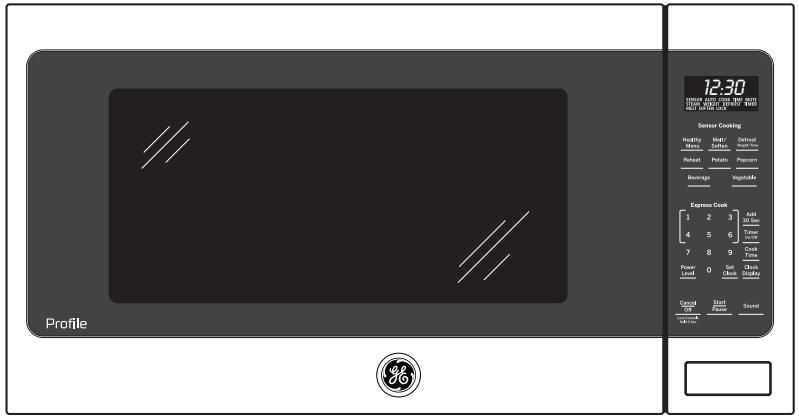
PES7227DL/SL/EL/BL/FM

GE Profile™ Series 2.2 Cu. Ft. Countertop Sensor Microwave Oven

DIMENSIONS AND INSTALLATION INFORMATION (IN INCHES)

EXTERIOR DIMENSIONS* (IN INCHES)	
W x H x D	24-1/8″ x 14″ x 19-3/4″

*Height includes feet. Depth does not include handle.



This unit designed to be placed on countertop.

GE APPLIANCES

For answers to your Monogram, GE Café™ Series, GE Profile™ Series or GE Appliances product questions, visit our website at geappliances.com or call GE Answer Center® Service, 800.626.2000.

Listed by Underwriters Laboratories

Specification Revised 8/19

TOP LOAD WASHERS



TR7



TR5



TR3



TC5

Product Code	TR7003WN *(White)* TR7003BN *(Matte Black)*	TR5003WN	TR3003WN	TC5003WN *(White)* TC5003BN *(Matte Black)*
Capacity – Cu. Ft.	3.2	3.2	3.2	3.2
Stainless Steel Wash Tub	•	•	•	•
Porcelain Outer Tub	•	•	•	•
Automatic Balancing System	•	•	•	•
Agitator	•	•	•	•
Durable 3 - Coat Finish	•	•	•	•
End-of-Cycle Signal	•	•	•	•
Preset Cycles	16	6	4	6
Temperature Selections	4	4	3	4
Load Size Selections	4	3	3	2
Soil Level Selections	4	2	2	2
Speed Queen Perfect Wash™	•	•	•	
Variable Speed, 1 HP Motor	•	•	•	
Quiet Agitation (43dB)	•	•	•	
Speed Queen Classic Clean™				•
Two-Speed, ¾ HP Motor				•
Pre-Wash	•			
Time Remaining Display	•			
Favorite Cycles	•			
Speed Cycle	•			
Delay Start	•			
Warranty	7-Year Parts & Labor	5-Year Parts & Labor	3-Year Parts & Labor	5-Year Parts & Labor
Model No.	AWNE9RSN116TW01 AWNE9RSN116TB01	AWN63RSN116TW01	AWN43RSN116TW01	AWN632SP116TW02 AWN632SP116TB02
UPC	810084500026 810084500606	810084500019	810084500002	810084500033 810084500750

Agency approvals: cULus

For the most accurate information, the installation guide should be used for all design and construction purposes. Due to continuous product improvements, design and specifications are subject to change without notice. The quality management systems of Alliance Laundry Systems are registered to ISO 9001.

Dimensions	W-Width	H-Height	D-Depth	Height with Lid Open
TR7003WN / TR7003BN	25 ⅝"	42 ¾"	28"	53"
TR5003WN	25 ⅝"	42 ¾"	28"	53"
TR3003WN	25 ⅝"	42 ¾"	28"	53"
TC5003WN / TC5003BN	25 ⅝"	42 ¾"	28"	53"

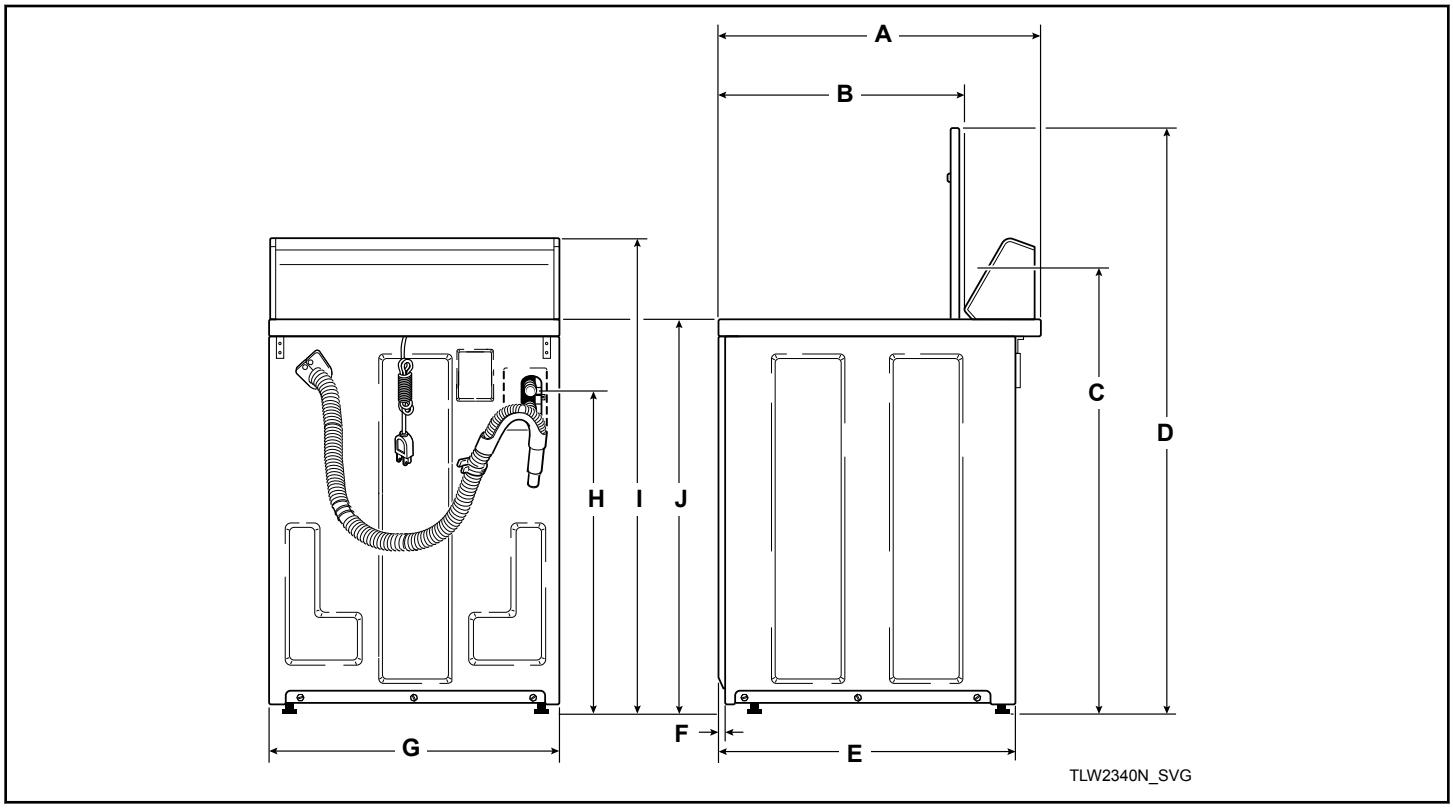


Optional Accessories

Drain Extension Kit – Part No: 204512
Hose Kit – Part No: 807239
Siphon Break Kit – Part No: 562P3

Speed Queen.

Dimensions and Specifications

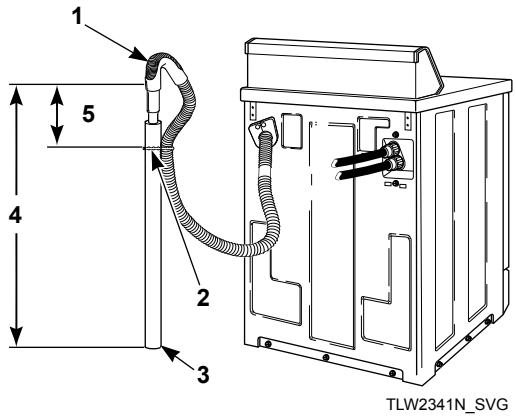


A	28 in. [711 mm]
B	22.13 in. [562 mm]
C (to controls)	Electronic Control: *41.25 in. [1048 mm] Knob Control: *40.75 [1035 mm]
D	*53 in. [1346 mm]
E	26 in. [660 mm]
F	0.4 in. [10 mm]
G	25.63 in. [651 mm]
H	*29 in. [737 mm]
I	*42.75 in. [1086 mm]
J	*36 in. [914 mm]
	*With leveling legs turned into base.

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2. Install standpipe adapter onto drain hose only if standpipe diameter is 2 inches [51 mm] or less.
3. Place the drain hose into the standpipe.

   IMPORTANT: To prevent siphoning, do not place any ribbed portion of the drain hose into the standpipe.
4. Remove the beaded strap from accessories bag and place around standpipe and drain hose, approximately 12 inches [300 mm] down from the top of pipe. Refer to *Figure 5* .
   a. Insert the end of the beaded strap into the larger hole found on the end of the strap.
   b. Tighten to desired fit.
   c. Lock strap in place by pulling beaded strap into the tapered smaller opening of the beaded strap end. A distinct snap noise should be heard once the strap is properly seated.
   d. Pull on the strap once locked in place to ensure beaded strap is properly installed. This will prevent the drain hose from dislodging from drain receptacle during use.

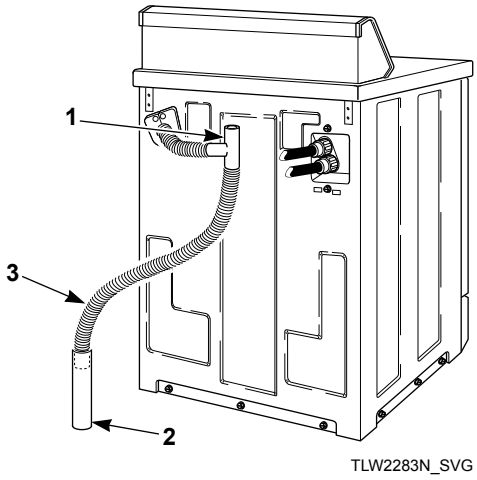


1. Ribbed Portion of Drain Hose
2. Beaded Strap
3. Standpipe - 2 in. [51mm] or 1-1/2 in. [40 mm] Diameter
4. 36 in. [914 mm] Recommended Height
5. 12 in. [305 mm]

Figure 5

Low Standpipe Installation

If standpipe is lower than 36 inches [914 mm], you must install No. 562P3 Siphon Break Kit. This kit is available (as optional equipment at extra cost) through an authorized dealer or parts distributor. Installation instructions are supplied with the kit.



1. 562P3 Siphon Break Kit
2. Standpipe
3. Drain Hose

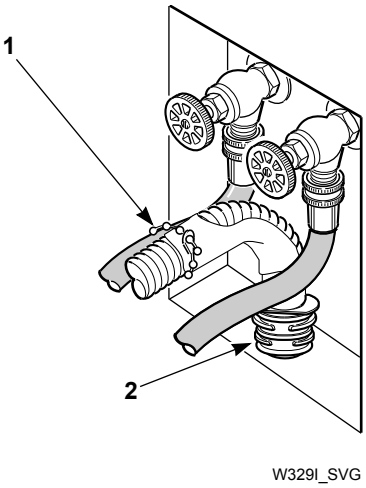
Figure 6

Wall Installation

Check wall drain height. The recommended height for the drain is 36 inches [914 mm].

Install standpipe adapter onto drain hose only if standpipe diameter is 2 inches [51 mm] or less.

For installations of this type, the drain hose MUST be secured to one of the fill hoses using the beaded strap from accessories bag. Refer to *Figure 7* .



1. Beaded Strap (tape if necessary)
2. Standpipe Adapter (select models)

Figure 7

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DRYERS

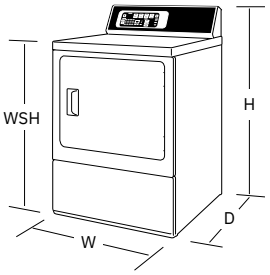


	DR7	DR5	DR3	DC5
Product Code **Gas:**	**DR7004WG** *(White)* **DR7004BG** *(Matte Black)*	**DR5004WG**	**DR3003WG**	**DC5003WG** *(White)* **DC5003BG** *(Matte Black)*
Electric:	**DR7004WE** *(White)* **DR7004BE** *(Matte Black)*	**DR5004WE**	**DR3003WE**	**DC5003WE** *(White)* **DC5003BE** *(Matte Black)*
Capacity – Cu. Ft.	7.0	7.0	7.0	7.0
Galvanized Cylinder	•	•	•	•
ADA Compliant	•	•	•	•
Cylinder Light	•	•	•	•
Reversible Door	•	•	•	•
Lint Filter Guard	•	•	•	•
Sanitize	•	•	•	•
Preset Cycles	10	9	3	4
Temperature Selections	4	5	3	4
End-of-Cycle Signal	•	•		•
Extended Tumble	•	•		•
Moisture Sensor	•	•		
Commercial Cool-Down Technology	•	•		
ENERGY STAR® Certified	•	•		
Steam Boost	•	•		
Steam Refresh	•	•		
Steam Sanitize	•			
Anti-Static	•			
Time Remaining Display	•			
Favorite Cycles	•			
Pet Plus™ Cycles	•			
Warranty	7-Year Parts & Labor	5-Year Parts & Labor	3-Year Parts & Labor	5-Year Parts & Labor
Model No. (Gas)	ADGE9RYS118TW01 ADGE9RYS118TB01	ADG6HRYS118TW01	ADG3SRGS117TW01	ADG4BRGS117TW01 ADG4BRGS117TB01
(Electric)	ADEE9RYS178TW01 ADEE9RYS178TB01	ADE6HRYS178TW01	ADE3SRGS177TW01	ADE4BRGS177TW01 ADE4BRGS177TB01
UPC (Gas)	810084500156 810084500620	810084500132	810084500057	810084500118 810084500712
(Electric)	810084500149 810084500613	810084500125	810084500040	810084500101 810084500705

Agency approvals: cULus, CSA us star, MA gas board

For the most accurate information, the installation guide should be used for all design and construction purposes. Due to continuous product improvements, design and specifications are subject to change without notice. The quality management systems of Alliance Laundry Systems are registered to ISO 9001.

Dimensions	W-Width	H-Height	D-Depth	WSH-Work Surface Height	Depth with Door Open
DR7004WG / DR7004WE / DR7004BG / DR7004BE	26 ⅞"	42 ¾"	28"	36"	51 ½"
DR5004WG / DR5004WE	26 ⅞"	42 ¾"	28"	36"	51 ½"
DR3003WG / DR3003WE	26 ⅞"	42 ¾"	28"	36"	51 ½"
DC5003WG / DC5003WE / DC5003BG / DC5003BE	26 ⅞"	42 ¾"	28"	36"	51 ½"

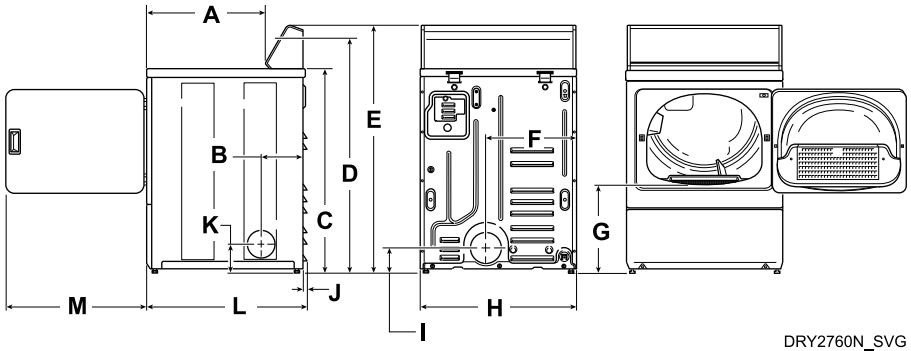


Optional Accessories

Drying Rack – Part # D512082
Directional Exhaust Kit – Part # 528P3
Conversion Kit = Gas to LP – Part # 649P3
Flexible Metal Vent Kit – Part # 521P3

Dimensions

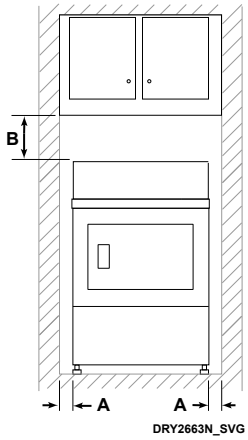
Electric Dryers



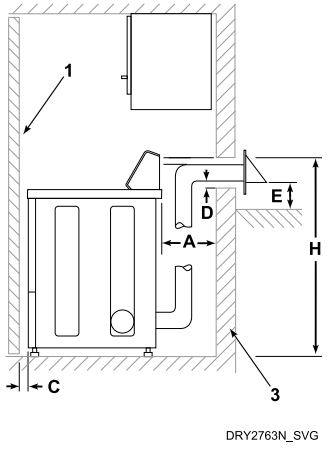
A	22.38 in. [569 mm]
B	8.0 in. [203 mm]
C	* 36 in. [914 mm]
D (to controls)	Electronic Control: * 41.25 in. [1048 mm] Knob Control: * 40.75 [1035 mm]
E	* 42.75 in. [1086 mm]
F	15.4 in. [391 mm]
G	* 15.44 in. [392 mm]
H	26.875 in. [683 mm]
I	* 4.0 in. [102 mm]
J	0.4 in. [11 mm]
K	* 4.5 in. [114 mm]
L	28 in. [711 mm]
M	23.5 in. [597 mm]
NOTE: Exhaust openings are 4 inch [102 mm] metal ducting.	* With leveling legs turned into base.

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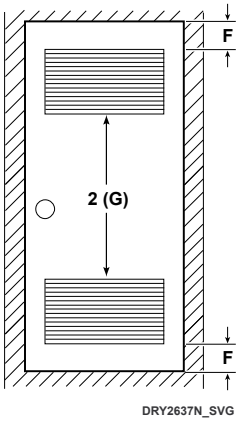
Front View (Without Closet Door)



Side View (Closet Door)



Front View (Closet Door)



1. Closet Door
2. Centered Air Openings (G) (2 Openings minimum)
3. Outer Wall of Enclosure

Figure 3

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Area	Description	Free Standing/Alcove Installation	Closet Installation
A*	Dryer sides and rear clearance	0 in. [0 mm]	0 in. [0 mm]
B	Dryer top clearance	12.25 in. [305 mm]	12.25 in. [305 mm]
C	Dryer front clearance	Not Applicable	2 in. [51 mm]
D	Exhaust duct clearance to combustible material	2 in. [51 mm]	2 in. [51 mm]
E	Weather hood to ground clearance	12 in. [305 mm]	12 in. [305 mm]
F	Distance from floor or ceiling to air opening edge	Not Applicable	3 in. [76 mm]
G	Area of centered air openings in closet door. Louvered door with equivalent air openings is acceptable. (Minimum clearances are shown.)	Not Applicable	40 sq. in./open [260 sq. cm/open]
H	For new installations, locate top of wall vent 42 inches [1067 mm] above floor to make venting easier to connect.	42 in. [1067 mm]	42 in. [1067 mm]
*	Rear clearance is minimum. 2 inches [51 mm] is recommended for utility connection. 6 inches [152 mm] is recommended when venting through rear of unit.		

Table 1

NOTE: For new installations, it is suggested to locate top of wall vent 42 inches (106.7 cm) above floor to make venting easier to connect.

IMPORTANT: In mobile home installations, gas dryers MUST be permanently attached to the floor at the time of installation. Order No. 526P3 Dryer Installation Kit (available at extra cost) for a manufactured (mobile) home installation. Follow the instructions supplied with the kit.

Connect Dryer Exhaust System

WARNING

To reduce the risk of fire and combustion gas accumulation the dryer MUST be exhausted to the outdoors.

W604

WARNING

To reduce the risk of fire and the accumulation of combustion gases, DO NOT exhaust dryer air into a window well, gas vent, chimney or enclosed, unventilated area, such as an attic, wall, ceiling, crawl space under a building or concealed space of a building.

W045

WARNING

To reduce the risk of fire, DO NOT use plastic or thin foil ducting to exhaust the dryer.

W354

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PF/SF Bins

ICE STORAGE BIN SERIES

PF/SF Bins
05/04/18
Item # 13163

Item #: _____

Project: _____

Qty: _____

AIA#: _____

PF - PVC Coated Galvanized Steel Finish
SF - Stainless Steel Finish



B-250PF

B-300PF
B-300SF
BD-300PF
BD-300SF

B-500PF
B-500SF
BD-500PF
BD-500SF



B-700PF
B-700SF

B-800PF
B-800SF

B-900PF
B-900SF

Features

- **Protected by H-GUARD Plus Antimicrobial Agent** H-GUARD PLUS
- **Polyethylene bin liner for sanitary storage**
- **Sturdy construction for side-by-side or stacked ice machine installation**

- Ice storage capacity from 250 lbs. up to 900 lbs.
- Both surfaces are designed for easy cleaning
- Long lasting attractive appearance
- Foamed-in-place polyurethane insulation, in all bin walls and bottom, provides dependable ice storage
- H-GUARD Plus Antimicrobial adds extra protection to the ice scoop (included)

BD Bins

- Fit 24” - 24 1/2” deep ice machine without top kit extension

CANADIAN ENERGY PERFORMANCE VERIFIED
RENDEMENT ENERGETIQUE VERIFIE

Warranty:
2 Year Parts & Labor (Production prior to January 2012)
3 Year Parts & Labor (Production January 2012 and after)
Valid in United States, Canada, Puerto Rico and U.S. Territories. Contact factory for warranty in other countries.

Model Number	Exterior Dimensions W x D x H*	Application Storage Capacity †	Cubic Volume	Interior Dimensions W x D x H	Shipping Weight
B-250PF	30” x 32.3” x 33.4”	250 lbs.	10.30 ft³	27” x 27.7” x 23.7”	130 lbs.
B(D)-300PF/SF	22” x 32.3” x 46”	300 lbs.	11.51 ft³	19” x 27.7” x 37.6”	135 lbs.
B(D)-500PF/SF	30” x 32.3” x 46”	500 lbs.	16.33 ft³	27” x 27.7” x 37.6”	155 lbs.
B-700PF/SF	44” x 32.3” x 46”	700 lbs.	24.77 ft³	41” x 27.7” x 37.6”	200 lbs.
B-800PF/SF	48” x 32.3” x 46”	800 lbs.	26.90 ft³	45” x 27.7” x 37.6”	210 lbs.
B-900PF/SF	52” x 32.3” x 46”	900 lbs.	29.59 ft³	49” x 27.7” x 37.6”	220 lbs.

*Height includes 6” legs
† Capacity based on volume x 30 lb/ft³ average density of ice.

Printed in the U.S.A.

Hoshizaki reserves the right to change specifications without notice.

PF/SF Bins

ICE STORAGE BIN SERIES

Ice Machine Model Application

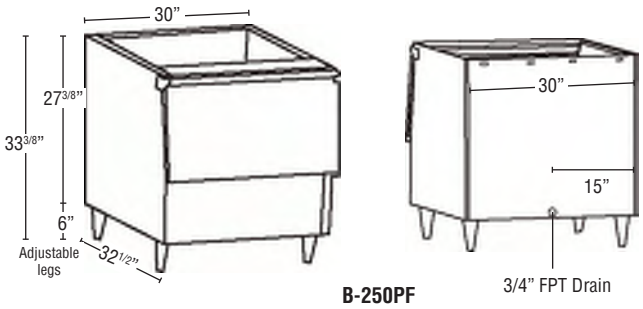
	22" Width KM-340M KM-515M KM-600M KM-650M F-450M F-801M F-1002M	22" Width KMD-410M† KMS-822M† FD-650M-C† FD-1002M-C†	30" Width KM-901M KM-1340M KM-1601M KML Series F-1501M F-2001	30" Width KMD-460M‡ KMD-530M‡ KMD-860M‡ KMS-1402M* KMS-2000M*	44" Width 2 KM-340M 2 KM-515M 2 KM-600M 2 KM-650M IM-500S 2 F-450M 2 F-801M 2 F-1002M	44" Width 2 KMD-410M 2 KMS-822M 2 FD-650M-C 2 FD-1002M-C	48" Width KM-1301S KM-1400S KM-1601S KM-1900S KM-2100S KM-2500S
Bins B-300PF/SF	–	N/A	N/A	N/A	N/A	N/A	N/A
Bins B-250PF B-500PF/SF	NEED HS-2033	NEED HS-2033 & HS-2129	–	NEED HS-2129	N/A	N/A	N/A
Bins B-700PF/SF	NEED HS-2035	NEED HS-2035 & HS-2130	NEED HS-2034	NEED HS-2034 & HS-2130	–	NEED HS-2130	N/A
Bins B-800PF/SF	NEED HS-2035 & HS-2032	NEED HS-2035 & HS-2032/ 2131	NEED HS-2034 & HS-2032	NEED HS-2131 & HS-2034/2032	NEED HS-2032	NEED HS-2032 & HS-2131	–
Bins B-900PF/SF	NEED HS-2035 & HS-2033	NEED HS-2035 & HS-2033/ HS-2132	NEED HS-2035	NEED HS-2132 & HS-2035	NEED HS-2033	NEED HS-2033 & HS-2132	NEED HS-2032

– No top kit necesary | N/A Combination of ice maker and bin is not possible

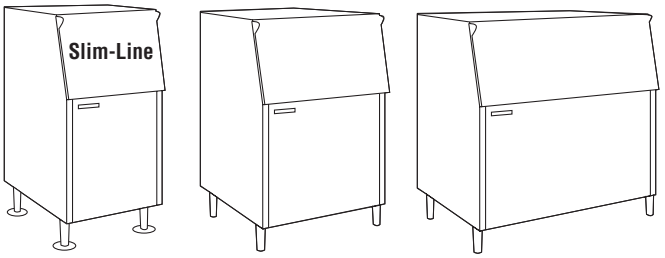
BD Bins fit 24" - 24 1/2" deep ice machine without Top Kit extension.
† **BD-300PF/SF:** KMD-410M, KMS-822M, FD-650M-C, FD-1002M-C
‡ **BD-500PF/SF:** KMD-460M, KMD-530, KMD-860

* Any KMS or FD on bin need Top Kit Extension (excludes KMS-830MLH):
- HS-2129 - for use with B-500 bins
- HS-2130 - for use with B-700 bins
- HS-2131 - for use with B-800 bins
- HS-2132 - for use with B-900 bins

Top Kits:
HS-2032 - 4" ABS Top Kit
HS-2033 - 8" ABS Top Kit
HS-2034 - 14" ABS Top Kit
HS-2035 - 22" ABS Top Kit
HS-2036 - (2) 4" ABS Top Kits
HS-2111 - 11.3" x 26.2" Stainless Cover/Separator
HS-2148 - 30" x 3.1" Stainless Cover
HS-2160 - 2 KM-901M



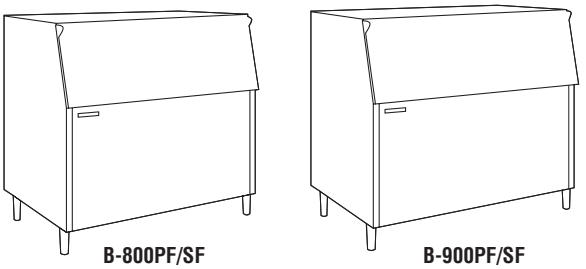
B-250PF



B-300PF/SF
BD-300PF/SF

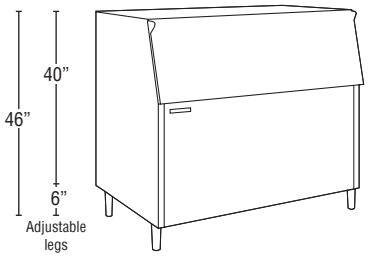
B-500PF/SF
BD-500PF/SF

B-700PF/SF



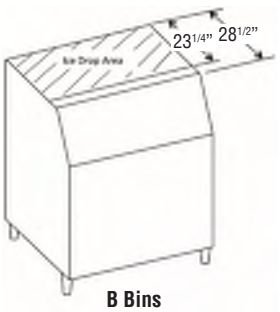
B-800PF/SF

B-900PF/SF



Bin Height

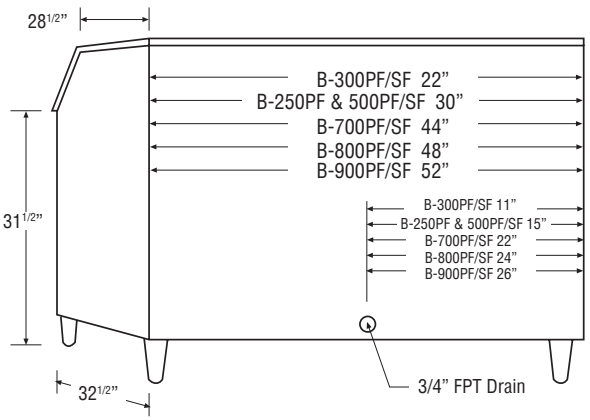
B-300PF/SF
BD-300PF/SF
B-500PF/SF
BD-500PF/SF
B-700PF/SF
B-800PF/SF
B-900PF/SF



B Bins
Top View



BD Bins
Top View



Bell Architectural Specialties, Inc.

8516 E. Riverview Drive
Riverview FL 33578

Phone (813) 741-9926
Fax (813) 741-9919

13-Nov 2024

To: Estimating
CO:
Re: City of Port Orange Public Utilities Field Operations Facility

We propose the following:

	F & I w/ tax
Operable Wall	**$32,000.00**

Based on the Signature 842 Series by Moderco.
Paired Panels, Protective Trim, Carpet, STC 55, Top Fixed & Retractable and Bottom Retractable Seals.
1 39'-3" X 10' (10 Panels)

Note: STC 56 not available with Moderco, priced highest available STC.
Note: Supporting steel and drilling of holes by others.

Price valid for completion by June 2026.

Lead times
Track: 4 weeks
Panels: 8 weeks

Sincerely,

James Anderson

SSE SPACE MANAGEMENT
A DIVISION OF SOUTHEASTERN SURFACES & EQUIPMENT
Florida State Certified M/WBE

Q U O T A T I O N

TO: Wharton Smith **DATE: 11/21/2024**
PHONE: 407-321-8410

ATTN: James Manyette **QUOTE #: 24-11-013**

PROJECT: Port Orange Public Utilities Field Operations Facility
Port Orange, Florida

We are pleased to offer the following proposal:

OPERABLE PARTITION Section 10 22 26 ***Manufacturer: MODERNFOLD***

• Series	Encore Paired Panel Partition System
• STC	56
• Openings	(1) @ 39'-3" W x 10'-0" H (10 panels)
• Panel Construction	Steel over gypsum to steel welded frame
• Surface	Modernfold Standard Carpet
• Final Closure	Expandable Panel
• Seals	Top – Automatic, Bottom – Sureset (2" Manual Seals)
• Track	Type 17 with Heavy Duty Brackets
• Pass Door	N/A
• Pocket Door	N/A
• Support	SSE Post and Beam System
• Installation	By certified installers.

DELIVERED & INSTALLED: $ 61,600.00*

*PLEASE NOTE: Proposal based on manufacturer's required minimum clearances for proper and safe operation and warranty.
This quotation is good for 60 days from date of this proposal and subject to delivery and installation in twelve months from date of purchase order/contract. Beyond twelve months subject to material escalation.

SSE Space Management, LLC
By: *Jenna Haas*
Business Development Manager
Phone 386-428-8875
Email jhaas@sseteam.com

SSE SPACE MANAGEMENT

A DIVISION OF SOUTHEASTERN SURFACES & EQUIPMENT

Florida State Certified M/WBE

Notes:

- We accept Visa, Master Card and American Express. Payments made using a Visa or Master Card will require an additional fee of 2%. American Express payments will require an additional fee of 2.5%.
- Sales/Use taxes are INCLUDED in above bid amount.
- 50% Deposit required at time of Order without prior credit approval. Balance due on completion, with prior approved credit.
- Payment and Performance Bonds are NOT INCLUDED in the above price. Add 1% for our standard bond form. If alternate bond forms are required there may be an additional cost and the forms will be subject to approval by our bonding company.
- Removal and disposal of existing equipment or materials is NOT INCLUDED.
- Materials stored at owner or GC's request will incur storage fees and handling charges.
- All electrical service requirements, including conduit, wiring and/or final hook which may be required shall be provided by electrical subcontractor.
- Hoisting for non-ground floor access, unless specifically indicated above is not included.
- 100% Restocking fee on all materials.
- Permits, if required, are not included, and shall be provided by others at others expense.
- **Operable Partitions** – GC to provide pre-punched overhead support beams to support the operable partitions. Sway bracing, sound plenums, blocking at wall and jamb, lock cylinders, pass doors, pocket doors, other accessories (i.e., marker boards), or caulking are not included unless specifically indicated above.
- All pricing based upon work being performed during regular working hours. Weekend, holiday, and after-hours work is extra, unless otherwise noted.
- Proposal based on manufacturer's required minimum clearances for proper and safe operation and warranty.
- This quotation is good for 30 days from date of this proposal and subject to delivery and installation in twelve months from date of purchase order/contract. Beyond twelve months subject to material escalation.

TERMS AND CONDITIONS

- FINANCE CHARGES Purchaser will receive monthly statements; however, payment is due upon receipt of original invoice. If the balance shown on a monthly statement is not paid before the 30th day of the same month, interest will accrue on the unpaid amount at the highest rate allowable by Florida law.
- PERSONAL JURISDICTION Any judicial proceeding by the Purchaser against the Seller or the Seller against the Purchaser involving, directly or indirectly, any matter in any way arising out of related to or connected with this agreement or any other credit document shall be brought in the courts of the State of Florida, County of Volusia, and the parties accept exclusive personal jurisdiction of these courts for the purpose of any suit, action or proceeding. In addition, the parties knowingly, intentionally, and irrevocably waive to the fullest extent permitted by law, any objection which they may now or later have to the laying of venue of any suit, action or proceeding arising out of relating to this agreement, or any judgment entered by any court brought in the State of Florida. Further, both parties intentionally and irrevocably waive any claim that any suit, action or proceeding brought in the State of Florida, County of Volusia, has been brought in an inconvenient forum.
- ATTORNEY'S FEES If Seller employs an attorney to enforce any provision of this Quotation or invoice, or to defend any action brought by Purchaser, its agents or employees against Seller, whether the action sounds in contract, in tort or otherwise, or to collect any payment due to Seller from Purchaser whether or not suit is instituted, Seller will be entitled to recover from Purchaser all costs and expenses incurred including a reasonable attorney's fee.
- VENUE/JURY TRIAL/INTEREST Purchaser will pay interest on all monies due to Seller at the highest lawful contract rate. Purchaser WAIVES ANY RIGHT TO JURY TRIAL in any action brought by or against Purchaser involving Seller regardless of whether the claim sounds in contract, in tort or otherwise, or is in any proceeding related, ancillary or supplementary to this Application. Purchaser waives any right of venue and agrees that any legal action or arbitration proceeding between Purchaser and Seller regardless of whether it sounds in contract, in tort or otherwise, will be brought in a state court of competent jurisdiction located in Volusia County, Florida.
- PERSONAL GUARANTY The person signing this Quotation on behalf of the Purchaser, personally and individually, guarantees the full and prompt performance of the Purchaser and the payment of all sums due to Seller. As used in this PO, The term "Purchaser" will also include the guarantor and any other party to this PO and all waivers are equally applicable to those persons.

I have read and agreed to the terms and conditions of this Quotation.

_____

SIGNATURE

_____

TITLE

_____

DATE

P.O. Box 602 ● 569 Canal Street ● New Smyrna Beach ● Florida ● 32170
Phone: (386) 428-8875 ● Fax: (386) 428-8767
www.sseteam.com

Christine Carasas

From: Jenna Haas <jhaas@sseteam.com>
Sent: Thursday, November 21, 2024 3:13 PM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Public Utilities Field Ops Bldg. : Operable Partition
Attachments: Port Orange Public Utilities_SSE Proposal.pdf

Hello,

Please see attached proposal for the operable partition with a post and beam system included to the support the operable partition. Please let me know if you have any questions or need any additional information.

Thank you,

Jenna Haas
Business Development Manager
Southeastern Surfaces & Equipment
Email: jhaas@sseteam.com
Phone: 386-428-8875 | Mobile: 386-547-1248
569 Canal Street, New Smyrna Beach, FL 32168
www.sseteam.com

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!

clear vision signs
34234 State Rd. 54 - Wesley Chapel, FL 33543
813-884-1578 www.ClearVisionSigns.net

Quotation# 11152024-11

Bill To: Wharton-Smith, Inc.

Install/Ship To: Port Orange Public Utilities
4505 Clyde Morris Blvd.
Port Orange, FL 32129

Date	Sales Rep.	FOB	Ship Via	Terms	Taxable
11/15/2024	House		Install	TBD	Y

Sign Type	Description	Unit Cost	Qty	Total
'NOTE: Due to the continuing increase in price for raw materials (plastics / metals) all estimates are valid for 15 days of date 'listed on estimate. After the 15 days, pricing will need to be revisited and possibly subject to change.				
Type S01 - Room ID	8" x 8" - 1/4" painted thermocompression with raised copy and Grade	$105.60	16	$1,689.60
with insert	II Braille. Window for name insert. Mounted with VHB tape and silicone.			
	Inserts by others.			
Type S02 - Room ID	12" x 8" - 1/8" painted thermocompression with raised copy and Grade	$115.20	36	$4,147.20
	II Braille. Mounted with VHB tape and silicone.			
Type S03 - Unisex	8" x 8" - 1/8" painted thermocompression with raised copy and pictogram.	$76.80	7	$537.60
Restroom	Grade II Braille. Mounted with VHB tape and silicone.			
Type S04 - Evacuation	8-1/2" x 11" clear acrylic panel with red copy. Clear acrylic to hold	$154.60	2	$309.20
Map Holder	printed map insert. Mounted with VHB tape and silicone. ***Insert by***			
	others.			
Type S05 - Maximum	12" x 3" - 1/8" painted thermocompression with raised copy and Grade	$43.20	1	$43.20
Occupancy	II Braille. Mounted with VHB tape and silicone.			
Type S06 - No Combustib	8" x 8" - 1/8" painted thermocompression with raised copy and Grade	$76.80	3	$230.40
Storage Allowed	II Braille. Mounted with VHB tape and silicone.			
Type S07 - Exit	6" x 9" - 1/8" painted thermocompression with raised copy and pictogram.	$64.80	13	$842.40
	Grade II Braille. Mounted with VHB tape and silicone.			
* Non-taxable item	Compile Message Schedule and Sign Placement Plans			$234.00
	Permit Fees billed at cost upon permit approval.			
	Change order required			
	ART SUBMITTALS:			
	We provide one set of proofs per order, with one revision at no cost.			
	Proof changes past the first 2 sets, will incur an Art Fee of $ 100.00 per			
	hour. Paper Proofs typically take 48 hours / 2 working days to produce.			
	If order is not placed or is cancelled, you will incur a $ 100.00 per hour			
	art fee, billed after 30 days of no response from client. Thank you.			
	BACKGROUND PAINT NOTES:			
	We paint all of our ADA Signage using Matthews Acrylic Polyurethane.			
	If requesting a PMS color background, please advise us which fan/book			
	and category your client is viewing from. PMS charts are formulated for			
	printing ink on paper, and when we are converting to paint, shades may			
	vary slightly.			**
1. 50% Deposit is Required - Balance due net 30 days from completion				
2. All warranties are valid for (1) ONE year from substantial completion.				
3. Additional insurance outside of our standard liability ($1 Mill / $2 Mill - $5 Mill Umbrella)				
coverage's including additional endorsement will be billed at cost.		Subtotal	78	$8,033.60
4. All power (IF Required) must be brought to within 4'-0" of sign location by GC or owner and		Taxes (6.5%)		$506.97
must allow access behind wall when applicable.		Installation		$5,223.22
5. Installation for project is based on (1) ONE trip charge. Additional trips for Phasing if				
the project is not ready upon arrival will be billed at additional cost.				
		Total		$13,763.79

Quote accepted by: _____ Date: _____

James Manyette

From: nsolis@clearvisionsigns.net
Sent: Friday, November 15, 2024 3:58 PM
To: James Manyette
Cc: gsuris@clearvisionsigns.net
Subject: RE: Port Orange Public Utilities Field Ops Bldg.
Attachments: Estimate No. 11152024-11.pdf

Importance: High

Hi James,

Please find attached your estimate for the signage scope of work on the above noted project. For your convenience we have listed each sign type as a line item based on unit cost and quantity. We look forward to the possibility of working with you on this project and appreciate the opportunity. Feel free to contact Gary if you have any questions.

"Our Installers are OSHA Certified – First Aid / CPR Certified & hold a TSA Security Clearance"

Thank you,

Nancy Solis

CLEAR VISION SIGNS
813-884-1578 Office xt. 114
813-547-8775 Direct

Address: 34234 State Road 54 – Wesley Chapel, FL 33543

www.ClearVisionSigns.net

From: James Manyette <jmanyette@whartonsmith.com>
Sent: Thursday, November 14, 2024 11:56 AM
To: nsolis@clearvisionsigns.net
Cc: Christine Carasas <ccarasas@whartonsmith.com>
Subject: RE: Port Orange Public Utilities Field Ops Bldg.

Please contact ConstructConnect. It's something on their end (likely with their recent server crash or transferring clients from iSqFt to ConstructConnect).

Meanwhile, here are the dwgs specs. for now - and bid based on these. But you have to get up on Construct Connect to be sure to see/review all other bid docs, RFI's etc.

Respectfully,

James R. Manyette | Senior Preconstruction Services Manager
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771 | Cell: (407) 810-9590

From: nsolis@clearvisionsigns.net <nsolis@clearvisionsigns.net>
Sent: Thursday, November 14, 2024 8:57 AM
To: James Manyette <jmanyette@whartonsmith.com>
Subject: RE: Port Orange Public Utilities Field Ops Bldg.
Importance: High

Good morning James,

It still isn't working. When I click on "Click here to view the project", the above pops up. I click on "Try again" and nothing happens.

"Our Installers are OSHA Certified – First Aid / CPR Certified & hold a TSA Security Clearance"

Thank you,

Nancy Solis

CLEAR VISION SIGNS
34234 State Road 54 – Wesley Chapel, FL 33543

813-884-1578 Office xt. 114
813-547-8775 Direct

From: James Manyette <jmanyette@whartonsmith.com>
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I also mark you as "Will Bid" in the system in case that fixes the issue.

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I am going to resend the project ITB just in case that does something. See "cookies" suggestion below

Respectfully,



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From: Wharton Smith Commercial Estimating <comest@whartonsmith.com>
Sent: Wednesday, November 13, 2024 3:23 PM
To: James Manyette <jmanyette@whartonsmith.com>
Subject: FW: Port Orange Public Utilities Field Ops Bldg.
Importance: High

Good afternoon,

They may need to clear the cookies and browser history. This has been happening allot lately.

I didn't want to respond directly in case it was something else.

Thank you,

Christine Carasas | Preconstruction Specialist Commercial Division
Wharton-Smith, Inc. | Construction Group of Choice
|www.whartonsmith.com
750 Monroe Road, Sanford, FL, 32771
Office: (407) 321-8410 x 3873

From: nsolis@clearvisionsigns.net <nsolis@clearvisionsigns.net>
Sent: Wednesday, November 13, 2024 3:21 PM
To: Wharton Smith Commercial Estimating <comest@whartonsmith.com>
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clear vision signs
34234 State Rd. 54 - Wesley Chapel, FL 33543
813-884-1578 www.ClearVisionSigns.net

Quotation# 11152024-11

Bill To: Wharton-Smith, Inc.

Install/Ship To: Port Orange Public Utilities
4505 Clyde Morris Blvd.
Port Orange, FL 32129

Date	Sales Rep.	FOB	Ship Via	Terms	Taxable
11/15/2024	House		Install	TBD	Y

Sign Type	Description	Unit Cost	Qty	Total
'NOTE: Due to the continuing increase in price for raw materials (plastics / metals) all estimates are valid for 15 days of date 'listed on estimate. After the 15 days, pricing will need to be revisited and possibly subject to change.				
Type S01 - Room ID	8" x 8" - 1/4" painted thermocompression with raised copy and Grade	$105.60	16	$1,689.60
with insert	II Braille. Window for name insert. Mounted with VHB tape and silicone.			
	Inserts by others.			
Type S02 - Room ID	12" x 8" - 1/8" painted thermocompression with raised copy and Grade	$115.20	36	$4,147.20
	II Braille. Mounted with VHB tape and silicone.			
Type S03 - Unisex	8" x 8" - 1/8" painted thermocompression with raised copy and pictogram.	$76.80	7	$537.60
Restroom	Grade II Braille. Mounted with VHB tape and silicone.			
Type S04 - Evacuation	8-1/2" x 11" clear acrylic panel with red copy. Clear acrylic to hold	$154.60	2	$309.20
Map Holder	printed map insert. Mounted with VHB tape and silicone. ***Insert by***			
	others.			
Type S05 - Maximum	12" x 3" - 1/8" painted thermocompression with raised copy and Grade	$43.20	1	$43.20
Occupancy	II Braille. Mounted with VHB tape and silicone.			
Type S06 - No Combustib	8" x 8" - 1/8" painted thermocompression with raised copy and Grade	$76.80	3	$230.40
Storage Allowed	II Braille. Mounted with VHB tape and silicone.			
Type S07 - Exit	6" x 9" - 1/8" painted thermocompression with raised copy and pictogram.	$64.80	13	$842.40
	Grade II Braille. Mounted with VHB tape and silicone.			
* Non-taxable item	Compile Message Schedule and Sign Placement Plans			$234.00
	Permit Fees billed at cost upon permit approval.			
	Change order required			
	ART SUBMITTALS:			
	We provide one set of proofs per order, with one revision at no cost.			
	Proof changes past the first 2 sets, will incur an Art Fee of $ 100.00 per			
	hour. Paper Proofs typically take 48 hours / 2 working days to produce.			
	If order is not placed or is cancelled, you will incur a $ 100.00 per hour			
	art fee, billed after 30 days of no response from client. Thank you.			
	BACKGROUND PAINT NOTES:			
	We paint all of our ADA Signage using Matthews Acrylic Polyurethane.			
	If requesting a PMS color background, please advise us which fan/book			
	and category your client is viewing from. PMS charts are formulated for			
	printing ink on paper, and when we are converting to paint, shades may			
	vary slightly.			**

1. 50% Deposit is Required - Balance due net 30 days from completion

2. All warranties are valid for (1) ONE year from substantial completion.
3. Additional insurance outside of our standard liability ($1 Mill / $2 Mill - $5 Mill Umbrella) coverage's including additional endorsement will be billed at cost.
4. All power (IF Required) must be brought to within 4'-0" of sign location by GC or owner and must allow access behind wall when applicable.
5. Installation for project is based on (1) ONE trip charge. Additional trips for Phasing if the project is not ready upon arrival will be billed at additional cost.

Subtotal		78	$8,033.60
Taxes (6.5%)			$506.97
Installation			$5,223.22
Total			$13,763.79

Quote accepted by: _____ Date: _____

Christine Carasas

From: James Manyette
Sent: Monday, November 18, 2024 8:33 AM
To: Wharton Smith Commercial Estimating
Subject: 10_Signage_Clear Vision Signs Port Orange Public Utilities Field Ops Bldg.
Attachments: Estimate No. 11152024-11.pdf

Importance: High

This is just for Comest email record. I have saved this to the sub quotes folder…

10_Signage_Clear Vision Signs

Respectfully,

James R. Manyette | Senior Preconstruction Services Manager
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771 | Cell: (407) 810-9590

From: nsolis@clearvisionsigns.net <nsolis@clearvisionsigns.net>
Sent: Friday, November 15, 2024 3:58 PM
To: James Manyette <jmanyette@whartonsmith.com>
Cc: gsuris@clearvisionsigns.net
Subject: RE: Port Orange Public Utilities Field Ops Bldg.
Importance: High

Hi James,

Please find attached your estimate for the signage scope of work on the above noted project. For your convenience we have listed each sign type as a line item based on unit cost and quantity. We look forward to the possibility of working with you on this project and appreciate the opportunity. Feel free to contact Gary if you have any questions.

"Our Installers are OSHA Certified – First Aid / CPR Certified & hold a TSA Security Clearance"

Thank you,

Nancy Solis

CLEAR VISION SIGNS
813-884-1578 Office xt. 114
813-547-8775 Direct

Address: 34234 State Road 54 – Wesley Chapel, FL 33543

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Estimate

Vital Signs
OF ORLANDO INC.
2111 S. DIVISION AVE. SUITE A ORLANDO FL. 32805
407-297-0680 fax 407-578-5374
www.vitalsignsorlando.com

CUSTOMER/BILLING INFORMATION	PROJECT & INSTALLATION ADDRESS
Wharton Smith Inc. P.O.Box 471028 LAKE MONROE, FL. 32747-1028 407-321-8410 FAX407-829-4453	PORT ORANGE PUBLIC UTILITIES BLDG PORT ORANGE, FL CONTACT: COLIN PARENTON email: cparenton@whartonsmith.com

PROJECT	DATE	P.O. NO.	PM	ESTIMATE #
FIELD OPS BUILDING	11/13/2024		GLS	24-500

DESCRIPTION	QTY	COST	TOTAL
INTERIOR SIGNS			
8" x 8" ROOM NAME AND NUMBER SIGN w/ NAME INSERT	16	72.00	1,152.00T
6" x 8" ROOM NAME AND NUMBER SIGN. ADA	36	48.00	1,728.00T
10" x 8" RESTROOM SIGN w/ SYMBOL. ADA	7	80.00	560.00T
11" x 17" EVACUATION MAP.	2	80.00	160.00T
8" x 8" MAXIMUM CAPACITY. ADA	1	64.00	64.00T
8" x 8" NO COMBUSTIBLE STORAGE. ADA	3	64.00	192.00T
4" x 8" TACTILE EXIT SIGN. ADA	12	32.00	384.00T
INSTALLATION		2,450.00	2,450.00
SALES TAX		6.50%	275.60
TOTAL			$6,965.60

Signature required to begin processing: _____

Estimate

Vital Signs
OF ORLANDO INC.
2111 S. DIVISION AVE. SUITE A ORLANDO FL. 32805
407-297-0680 fax 407-578-5374
www.vitalsignsorlando.com

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PROJECT	DATE	P.O. NO.	PM	ESTIMATE #
FIELD OPS BUILDING	11/13/2024		GLS	24-500

DESCRIPTION		QTY	COST	TOTAL
INTERIOR SIGNS				
8" x 8" ROOM NAME AND NUMBER SIGN w/ NAME INSERT	S-01	16	72.00	1,152.00T
8" x 12" ROOM NAME AND NUMBER SIGN. ADA	S-02	36	96.00	3,456.00T
8" x 8" RESTROOM SIGN w/ SYMBOL. ADA	S-03	7	64.00	448.00T
8 1/2" x 11" EVACUATION MAP.	S-04	2	58.00	116.00T
8" x 8" MAXIMUM CAPACITY. ADA	S-05	1	64.00	64.00T
8" x 8" NO COMBUSTIBLE STORAGE. ADA	S-06	3	64.00	192.00T
9" x 6" TACTILE EXIT SIGN. ADA	S-07	12	32.00	384.00T
INSTALLATION			2,450.00	2,450.00
SALES TAX			6.50%	377.78

TOTAL $8,639.78

Signature required to begin processing: _____

Subcontractor Bid Form-General

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Architectural Building Specialties, Inc.
Scope of Work:	Division 10 Specialties

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	**$** 31,750.00
Amount in Words:	Thirty-One Thousand Seven Hundred Fifty Dollars

(1.2) Alternates (Voluntary) N/A

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	Division 10 Specialties
Amount:	$ 18,100.00

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options) N/A

1		$
2		$
3		$

(1.5) MWBE Participation N/A

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %: 3.3	

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +) N/A

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	001	Dated:	11/07/24	RFI No.	002	Dated:	11/11/24
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	001	Dated:	10/22/24	WSI No.	002	Dated:	10/24/24
WSI No.	003	Dated:	10/24/24	WSI No.	004	Dated:	10/28/24
WSI No.	005	Dated:	10/31/24	WSI No.	006	Dated:	11/04/24
	007		11/06/24		008		11/08/24

(2.3) ASI (Architect's Supplemental Instructions) N/A

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda N/A

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Architectural Building Specialties, Inc.

Company Name

320 Division Ave., Suite A, Ormond Beach, FL 32174

Address (Street, City, State, Zip)

386-676-2095 info@absincfl.com

Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable: N/A

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Architectural Building Specialties, Inc.

By: Burt May

Printed Name: Burt May

Title: Operations Manager

Dated: 11/12/24

License No.: N/A

Architectural Building Specialties, Inc.
Established 1985

Office: 386-676-2095
Email: info@absincfl.com
Web: www.absincfl.com

November 12, 2024

City of Port Orange
Public Utilities Field Operations Facility
Port Orange, FL

We are please to provide the following:

Section 102600 Wall Protection by "Inpro Corporation"
24 – 16 Gauge 304 Stainless Steel Corner Guards, 1.5" legs, 4' high 90° Screw-on

Section 102813 Toilet Accessories by "American Specialties"
See attached takeoff for quantities & model numbers

Section 104116 Emergency Key Cabinets by "Knox Box"
1 – Knox Box

Section 104400 Fire Protection Specialties by "Larsen's Manufacturing"
8 – Fire Extinguisher Cabinets, 22 – Fire Extinguishers

Section 107500 Flagpoles by "Concord American Flagpoles"
1 – 30' Flagpole

Burt May
Burt May, Operations Manager

Architectural Building Specialties, Inc.
Port Orange Utilities Facility

Key #	Item	Part #		ADA 103B	ADA 110	ADA 111	RR-SH 113	RR-SH 114	RR-SH 115	RR-SH 116	Janitor 117	Mud 203A	Mud 203		Totals
T-1A	Grab Bar 42"	3701-42		1	1	1	1	1	1	1	0	0	0		7
T-1B	Grab Bar 36"	3701-36		1	1	1	1	1	1	1	0	0	0		7
T-2	Grab Bar 24"x36"	3750		0	0	0	1	1	1	1	0	1	0		5
T-3	Robe Hook	7340-S		1	1	1	2	2	2	2	0	0	0		11
T-3A	HD Robe Hook	0751		0	0	0	1	1	1	1	0	0	24		28
T-4	Soap Dish	7320-S		0	0	0	1	1	1	1	0	1	0		5
T-6	Mirror	0535-1830		1	1	1	1	1	1	1	0	0	0		7
T-7	Waste Receptacle	20826		1	1	1	1	1	1	1	0	0	0		7
T-8	Soap Dispenser	9343		1	1	1	1	1	1	1	0	0	0		7
T-9	Paper Towel Dispenser	68523A		1	1	1	1	1	1	1	0	0	0		7
T-10	Toilet Paper Dispenser	20030		1	1	1	1	1	1	1	0	0	0		7
T-13	Folding Shower Seat	8205-L		0	0	0	1	1	1	1	0	1	0		5
T-13A	Sold Phenolic Shower Seat	8203-28		0	0	0	0	0	0	0	0	0	0		0
T-14	Shower Rod/Curtain/Hooks	1201-B/1200-SHU/1200-V60		0	0	0	1	1	1	1	0	1	0		5
T-18	Sanitary Napkin Receptacle	0473-1A		1	1	1	1	1	1	1	0	0	0		7
T-19	Shelf Mop/Broom Holder	1308-3		0	0	0	0	0	0	0	1	0	0		1
T-19A	SS Shelf Unit	0692-624		0	0	0	0	0	0	0	0	0	12		12
	Totals			9	9	9	15	15	15	15	1	4	36		128

Christine Carasas

From: Architectural Building Specialties Inc. <info@absincfl.com>
Sent: Tuesday, November 12, 2024 1:42 PM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Utilities Facility Bid
Attachments: 24-11-12_ABS Port Orange Utility Bid Form.pdf

Good Afternoon,

Find our attached bid with scope of work for this project. Let us know if you have any questions.

Have a Great Day!
Burt

Burt May, Operations Manager
Architectural Building Specialties, Inc.
320 Division Ave., Suite A
Ormond Beach, FL 32174
PH: 386-676-2095 / Email: info@absincfl.com / www.absincfl.com



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Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Patterson Pope, Inc
Scope of Work:	Misc E12 Pallet Rack / E10 Whiteboards / E13 Workbench / E16 Flammable Cabinet /E17 Storage Cabinets / E18 Shelving E20 Bin & Drawer Shelving / E23 Pipe Rack E 9 Phenolic Lockers

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING **Prices quoted are good for 90 days, but since my products will not be required until 2026, we need to include an escalation clause. Prices quoted will increase as per trade announced price increases for my products, inclusive to 90 days from actual install date.**

(1.1) Total Base Bid

Amount in Figures:	**$196,303.08**
Amount in Words:	one hundred ninety-six thousand three hundred three dollars and eight cents

(1.2) Alternates (Voluntary)

N/A	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $5,000)

Material/Equipment Types:	All above in scope of work
Amount:	$ 185,168.00

Prices quoted are good for 90 days, but since our products will not be required until 2026, we need to include an escalation clause. Prices quoted will increase as per trade announced price increases for our products, inclusive to 90 days from actual install date.

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1	Hallowell-List Lockers with (1) hat shelf	$ (1,589.00)
2		$
3		$

(1.5) MWBE Participation N/A

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %: 1.25	

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)
N/A			

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1	Dated:	11.7.24	RFI No.		Dated:	
RFI No.	2	Dated:	11.11.24	RFI No.		Dated:	
RFI No.	3	Dated:	11.15.24	RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	001	Dated:	10.22.24	WSI No.	005	Dated:	10.31.24
WSI No.	002	Dated:	10.24.24	WSI No.	006	Dated:	11.4.24
WSI No.	003	Dated:	10.24.24	WSI No.	007	Dated:	11.6.24
	004		10.28.24		008		11.8.24

(2.3) ASI (Architect's Supplemental Instructions) N/A

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda N/A

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Patterson Pope, Inc

Company Name

801 International Parkway, 5th Floor, Lake Mary, FL 32746

Address (Street, City, State, Zip)

407-328-0688 x 6015 bnienhuis@pattersonpope.com

Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of North Carolina.

Subcontractor's Minority Certification, if applicable: N/A

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Patterson Pope, Inc

By: Bonnie Nienhuis

Printed Name: Bonnie Nienhuis

Title: Account Manager

Dated: 11.19.24

License No.: N/A

Proposal City of Port Orange Public Utilities Facility

Various Products

Quote #: Q-68635-1
Drawing Ver: 345514 1A 11.18.24
Date: 11/19/2024
Expires On: 2/17/2025

Dept. #407, PO BOX 1431
Charlotte, NC 28201
Phone: (704) 523-4400
Fax: (704) 523-4499

Install To
James Manyette
City of Port Orange
4505 Clyde Morris Boulevard
Port Orange, FL 32129
407-321-8410
jmanyette@whartonsmith.com

Bill To
Wharton Smith
750 Monroe Road
Sanford, FL 32771

SALESPERSON	EMAIL	DELIVERY METHOD	PAYMENT METHOD
Bonnie Nienhuis	bnienhuis@pattersonpope.com		Deposit/Progress Payments

Group Name	Description	Net Total
Whiteboards	**E10** Rooms 104 /105 / 106 /120 / 123 / 126 / 130 / 131 / 132 /133 (10) Claridge Non-Glare Magnetic Glass with Invisi-mount @ 48'W x 48"H MGMI-44-NG as per specification	$20,142.00
Durham Manufacturing	**E13** Rooms 205 / 206 (5) Adjustable Work Tables Steel w. Particleboard Top @ 72"W x 36" DWBF-TH-3672-95 (5) Drawers for Work Tables above As per specifications. Color Grey	$8,976.00
Custom Phenolic Lockers Hallowell-List 10.51.29	**E9** Rooms 113 /114 /115 /116 (8) Single Tiered Phenolic Lockers @ 18"W x 24"D x 72"H with base trim (4) Finished End Panels Hasp for owner provided padlock, (2) SS Hooks per locker, numerical numbers (sequence to be determined by architect) NO INTERIOR SHELVES OR COAT ROD, Slopped Tops Color: White interior & standard manufacturer colors Attic Stock (5) Number Plates (5) SS Hooks (5) SS Hinges	$14,164.00
Pallet Rack & Wire Decking	**E12** Rooms 201 / 204 / 205 /206 / 207 (73) Sections of Pallet Rack including Starters and Adders @ 96"W x 48"D x 96"H with (4) Levels including bottom Standard Color (576) Waterfall wire decking - 48" deep x 46" wide - 2.5" x 4.0" mesh, 6 ga wire - 3 Step channels, 1.5" waterfall - 2500 lbs cap (UDL) - Powder coat gray	$24,752.00
Cantilever Pipe Rack	**E23** Room 207 (21) Single Faced Cantilever Pipe Rack @ 48"W x 45.82 "D x 120"H with 36.37 " arm (5) Double Faced Sections to make (10) individual sections Total Individual Sections = 31	$48,624.00
Equipto	**E17** (6) Storage Cabinets (1710) @ 36"W x 18"D x 78"H	$11,070.00

Proposal City of Port Orange Public Utilities Facility

Various Products

Quote #: Q-68635-1
Drawing Ver: 345514 1A 11.18.24
Date: 11/19/2024
Expires On: 2/17/2025

Dept. #407, PO BOX 1431
Charlotte, NC 28201
Phone: (704) 523-4400
Fax: (704) 523-4499

Group Name	Description	Net Total
	E18 (9) Total Sections (with starters + adders) @ 36"W x 18"D x 84"H with (7) Levels **E 20** (1) Bin and Drawer shelving (905S) @ 36"W x 12"D x 84"H with (36) compartments Standard Color: Office Grey	
Flammable Cabinet	Room 205 **E16-** (1) Flammable Cabinet Self Close Double Door - 45 gallon @ 43"W x 18"D x 65"H Color: Yellow	$1,548.00
Freight Receipt & Handling Installation	Freight Dock to Dock Receipt & Check in of Product Delivery to job site Turnkey installation by our own P2 technicians of all quoted material. To take place during Normal Business Hours: M-F | 8a-5p Clean up and removal of all packaging materials	$55,892.00
	- The customer will be responsible for storage fees of $4850, per month, incurred 30 days after the ship date that are related to a delay in an installation date due to the customer's request or site related project delay.	

Prices quoted are good for 90 days, but since our products will not be required until 2026, we need to include an escalation clause. Prices quoted will increase as per trade announced price increases for our products, inclusive to 90 days from actual install date.	Sub Total:	$185,168.00
	Estimated Total Tax:	$11,135.08
	Grand Total:	**$196,303.08**

AS PER INFORMATION PROVIDED & DRAWINGS A171A & A171B

Important Proposal Notes
Applicable sales tax and final shipping charges will be added to the invoice if not indicated above.

If TAX EXEMPT - Please provide Tax Exemption Certificate along with Purchase Order or Signed Quote

INFO REGARDING STORAGE FEES: The customer acknowledges that they will be responsible for Storage Fees of $50 per pallet, per month, incurred 30 days after the ship date that are related to a delay in an installation date due to a customer's request or a site related project delay

Patterson Pope requires a purchase order (or signed quote) for each individual accepted quote.

Please provide sign off on final drawing(s). Indicate color choices on your PO.

Patterson Pope offers custom manufactured solutions to fit your unique space. For this reason no product can be ordered until a representative from Patterson Pope is able to field verify all dimensions.

Signature below indicates acceptance of this proposal and of the attached terms and conditions.

Signature: _____ **Effective Date:** _____/_____/_____

Name (Print): _____ **Title:** _____

Please sign and email to Bonnie Nienhuis at bnienhuis@pattersonpope.com.

THANK YOU FOR YOUR BUSINESS!

Patterson Pope Terms and Conditions The following terms and conditions shall apply to any Deliverables (defined herein) provided by Patterson Pope, Inc. ("Company") to Client.

1. **Acceptance and Agreement:** The provisions on the pricing page, the purchase order and these Terms and Conditions (collectively, the "Agreement") constitute the entire agreement between Company and Client and supersede all other communications between the parties, whether written or oral, regarding the products and services described in this Agreement ("Deliverables"). The terms of this Agreement are expressly limited to those provided herein, and no purported modification, addition, or waiver of the provisions hereof shall be binding on Company for any purposes unless contained in writing, signed by an authorized representative of Company. The provisions hereof shall be deemed to have been accepted by Client's acceptance of all or any part of the Deliverables. All orders or any changes to such orders shall be subject to acceptance by Company. Change orders requested after receipt of Client purchase order may also incur additional charges. If, for any reason, Client cancels the order, any cancellation, restocking and handling charges will be invoiced. Future purchase orders (or similar engagement documents) and associated pricing pages may reference these Terms and Conditions, and by such reference, these Terms and Conditions shall be incorporated therein.

2. **Payment and Pricing:** Pricing quoted on the pricing page supersedes all previously quoted prices and is good for 60 days from the date of this Agreement. The pricing page may or may not include applicable sales or other taxes required by law; such taxes will be billed to Client and are Client's sole responsibility. This system has been custom designed and will be specially manufactured for your unique requirements. A non-refundable down payment of 40% is due upon order, 30% is due at the time of shipment and 30% is due at the time of completion. Client shall have no authority to assert any offsets or discounts against any payment due, except as expressly agreed to by Company in the pricing page or other signed writing. Client represents and warrants to Company that it is solvent at the time this Agreement is made. Client hereby grants a security interest in the product Deliverables to secure payment to Company and consents to Company filing a financing statement to perfect such security.

3. **Space Requirements:** This system has been specially designed to meet Client's specific requirements; as such, most of the equipment is manufactured on a "per job" basis. Client shall allow Company's representative(s) reasonable access to Client's facilities to confirm whether the space where the Deliverables will be installed matches Client's representations. In the event that the space cannot be field verified before the Deliverables must be ordered and the actual space does not match what had been previously represented, Client is responsible for any delays and additional costs incurred to reconfigure the Deliverables to fit actual space (i.e. extra material, labor, and freight). Notwithstanding any field verification by Company, it is Client's responsibility to be certain the space is suitable for the installation of this equipment (i.e. adequate fire protection and floor load capacity).

4. **Acceptance:** Client shall accept the Deliverables which conform to the requirements of specifications under this Agreement. All claims for errors, shortages, or damage ("Non-conformance") must be made in writing to the respective Account Representative within ten (10) days of Client's receipt of any Deliverables, and Company shall have a reasonable period of time, based on the severity and complexity of the Non-conformance, to correct the Non-conformance. If Client uses the Deliverables before acceptance or fails to promptly notify Company of any Non-conformance then the Deliverables shall be considered accepted by the Client.

5. **Freight and Shipping:** Freight and shipping terms are detailed on the pricing page. In the event that Client or one of its agents refuses delivery for whatever reason on or after the estimated delivery date, Client will be responsible for the payments in accordance to Section 2 and the pricing page in addition to any supplemental storage charges incurred by Company as a result of the delay *unless* the delay is caused by Company, one of its manufacturers, freight carriers, subcontractors, and/or any other agent acting on Company's behalf.

6. **Storage Fees:** As part of the Sales Agreement, Patterson Pope agrees to provide 30 days of storage at no cost. After 30 days storage fees will accrue and become billable to customers for any customer related delay or site related delay that results in a change in the installation date.

7. **Limited Warranty:** Company warrants its installation services under the Agreement shall be performed with reasonable care in a diligent and competent manner. Company's sole obligation under this warranty shall be to correct any Non-conformance, provided that Client gives Company written notice within ten (10) days after installation is completed. Company does not warrant and is not responsible for any product Deliverables or third party services. Client agrees to look to the third party manufacturer or vendor (and not Company) with respect to all claims regarding such third party products or services as its sole and exclusive remedy. *This section is Company's only warranty concerning the product and service Deliverables, and is made expressly in lieu of, and to disclaim, all other warranties and representations, express or implied, including any implied warranties of merchantability, non-infringement, or fitness for a particular purpose, or otherwise.*

8. **Limitation of Remedy and Liability:** *The maximum liability of Company and Company's principals, directors, officers, agents, employees, personnel, affiliates and their partners shall be the fees Company actually receives under the Agreement for the portion of work giving rise to the liability. In no event shall any of the above be liable to Client or any third party for any indirect, special, incidental, consequential, exemplary or punitive damages of any kind whatsoever in connection with the agreement, including but not limited to lost profits, loss of business opportunity, lost savings, and loss of business information.* Client will bear the risk of loss or damage to, or theft of, any Deliverables once delivery has been made to the Client. Any action against Company must be brought within twelve (12) months after the cause of action arises. Neither party shall be liable for any delays or failures in performance due to circumstances beyond its reasonable control, including but not limited to, strikes, riot, war, fire, flood, storm, explosion, accident, or other acts of God. This contract shall be construed in accordance with the laws of the State of North Carolina (without regard to its choice of law provisions). Claims arising out of or requiring the interpretation of this Agreement shall be brought and litigated exclusively in courts located within Mecklenburg County, North Carolina, or if a federal court, the court whose district includes Mecklenburg County, North Carolina. This Agreement may not be assigned without prior written consent; provided, however, Company may assign this Agreement in whole or in part, without the Client's consent, in connection with a merger, acquisition, corporate reorganization, or sale of substantially all of the Company's assets, and Client agrees that Company shall be released from any further obligations under this Agreement upon such assignment.

Patterson Pope, Inc. Date

CLIENT Date

(This Agreement may be signed in counterparts and by facsimile or electronic signature by an authorized representative.)

Purchase Order #_____

patterson·pope

pattersonpope.com

Colin Parenton

From: Bonnie Nienhuis <BNienhuis@pattersonpope.com>
Sent: Tuesday, November 19, 2024 12:50 PM
To: Colin Parenton
Subject: RE: Port Orange Public Utilities Field Ops Bldg. - Wharton-Smith, Inc.
Attachments: 2-Quote for Port Orange Public Utilities Facility - Storage.pdf; Bid Form_General_v24.1 Miscellaneou.pdf

Colin,

Attached please find the Bid Form & Quote for this project.

Please let me know if you have any questions.

Again, thank you for your extension for this bid.

Bonnie Nienhuis

50 YEARS OF STUFF

100% employee owned

407.328.0688 ext. 6015
740.706.0691 cell
pattersonpope.com

From: Bonnie Nienhuis
Sent: Tuesday, November 19, 2024 10:11 AM
To: Colin Parenton <cparenton@whartonsmith.com>
Subject: RE: Port Orange Public Utilities Field Ops Bldg. - Wharton-Smith, Inc.

I will have for you by end of day. Since I just received some of the clarifications from the RFI on Friday I needed to adjust some items.

I am sorry for the delay, but will have this completed.

Thanks for your patience.

Bonnie Nienhuis

50 YEARS OF STUFF

100% employee owned

407.328.0688 ext. 6015
740.706.0691 cell
pattersonpope.com

From: Colin Parenton <cparenton@whartonsmith.com>
Sent: Tuesday, November 19, 2024 9:29 AM
To: Bonnie Nienhuis <BNienhuis@pattersonpope.com>
Subject: RE: Port Orange Public Utilities Field Ops Bldg. - Wharton-Smith, Inc.

Good Morning Bonnie,

Did you submit to us yet? I haven't received anything. Tomorrow is the last day I can accept bids.

Thank you,

Colin Parenton | Preconstruction Engineer
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL, 32771
Cell: (407) 752-3590
Office: (407) 321-8410 ext. 3888

From: Bonnie Nienhuis <BNienhuis@pattersonpope.com>
Sent: Wednesday, November 13, 2024 6:26 PM
To: Colin Parenton <cparenton@whartonsmith.com>
Subject: RE: Port Orange Public Utilities Field Ops Bldg. - Wharton-Smith, Inc.

Colin,

My scope is not due to install until 2026 and we cannot guarantee pricing past 90 days and shipping in 2026. However year over year increase pricing has historical been 10% or less. This pricing will need to be updated closer to the ship date.

Just wanted to let you know, but I am sure you will be running into this with other subcontractors.

Thank you.

Bonnie Nienhuis

50 YEARS OF STUFF

100% employee owned

407.328.0688 ext. 6015
740.706.0691 cell
pattersonpope.com

From: Bonnie Nienhuis
Sent: Wednesday, November 13, 2024 5:53 PM
To: 'Colin Parenton' <cparenton@whartonsmith.com>
Subject: RE: Port Orange Public Utilities Field Ops Bldg. - Wharton-Smith, Inc.

Colin,

Also bidding E10 Claridge Glass Boards

Thanks

Bonnie Nienhuis

50 YEARS OF STUFF

100% employee owned

407.328.0688 ext. 6015
740.706.0691 cell
pattersonpope.com

From: Bonnie Nienhuis
Sent: Wednesday, November 13, 2024 2:10 PM
To: Colin Parenton <cparenton@whartonsmith.com>
Subject: RE: Port Orange Public Utilities Field Ops Bldg. - Wharton-Smith, Inc.

You are most welcome. Still waiting for all my quotes from manufacturers and will do my best for Friday, but it might be early next week.

Thanks for letting me bid this after due date, but I did need to wait for answers from architiect.

Bonnie Nienhuis

50 YEARS OF STUFF

100% employee owned

407.328.0688 ext. 6015
740.706.0691 cell
pattersonpope.com

From: Colin Parenton <cparenton@whartonsmith.com>
Sent: Wednesday, November 13, 2024 2:07 PM
To: Bonnie Nienhuis <BNienhuis@pattersonpope.com>
Subject: RE: Port Orange Public Utilities Field Ops Bldg. - Wharton-Smith, Inc.

Thanks so much Bonnie!

40 CELEBRATING years

Colin Parenton | Preconstruction Engineer
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771
Cell: (407) 752-3590
Office: (407) 321-8410 ext. 3888

From: Bonnie Nienhuis <BNienhuis@pattersonpope.com>
Sent: Wednesday, November 13, 2024 2:03 PM

To: Colin Parenton <cparenton@whartonsmith.com>
Subject: RE: Port Orange Public Utilities Field Ops Bldg. - Wharton-Smith, Inc.

Colin,

After speaking with James who spoke with the architect I will be quoting below in RED

I will also be quoting the following:
E13 Durham Workbenches (5) each with drawer unit
E16 Flammable Cabinet Qty (1)

When I submit my bid I will also provide you an itemized quote describing each product.

Thank you.

Bonnie Nienhuis

50 YEARS OF STUFF

100% employee owned

407.328.0688 ext. 6015
740.706.0691 cell
pattersonpope.com

From: Colin Parenton <cparenton@whartonsmith.com>
Sent: Wednesday, November 13, 2024 10:20 AM
To: Bonnie Nienhuis <BNienhuis@pattersonpope.com>
Subject: RE: Port Orange Public Utilities Field Ops Bldg. - Wharton-Smith, Inc.

Thank you! And you will be able to price the shelving items correct?

40 CELEBRATING years

Colin Parenton | Preconstruction Engineer
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771
Cell: (407) 752-3590
Office: (407) 321-9410 ext. 3999

From: Bonnie Nienhuis <BNienhuis@pattersonpope.com>
Sent: Wednesday, November 13, 2024 10:15 AM
To: Colin Parenton <cparenton@whartonsmith.com>; Ron Nienhuis <RNienhuis@pattersonpope.com>
Subject: RE: Port Orange Public Utilities Field Ops Bldg. - Wharton-Smith, Inc.

Yes I am working on it, I was waiting for clarification which I just received yesterday.

Thank you for the extension

Bonnie Nienhuis

50 YEARS OF STUFF

100% employee owned

407.328.0688 ext. 6015
740.706.0691 cell
pattersonpope.com

From: Colin Parenton <cparenton@whartonsmith.com>
Sent: Wednesday, November 13, 2024 10:12 AM
To: Ron Nienhuis <RNienhuis@pattersonpope.com>
Cc: Bonnie Nienhuis <BNienhuis@pattersonpope.com>
Subject: Port Orange Public Utilities Field Ops Bldg. - Wharton-Smith, Inc.

Good Morning,

We have not received any quotes for the lockers or shelving for the Port Orange Public Utility Building, and the bid date was yesterday. Can you get a proposal to us for these items below by the end of the week?

Phenolic Lockers	0	
Spectrum Hygiene+ Locker - 18" W x 24" L x 71 3/4" H Hallowell as per specification	8	ea

Miscellaneous Equipment - CFCI	0	
E12 - Pallet Rack Shelving - Lyon Products SWD096042096 Yes	73	ea
E16 - Flammable Liquid Safety Storage Cabinet - Eagle 4510 Yes, but through different manufacturer -same product	1	ea
E17 - Storage Cabinet - Equipto 1710 Yes	6	ea
E18 - Storage Shelving - Equipto 763-7S Yes used starters + adders	9	ea
E20 - Bin and Drawer Shelving - Equipto 905S Yes	1	ea
E23 - Pipe Arm Rack - Jarke SC-10J Spec was incorrect per architect they are fine with different manufacturer. This quantity will change as there is no 36"W pipe rack for any manufacturer. I will be quoting (16) single faced & (4) double Faced @56" x 82" x 96" with 36" arms	31	ea

Thank you,

Colin Parenton | Preconstruction Engineer
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771
Cell: (407) 752-3590
Office: (407) 321-8410 ext. 3999

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Mardale Specialties Direct Inc.	14038 63rd Way North Clearwater, FL 33760 Phone: 727-772-8099 MCOOPER@SPECIALTIESDIRECT.COM R10 10.2023	DATE **11/4/2024**	REV.1	REV.2	REV.3
		Customer: **Wharton-Smith, Inc.** Attention: **James Manyette** Fax/Email: **comest@whartonsmith.com**			
Plan Date: 9/30/2024	Addendums: **N/A**	Sales Rep: Mike Cooper			

DIVISION 10 - SPECIALTIES | **JOB NAME: PORT ORANGE PUBLIC UTILITIES FIELD OPS BLDG**

QTY	DESCRIPTION			
	Partitions & Screens By	Material	$	-
		Installation	$	-
132	**Accessories by American Specialties, See itemized list for counts & details**	**Material**	**$**	**10,834**
		Installation	**$**	**3,441**
8	**Lockers By ASI Storage Solutions, 1 Tier Traditional Phenolic Locker 18X24X 72, 4in HDPE-Base, Slope Hood, **No Locks quoted**	**Material**	**$**	**9,974**
		Installation	**$**	**848**
21	**Fire Extinguishers & Cabinets By JL Industries, (8) Fec Semi-Rec Non Rated #CSS1037V17 W/Extinguishers #3A40BC & (13) Extinguishers #3A40BC W/Brackets, **Tagging FL**	**Material**	**$**	**6,322**
		Installation	**$**	**789**
20	**Corner Guards By American Specialties, 1-1/2" x 1-1/2" x 48" Stainless Steel 16 Ga**	**Material**	**$**	**1,772**
		Installation	**$**	**1,068**
	Curtain & Cubicle Tracks	Material	$	-
		Installation	$	-
1	**Flag Poles By Eder, 30' Height #ECH30IH Aluminum, Internal Halyard clear Anodized Finish, 6" Gold Aluminum Ball**	**Material**	**$**	**8,132**
		Installation	**$**	**2,925**
10	**Glass Marker Boards By American Specialties VDP, 4' X 10' Floating Magnetic White**	**Material**	**$**	**9,586**
		Installation	**$**	**1,270**
	Mailboxes	Material	$	-
		Installation	$	-
1	**Bike Racks By Ribbon Racks, #RB09SG Galvanized Surface Mounted**	**Material**	**$**	**2,689**
		Installation	**$**	**263**
	OTHER 1	Material	$	-
		Installation	$	-
	OTHER 2	Material	$	-
		Installation	$	-
	OTHER 3	Material	$	-
		Installation	$	-
	OTHER 4	Material	$	-
		Installation	$	-
	Textura or Bond included ONLY if there are values indicated in this section	**Textura/cc**	$	-
		Bond	$	-
		TOTAL	**$**	**59,912**

FOR QUALIFIERS PLEASE SEE PAGE 2

Mardale Specialties Direct Inc.	14038 63rd Way North Clearwater, FL 33760 Phone: 727-772-8099 MCOOPER@SPECIALTIESDIRECT.COM R10 10.2023	**PROJECT QUALIFIERS**
Plan Date: 9/30/2024	Addendums: **N/A**	Sales Rep: Mike Cooper
DIVISION 10 - SPECIALTIES	**JOB NAME: PORT ORANGE PUBLIC UTILITIES FIELD OPS BLDG**	

PROJECT SPECIFIC QUALIFIERS: MUST BE INCLUDED IN ALL CONTRACTS PRIOR TO MARDALE SPECIALTIES DIRECT SIGNING SUCH AGREEMENT.

A. PLANS - Quote is based on specifications and plans

B. EXCLUDES UNDER LAV GUARDS AND LARGE/CUSTOM VANITY MIRRORS.
***NO QUOTE FOR PLASTIC LAMINATE LOCKERS AT CORRIDOR (PART OF MILLWORK)**
***NO QUOTE FOR LOCKER BENCHES (BY OWNER)**
***NO 36" SHOWER CURTAIN ROD AVAILABLE IN CURVED MODEL. QUOTED STRAIGHT**

- Mardale SDI standard insurance is included. NO reduction to this quote for any OCIP or CCIP participation.
- **Glass/Ceramic/Porcelain Tile -** Mardale is not responsible for damages to tile. ANY WAINSCOT FILLERS ARE BY OTHERS.
- Quote valid for manufacturers/products as listed on THIS QUOTE.
- **Backing/Support/Electrical Items -** Mardale is not responsible for any structural support, blocking, caulking, backing or cut-outs; this work must be completed by the General Contractor prior to installation. Installation of any electrical items such as hand dryers and electrical mirrors by others.
- **Ceiling mount partition support -** In order to comply with manufacturer's warranty, ceiling support (by others), MUST be structural steel.
- **Cut-Sheets -** Mardale will provide cut-sheets and technical data on all of our material and products to the General Contractor. However, we do not coordinate with other trades for backing and cut-outs; this task is the responsibility of the Contractor overseeing the project.
- **Fire Extinguishers** - Fire extinguishers are tagged at time of purchase, valid for 1 year; retagging IS NOT included.
- **Flagpole quote INCLUDES**: flagpole & accessories, sleeve, shop drawings, erecting flagpole into pre-installed sleeve.
  EXCLUDES ALL FOUNDATION WORK: Install of sleeve, rebar, engineering drawings, permits and concrete
- **Installation Notes -** All work is to be 1st shift- weekdays unless otherwise noted. Installation of our scope (all materials) will be completed in an uninterrupted single visit to site; additional trips will result in additional charges. A change order for additional trip charges will be estimated based on each scenario.
- **Price** - The price on this quotation will not be subject to verbal changes or other agreements unless submitted in an official document and approved by both parties.
- The quoted price is valid for **30 days**, escalation charges may apply thereafter.

Mardale Specialties Direct Inc.
14038 63rd Way North
Clearwater, FL 33760
Phone: 727-772-8099
MCOOPER@SPECIALTIESDIRECT.COM
R10 10.2023

ITEMIZED ACCESSORIES

Plan Date: 9/30/2024 | Addendums: N/A | Job Name: PORT ORANGE PUBLIC UTILITIES FIELD O

QTY	MODEL / SERIES	DESCRIPTION
		ACCESSORIES BY AMERICAN SPECIALTIES
7	3701-42	42" (1-1/4" O.D) Smooth - Straight Grab Bar
7	3701-36	36" (1-1/4" O.D) Smooth - Straight Grab Bar
1	3750	(1-1/4" O.D) Smooth - Horizontal Grab Bar, 24" x 36"
11	7340-S	Robe Hook - Single - Satin Stainless Steel - Surface
28	0751	Robe Hook - Heavy Duty - Satin Chrome Plated Brass
5	7320-S	Soap Dish - Satin Stainless Steel - Surface
7	0535-1830	Mirror - Fixed Tilt, Stainless Steel Frame - 18"W X 30"H
7	20826	Waste Receptacle - 12.8 gal. - Surface
7	9343	Soap Dispenser- Liquid- Surface
7	68523A	Auto Paper Towel Dispenser - Roll - Battery - Surface
7	20030	Toilet Tissue Dispenser- Twin Hide-A-Rol Surface
5	8205-L	Folding Shower Seat - L-Shaped, Left Hand, ADA
4	ASI 1224-36	36" Shower Curtain Rod
4	1200-V42	42" Shower Curtain + Hooks
7	0473-1A	Sanitary Waste Disposal - w/ Lock - Surface
12	0692-524	Shelf - Stainless Steel - 5"D X 24"L - Surface
4	3757-16X32	3757-16X32 1-1/4” OD w/ Snap-on Flanges
1	1201-B	60" Shower Curtain Rod - Curved
1	1200-V72	72" Shower Curtain + Hooks
132	← TOTAL ITEMS	

Christine Carasas

From: Michael Cooper <mcooper@specialtiesdirect.com>
Sent: Monday, November 11, 2024 12:53 PM
To: Wharton Smith Commercial Estimating
Subject: PORT ORANGE PUBLIC UTILITIES FIELD OPS BLDG
Attachments: PORT ORANGE PUBLIC UTILITIES FIELD OPS BLDG.pdf

Please see the attached quote. We appreciate your business and we thank you for your time and consideration. **Please verify receipt of quote**. Thanks

Make sure to review qualifiers for important information & exclusions.

Thank you,

Mike Cooper
Regional Sales Manager
Specialties Direct, Inc.
(Ph) 727-772-8099 ext 4115
(Cell) 727-753-8078
Mcooper@specialtiesdirect.com
www.specialtiesdirect.com

Advancing your projects through experience.

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Subcontractor Bid Form-General

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Streamline Commercial Interiors, Inc.
Scope of Work:	Div10 and Equipment

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	**$** 536,464.00
Amount in Words:	five hundred thirty six thousand four hundred sixty-four and no cents.

(1.2) Alternates (Voluntary)

Use Husky racking in lieu of Lyon (same tear drop bracket)	$ $40,000.00
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	NA - unless customer sets up Streamline as a vendor.
Amount:	$ 200,000.00

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1	Use Husky racking in lieu of Lyon (same tear drop bracket)	$ $40,000.00
2		$
3		$

(1.5) MWBE Participation

MWBE	$ 536,464.00
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %: 3%	

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)
NA			

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1-15	Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1-8	Dated:		WSI No.		Dated:	
WSI No.		Dated:		WSI No.		Dated:	
WSI No.		Dated:		WSI No.		Dated:	

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Streamline Commercial Interiors, Inc.

Company Name

522 SOuth Hunt Club Blvd #536, Apopka, FL 32703

Address (Street, City, State, Zip)

407-416-2882 jamie@streamlineci.com

Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of _____.

Subcontractor's Minority Certification, if applicable:

(X)MBE (X)WBE ( ) LBE
( )VBE (X)SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Streamline Commercial Interiors, inc.

By: Jamie Reid

Printed Name: Jamie Reid

Title: Owner

Dated: 11/13/2024

License No.: _____

STREAMLINE

Commercial Interiors, Inc.

Streamline all your Division 10 material and install needs.

100% Woman Owned and Certified!

	City of Port Orange	
Project Name:	**Public Utilities Field Ops Facility**	Wednesday, November 13, 2024
	4505 Clyde Morris Blvd	
Project Address:	Port Orange, FL 32129	
Architect:	Schenkel Shultz	
Drawing Date:		
Spec. Date:		
Bid Package:	Specialties - Div 10	
Total Bid Amount:	**$536,464**	

Life Safety	$	10,726
Site Furnishings	$	13,564
Equipment	$	486,031
Wall Protection	$	2,131
Toilet Accessories	$	19,766
Misc Items - Mud Room & Laundry	$	4,246

See page 2 for all material scope, qty, and models.

Clarifications:

Due to the continual pricing increases from Manufacturers, this pricing is good for 60 days.
50% material deposit required to release material.
Additional permits or engnineered calculations for pallet racking and pipe stands are not included.
Flag Pole: Specs call out a internal and an external halyard, we priced an external to match the rest of th spec requirements.
S&S drawings for flagpole are included. Any dewatering for flag pole footings is excluded.
Locker benches are by Owner.

Exclusions/ Qualifying Notes:

Supervision	Includes all supervision and project management staff
Pricing	Based on both FURNISH + INSTALL unless otherwise noted.
Shiftwork/ overtime	No shiftwork or overtime is assumed in this estimate, unless otherwise noted.
Blocking	All wood products including plywood backing/ blocking
Damage	Trade damage repair
Debri Removal	Dumpsters + Debris removal from site, including trash chutes or high reach equipment, unless otherwise noted
Scope Changes	No contingency pricing has been allowed for scope change, omitted details or significant cost impact due to hidden conditions.
Sales Tax	**Included**

Please let me know if you have any questions.

Thank you,

Jamie Reid
407-416-2882

Drawings Tag	Scope	Manufacturer	Model	Qty
	Life Safety			
	Fire Extinguishers	JL Industries	Cosmic 5E	10
	Fire Extinguishers - Warehouse	JL Industries	Cosmic 5E	9
	Fire Extinguishers - IT/Electrical Room	JL Industries	Purple Dry Chem 5Lb	2
	Fire Extinguisher Cabinets	JL Industries	Cosmo 3" Rolled Edge Semi-Recessed	8
	Freight	JL Industries		1
	Knox	Knox	3200 - Surface Mount	1
	Site Furnishings			
	40' Flag Pole	Eder	Drawings and Specs do not match.	1
	Equipment			
E1	Clothes Washer	Speed Queen	TC5003WN	2
E2	Clothes Dryer	Speed Queen	DC5003WE	2
E4	**Refrigerator**	GE	GNE25JSKSS *model appears to be discontinued	1
E6	**Microwave (no trim kit)**	GE	PES7227SLSS	3
E9	**Locker**	Spectrum	12" x 24" x 80" w/sloped top, toe kick and hasp lock	58
E10	**48" x 48" White Board**	Claridge	MGMI-44-NG	10
E11	**Ice Machine w/filter**	Manitowoc Indigo	ID-0452A w/ B-570 BIN. PROVIDE WITH WATER FILTER	3
E12	**Pallet Racking**	Lyon	96x48x96 not available - we priced 96x42x96	73
E13	**Heavy Duty Work Bench**	Durham Manufacturing	HWBF-TH-3696-95	5
E16	**Flammable Liquid Safety Storage Cabinet**	Eagle Manufacturing	4510	1
E17	**Storage Cabinet - Lockable**	Equipto	1710 - 36x18x78	6
E18	**Storage Cabinet**	Equipto	963-7S 36x18x84	9
E20	**Bin & Drawer Shelving**	Equipto	905S	1
E23	**Pipe Rack Arm**	Jarke	SC-10J	31
	Freight			1
	Wall Protection			
	Corner Guards	Inpro	48"h w/1.5" wings	23
	Toilet Accessories Restroom/Shower 113, 114, 115, 116			
T-1A	42" Grab Bar	Bobrick	5806x42	4
T-1B	36" Grab Bar	Bobrick	5806x36	4
T-2	2-Wall Grab Bar	Bobrick	58616	4
T-3	Robe Hook	Bobrick	76717	4
T-3A	Robe Hook	Bobrick	2116	4
T-4	Soap Dish	Bobrick	6807	4
T-6	18" x 30" Channel Frame Mirror	Bobrick	293 1830	4
T-7	Waste Receptacle	Bobrick	277	4
T-8	Soap Dispenser	Bobrick	818615	4
T-9	Paper Towel Dispenser	Bobrick	2974	4
T-10	Toilet Paper Dispenser	Bobrick	4288	4
T-13	ADA Shower Seat	Bobrick	518	4
T-14	Shower Rod, Hooks, Curtain	Bobrick		4
T-18	Sanitary Napkin Disposal	Bobrick	254	4
	Toilet Accessories Restroom/Shower 103B, 110, 111			
T-1A	42" Grab Bar	Bobrick	5806x42	4
T-1B	36" Grab Bar	Bobrick	5806x36	4
T-6	18" x 30" Channel Frame Mirror	Bobrick	293 1830	4
T-7	Waste Receptacle	Bobrick	277	4
T-8	Soap Dispenser	Bobrick	818615	4
T-9	Paper Towel Dispenser	Bobrick	2974	4
T-10	Toilet Paper Dispenser	Bobrick	4288	4
T-18	Sanitary Napkin Disposal	Bobrick	254	4
	Misc Items - Mud Room & Laundry			
T-2	2-Wall Grab Bar - Mud Room	Bobrick	58616	1
T-3A	Robe Hook - Mud Room	Bobrick	2116	24
T-4	Soap Dish - Mud Room	Bobrick	6807	1
T-14	Shower Rod, Hooks, Curtain - Mud Room	Bobrick		1
T-13	ADA Shower Seat - Mud Room	Bobrick	518	1
T-19	Mop Rack - Laundry	Bobrick	239x34	1
T-19A	Shelf - Mud Room	Bobrick	295x24	12

Christine Carasas

From: ConstructConnect <DoNotReply@constructconnectmail.com>
Sent: Wednesday, November 13, 2024 7:45 AM
To: Wharton Smith Commercial Estimating
Subject: Received bid for Port Orange Public Utilities Field Ops Bldg.

A simpler, more effective bid process

You've received a bid from Streamline Commercial Interiors, Inc. via ConstructConnect

Port Orange Public Utilities Field Ops Bldg.

Project Details

Project Name	Port Orange Public Utilities Field Ops Bldg.
Bid Date	Nov 12, 2024 @ 02:00 PM ET
Project ID	6613997

View Project

Bid Details

Company	Streamline Commercial Interiors, Inc.
Bid Amount	$536,464
Submission Date	Nov 13, 2024 @ 07:44 AM ET
Description	See attached proposal. last page of file shows a breakout of all scope, models, and qtys.
Bid Attachments	Port Orange - Streamline Quote.pdf

Contact Details

Primary Contact	Jamie Reid
Email	jamie@streamlineci.com
Phone	
Website	

Support Number: (877) 4CC-TOOL (422-8665)

Email: customerservice@constructconnect.com

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Subcontractor Bid Form-General

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	VBM Window Fashions
Scope of Work:	Div. 12 - Window Treatments

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	**$** 7,728.61
Amount in Words:	Seven thousand seven hundred twenty eight dollars and sixty one cents.

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	
Amount:	$

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$ 7,728.61
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	5

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1	Dated:	11/08/24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10/22/24	WSI No.	2	Dated:	10/24/24
WSI No.	3	Dated:	10/25/24	WSI No.	4	Dated:	10/28/24
WSI No.	5	Dated:	10/21/24	WSI No.	6	Dated:	11/04/24

WSI No. 7 Date 11/06/24
WSI No. 8 Date 11/08/24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

VBM Window Fashions
Company Name

416 Commerce Way, Suite 120, Longwood, FL 32750
Address (Street, City, State, Zip)

407-339-7600 Charity@vbmwindows.com
Phone Number **Email Address**

Type of Organization (Check One):

(✓) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

(✓) MBE (✓) WBE ( ) LBE
( ) VBE ( ) SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: VBM Window Fashions
By: Charity Anne Agnew
Printed Name: Charity Anne Agnew
Title: Estimator
Dated: 10/28/24
License No.: N/A

Wild Oak Holding, Inc.

dba VBM Window Fashions
and Vertical Blind Manufacturers CFL
416 Commerce Way, Suite 120
Longwood, FL 32750

Estimate

Date	Estimate #
10/24/2024	332-5684

Name / Address
Wharton-Smith Commercial Group 750 Monroe Rd. Sanford, FL 32771

Project
Port Orange Public Ut...

Description	Qty	Rate	Total
Supply and Install Single Manual Roller Shades in the exterior windows of the 7 listed rooms below per Specifications Section 122413 and Plans A171A & A502. Single Manual Roller Shades is Summit U500, with a 5% Openness Factor, and comes with Front Fascia, End Caps, Sealed Hem Bar, and Side & Sill Channel; which is Manufactured by Springs Window Fashions, the parent company of Mecho. The exterior windows are in the following rooms: Conference / Training Room 101, and Offices 105, 106, 107, 127, 128, 129, 130, & 131.	7	1,031.85714	7,223.00T
Estimate includes materials, field measurement, travel, and installation. Good for 60 days.		0.00	0.00T
MWBE - Women Owned Enterprise LDB - Local Developing Business Self Certified Small Business -DOD Certification @ dbe@goaa.org EXPIRATION September 15, 2025		0.00	0.00T
If Textura is required add Textura cost to total.		0.00%	0.00

Port Orange Public Utilities Field Operations Building

Subtotal	$7,223.00
Sales Tax (7.0%)	$505.61
Total	$7,728.61

Phone #
407-339-7600

Christine Carasas

From: ConstructConnect <DoNotReply@constructconnectmail.com>
Sent: Monday, November 11, 2024 8:47 AM
To: Wharton Smith Commercial Estimating
Subject: Received bid for Port Orange Public Utilities Field Ops Bldg.

A simpler, more effective bid process

You've received a bid from Vertical Blind Manufacturers CFL via ConstructConnect

Port Orange Public Utilities Field Ops Bldg.

Project Details

Project Name	Port Orange Public Utilities Field Ops Bldg.
Bid Date	Nov 12, 2024 @ 02:00 PM ET
Project ID	6613997

View Project

Bid Details

Company	Vertical Blind Manufacturers CFL
Bid Amount	$7,729
Submission Date	Nov 11, 2024 @ 08:47 AM ET
Description	Estimate and Bid Form for Div. 12 - Window Treatments
Bid Attachments	Port Orange Public Utilities Field Operations Building - General Bid Form.pdf Port Orange Public Utilities Field Operations Building.pdf

Contact Details

Primary Contact	Charity Agnew
Email	Charity@vbmwindows.net
Phone	(407) 339-7600 ext.
Website	

Support Number: (877) 4CC-TOOL (422-8665)

Email: customerservice@constructconnect.com

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Subcontractor Bid Form-General

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

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Scope of Work:	Div. 12 - Window Treatments

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PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	**$** 7,728.61
Amount in Words:	Seven thousand seven hundred twenty eight dollars and sixty one cents.

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	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	
Amount:	$

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

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LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	5

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1	Dated:	11/08/24	RFI No.	2	Dated:	11/11/24
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10/22/24	WSI No.	2	Dated:	10/24/24
WSI No.	3	Dated:	10/25/24	WSI No.	4	Dated:	10/28/24
WSI No.	5	Dated:	10/21/24	WSI No.	6	Dated:	11/04/24

WSI No. 7 Date 11/06/24
WSI No. 8 Date 11/08/24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

VBM Window Fashions
Company Name

416 Commerce Way, Suite 120, Longwood, FL 32750
Address (Street, City, State, Zip)

407-339-7600 Charity@vbmwindows.com
Phone Number **Email Address**

Type of Organization (Check One):

(✓) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

(✓) MBE (✓) WBE ( ) LBE
( ) VBE ( ) SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: VBM Window Fashions
By: Charity Anne Agnew
Printed Name: Charity Anne Agnew
Title: Estimator
Dated: 10/28/24
License No.: N/A

Wild Oak Holding, Inc.

dba VBM Window Fashions
and Vertical Blind Manufacturers CFL
416 Commerce Way, Suite 120
Longwood, FL 32750

Estimate

Date	Estimate #
10/24/2024	332-5684

Name / Address
Wharton-Smith Commercial Group 750 Monroe Rd. Sanford, FL 32771

Project
Port Orange Public Ut...

Description	Qty	Rate	Total
Supply and Install Single Manual Roller Shades in the exterior windows of the 7 listed rooms below per Specifications Section 122413 and Plans A171A & A502. Single Manual Roller Shades is Summit U500, with a 5% Openness Factor, and comes with Front Fascia, End Caps, Sealed Hem Bar, and Side & Sill Channel; which is Manufactured by Springs Window Fashions, the parent company of Mecho. The exterior windows are in the following rooms: Conference / Training Room 101, and Offices 105, 106, 107, 127, 128, 129, 130, & 131.	7	1,031.85714	7,223.00T
Estimate includes materials, field measurement, travel, and installation. Good for 60 days.		0.00	0.00T
MWBE - Women Owned Enterprise LDB - Local Developing Business Self Certified Small Business -DOD Certification @ dbe@goaa.org EXPIRATION September 15, 2025		0.00	0.00T
If Textura is required add Textura cost to total.		0.00%	0.00

Port Orange Public Utilities Field Operations Building

Subtotal	$7,223.00
Sales Tax (7.0%)	$505.61
Total	$7,728.61

Phone #
407-339-7600

Christine Carasas

From: ConstructConnect <DoNotReply@constructconnectmail.com>
Sent: Monday, November 11, 2024 12:30 PM
To: Wharton Smith Commercial Estimating
Subject: Received bid for Port Orange Public Utilities Field Ops Bldg.

A simpler, more effective bid process

You've received a bid from Vertical Blind Manufacturers CFL via ConstructConnect

Port Orange Public Utilities Field Ops Bldg.

Project Details

Project Name	Port Orange Public Utilities Field Ops Bldg.
Bid Date	Nov 12, 2024 @ 02:00 PM ET
Project ID	6613997

View Project

Bid Details

Company	Vertical Blind Manufacturers CFL
Bid Amount	$7,729
Submission Date	Nov 11, 2024 @ 12:29 PM ET
Description	Estimate and Bid Form for Div. 12 - Window Treatments.
Bid Attachments	Port Orange Public Utilities Field Operations Building - General Bid Form.pdf Port Orange Public Utilities Field Operations Building.pdf

Contact Details

Primary Contact	Charity Agnew
Email	Charity@vbmwindows.net
Phone	(407) 339-7600 ext.
Website	

Support Number: (877) 4CC-TOOL (422-8665)

Email: customerservice@constructconnect.com

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Subcontractor Bid Form-General

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Brevard Constructors, Inc
Scope of Work:	Pre-engineered Metal Buildings

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

See attached proposal for scope.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	$ 1,229,700 ^{00}
Amount in Words:	one million, two hundred twenty nine thousand, seven hundred.

(1.2) Alternates (Voluntary)

See Attached Proposal	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	Pre-engineered Metal Buildings
Amount:	$ 689,980 ^{00} (No tax on this number)

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1	See Attach	$
2	Proposal	$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %: 3%

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)
Pre-engineered Metal Buildings	6-8 weeks	for Approvals	
	16-20 week	for Delivery after	Approval.

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10-22-24	WSI No.	4	Dated:	10-28-24
WSI No.	2	Dated:	10-24-24	WSI No.	5	Dated:	10-31-24
WSI No.	3	Dated:	10-24-24	WSI No.	6	Dated:	11-4-24
					7		11-6-24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Brevard Constructors Inc
Company Name

2023 N. Carpenter Rd. Titusville FL 32796
Address (Street, City, State, Zip)

321-269-2929 martygordon@brevardconstructors.com
Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of _____.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Brevard Constructors, Inc
By: Marty B. Gordon
Printed Name: Marty B. Gordon
Title: Sec./Tres.
Dated: 11-7-24
License No.: CGC047495

REVARD CONSTRUCTORS

COMMERCIAL AND INDUSTRIAL

EMAIL PROPOSAL
321-269-2929
4 PAGES

Date: Thursday, November 07, 2024

To: Wharton-Smith, Inc.
750 Monroe Rd.
Sanford, Florida 32771

Attn: James Manyette

Re: Port Orange Public Utilities

We are pleased to offer the following proposal. All work shall be performed in a workmanlike manner, complying with all prevailing local codes.

Warehouse Building:

- Supply and install one approx. 16,800 sq. ft. Nucor Pre-Engineered Metal Building including the following:
  - ◊ One 103'-3"x 120'-2 ½"x 18'-0" Asymmetrical Gable Building with 2:12 pitch
  - ◊ One 36'-9"x 120'-2 ½"x 18'-0" Covered Lean-to with 2:12 pitch
  - ◊ 22 gage Kynar Standing Seam Roof (Manufacturer's standard 35-year Kynar finish warranty and 20-year weather-tightness warranty included.) (U.L. 90 rated)
  - ◊ 24 gage Kynar Exposed Fastener wall panels. (All walls on main Asymmetrical Gable building are open 8' for self-supporting masonry. No masonry support beams) (Covered Lean-to has all walls open full height to remain open.)
  - ◊ Sidewall bay spacing: 1 @ 30'-11"; 1 @ 27'-9"; 1 @ 30'-0"; and 1 @ 31'-6 ½")
  - ◊ Endwall bay spacing on main building: 1 @ 37'-4 ¼"; 1 @ 36'-4 ½"; and 1 @ 29'- 6 ¼"
  - ◊ Non-expandable endwalls
  - ◊ R-30 vinyl faced reinforced faced insulation long tab banded system in roof of Asymmetrical building and R-19 vinyl faced reinforced faced insulation in metal walls. (None in Covered Lean-to)
  - ◊ Portal frames in sidewalls for bracing
  - ◊ Six 14'x 12' framed openings; two 3'-4"x 3'-6" framed openings; two 4'-4"x 3'-6" framed openings; three 2'x 1'-6" framed openings; and one 6'-8"x 3'-6" framed opening included. (All roll-up doors, louvers, and fans to be supplied and installed by other.)

- ◊ All walls from 8' up around the Asymmetrical Building gets hidden fastener liner panel.
- ◊ Both roofs get full hidden fastener ceiling liner.
- ◊ Building designed per FBC 2023; 148 MPH wind load; Occupancy Classification III; 10 psf collateral load; Exposure "C"; and a 20 PSF roof live load
- ◊ Special deflections are: L/240 deflections for purlins and main frames with a L/240 ceiling live load; L/180 for girts and H/200 for main frame sidesway.
- ◊ Front sidewall of Asymmetrical Building to have a 2'-4 ½" roof extension; and endwalls of both buildings to have a 1' roof extension, all with hidden fastener type soffit.
- ◊ Back sidewall of Asymmetrical Building will have a recessed area for an entrance that is out of masonry by other. We will provide soffit for this area, but framing for this soffit will be by other. And walls above masonry at this area will be by other.
- ◊ We have included a support beam for each of the 3 large fans hanging from structure.
- ◊ All primary steel on base bid to be manufacture's standard prep and one coat red oxide primer.
- ◊ Secondary steel to be G-90 cold rolled galvanized.
- ◊ Kynar gutters and downspouts included
- ◊ No anchor bolts included.
- ◊ Tax, Freight, and erection included (Standard Wage Rates have been figured, not davis bacon.)

Price ---------- $ 882,100.00

Alternates:

1. **Change primary steel to G-90 hot dipped galvanized. Add ---------- $ 36,500.00**
2. **Change roof to a 24 gage. Deduct ----------< $ 28,500.00 >**
3. **Change walls to a 3" Mesa Sandwich panel. Add ---------- $ 140,200.00**

Parking A Canopy

- Supply and install one 21'-6"x 150'-8"x 16'-6" Single Slope Nucor Pre-Engineered Metal Building including the following:
  - ◊ 22 gage kynar standing seam roof (Manufacturer's standard 35-year finish and 20-year weather-tightness warranty included.) (UL-90 rated) (1:12 roof pitch)
  - ◊ All walls are open full height to remain open.
  - ◊ Non expandable endwalls
  - ◊ Building designed per FBC 2023; 148 MPH wind load; Occupancy Classification II; 10 psf collateral load; Exposure "C"; and a 20 PSF roof live load (reducible)
  - ◊ Building is designed as open.
  - ◊ Special deflections: L/180 for purlins and main frames; and H/100 for main frame sidesway.
  - ◊ No insulation

- ◊ Portal frame in one bay on each sidewall for bracing.
- ◊ All primary steel on base bid to be manufacture's standard prep and one coat red oxide primer.
- ◊ Secondary steel to be G-90 cold rolled galvanized.
- ◊ Gutters and downspouts included
- ◊ Sidewall bay spading of 1 @ 38'-4"; 2 @ 37'-0"; and 1 @ 38'-4".
- ◊ Low sidewall to have a 4' projection at eave extension with no soffit.
- ◊ No anchor bolts included
- ◊ Tax, Freight, and erection included (standard wage rates have been figured, not davis bacon)

Price---------- $ 162,500.00

Alternates:

1. **Change primary steel to G-90 hot dipped galvanized. Add ---------- $ 10,600.00**
2. **Change roof to a 24 gage. Deduct ----------< $ 8,100.00 >**

Parking B Canopy

- Supply and install one 27'-6"x 167'-8"x 16'-6" Single Slope Nucor Pre-Engineered Metal Building including the following:
  - ◊ 22 gage kynar standing seam roof (Manufacturer's standard 35-year finish and 20-year weather-tightness warranty included.) (UL-90 rated) (1:12 roof pitch)
  - ◊ All walls are open full height to remain open.
  - ◊ Non expandable endwalls
  - ◊ Building designed per FBC 2023; 148 MPH wind load; Occupancy Classification II; 10 psf collateral load; Exposure "C"; and a 20 PSF roof live load (reducible)
  - ◊ Building is designed as open.
  - ◊ Special deflections: L/180 for purlins and main frames; and H/100 for main frame sidesway.
  - ◊ No insulation
  - ◊ Portal frame in one bay on each sidewall for bracing.
  - ◊ All primary steel on base bid to be manufacture's standard prep and one coat red oxide primer.
  - ◊ Secondary steel to be G-90 cold rolled galvanized.
  - ◊ Gutters and downspouts included
  - ◊ Sidewall bay spading of 1 @ 34'-4"; 3 @ 33'-0"; and 1 @ 34'-4".
  - ◊ Low sidewall to have a 4' projection at eave extension with no soffit.

- ◊ No anchor bolts included
- ◊ Tax, Freight, and erection included (standard wage rates have been figured, not davis bacon)

Price---------- $ 185,100.00

Alternates:

1. **Change primary steel to G-90 hot dipped galvanized. Add ---------- $ 10,600.00**
2. **Change roof to a 24 gage. Deduct ----------< $ 8,900.00 >**

**** With the instability of the steel prices, this price is only good for 25 days. Price is based on today steel market price from the steel mills. We can only lock a price in if we order building as a straight production job with no approval drawings. Once we receive the approval drawings from Nucor, they are reviewed and returned to Nucor as approved or approved as noted, Nucor will then update our price based on the current price module. We will then give you an add or the exact amount of increase with no mark up for change order. (We have not had a price increase since December.)**

Contractor does not include in this proposal any work not mentioned above.

Marty B. Gordon
Brevard Constructors, Inc.

Christine Carasas

From: Marty Gordon <martygordon@brevardconstructors.com>
Sent: Thursday, November 7, 2024 11:49 AM
To: Wharton Smith Commercial Estimating
Subject: Fwd: Message from KM_364e
Attachments: SKM_364e24110712400.pdf

Attached is the bid form and proposal for the Port Orange Public Utilities Field Operation facility Pre-engineered Metal Buildings. Please let me know if you have any questions.

---------- Forwarded message ---------
From: <brevardconstructorsscanner@icbminc.co>
Date: Thu, Nov 7, 2024 at 11:45 AM
Subject: Message from KM_364e
To: <MartyGordon@brevardconstructors.com>

--
Marty Gordon
Brevard Constructors, Inc.
Secretary Treasurer/ Estimator
2023 North Carpenter Rd.
Titusville FL 32796
Office: 321-269-2929
Cell: 321-403-5005

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COX FIRE PROTECTION | Proud part of PB PYE-BARKER FIRE & SAFETY · EST. 1946

6555 Grace Lane
Jacksonville, FL 32205

PHONE: (904) 781-8227
FAX: (904) 781-0408
WEB: CoxFire.com

November 11, 2024

Wharton Smith
750 Monroe Road
Sanford, FL 32771

Attn: James Manyette

Re: Port Orange Public Utilities

I am pleased to provide you with the following proposal for the automatic fire protection for the above project. Please review the following information carefully and feel free to contact me with any questions or clarifications regarding this proposal.

SUMMARY OF SCOPE

The information contained within this proposal represents our intention to provide a system of fire protection in the form of automatic sprinklers to protect the facilities described by the bid documents listed below. This proposal is based on Cox Fire Protection supplying all required materials, equipment, and labor to provide the following:

Provide and install a complete fire suppression system as indicated: 2 wet pipe sprinkler system shall be installed in the building per Cox Fire layout and engineer of records 61G plans and specifications as dated below.

BID DOCUMENTS

The following items were available to us and have been used for this proposal:

ITEM	TITLE	DATE
DRAWINGS	FIRE PROTECTION	09.30.24

DESIGN CRITERIA

The following design criteria shall be used in accordance with NFPA 13 and will be the basis for the system requirements:

All area's except as listed below – Provide a .10 GPM/ft^2 for the most remote 1500 ft^2 with a hose allowance of 100 GPM for the protection of light hazard occupancy. Head spacing shall not exceed 225 ft^2.

Mechanical, storage and janitors' rooms - Provide a .20 GPM/ft^2 for the most remote 1500 ft^2 with a hose allowance of 250 GPM for the protection of ordinary hazard occupancy. Head spacing shall not exceed 130 ft^2.

CONSTRUCTION DESIGN

Design shall be prepared and provided in 2D CAD documents. See submittals section for additional information.

STANDPIPE SYSTEM

N/A - No standpipes required per plans and specifications.

WATER SUPPLY

The following water flow test information was provided to us on drawing FP 001 and has been used for the basis of hydraulic design. Should the water supply vary in either quantity (GPM) or quality (PSI), it will be the buyer's responsibility to pay for any additional work due to the change in conditions. Cox Fire Protection has no control over municipal water supplies and cannot guarantee their adequacy or reliability for any given time.

Date of Test: 06.28.22
Static Pressure: 75 PSI
Residual Pressure: 55 PSI
Flow Gallons: 2252 GPM

SUBMITTALS

Electronic sets of Cox Fire's drawings in accordance w/ 61G documents, hydraulic calculations, and product data shall be prepared by Cox Fire Protection and submitted to the buyer for approval. No work shall commence until approved submittals and sprinkler permit are returned to our office. Submittals shall be completed and forwarded to the buyer 6 weeks from the date of award and CAD FILES are provided.

PIPE AND FITTINGS

All threaded piping shall be schedule 40 black pipe and joined by 175# threaded ductile iron fittings. All grooved piping shall be schedule 10 black pipe and joined by grooved mechanical fittings. Welded outlets shall be used to join branch piping to the cross main piping.

HANGERS

Cox Fire Protection shall utilize an approved method of hanging all horizontal and vertical pipes. Cox Fire Protection shall not be responsible for any modifications to ensure that the structure is capable of bearing the load of the sprinkler systems.

SPRINKLER HEADS

The following types and application of automatic sprinklers shall be provided:

Application	Head Type
Finished ceiling areas	½" pendent heads with a recessed escutcheon
Breezeway	½" sidewall heads w/ recessed escutcheon
Exposed structure areas	½" brass upright heads

All sprinklers within tiled ceiling areas shall be installed in a uniform manner within the center of the ceiling tiles. Head temperature ratings shall be selected in accordance with the requirements of NFPA 13.

VALVES

All valves shall be installed in an accessible manner and will be listed for their specific service. The following valve types and applications shall be used:

Application	Valve Type
Sprinkler Room	Shotgun type riser check valve
Riser Control Valve	Butterfly valve with internal supervisory switch
Drain Valves	Brass globe valves

Note: The buyer shall be responsible for providing all electrical work to connect supervisory switches.

WATER FLOW ALARM DEVICE

One vane type shall be provided and installed at each riser. One (1) – electric bell shall be provided and installed on the exterior wall at the riser location.

FIRE DEPARTMENT CONNECTION

One (1) 4 x 2 ½" x 2 ½" FDC shall be installed - in the underground line in accordance with NFPA 13 and local requirements (by others).

UNDERGROUND PIPE AND FITTINGS

Florida Statute 633.539FS states " For contracts written after 6-30-05, the contractor who installs the underground piping from the point of service is responsible for completing the installation to the above ground connection flange, which by definition in this chapter is no more than 1 foot above the finished floor."

INSTALLATION

The installation shall be done by skilled tradesmen working normal business hours and days. Overtime hours required due to the buyer accelerating the construction schedule will be charge as extra work to the buyer.

QUALIFICATIONS

Our price is based on our receiving the FP drawings or the reflected ceiling drawings in CAD from the architect and/or engineer.

WARRANTY

Cox fire protection guarantees all work and materials for a period of (12) months from the date the systems are activated into service.

EXCLUSIONS

We are excluding the following items/work and if required will be the responsibility of the buyer:

Any asbestos found on site shall be removed prior to completion of work.
Adequacy of water supply
Any electrical wiring, conduit, devices, and equipment
Alarm system and monitoring service
Pre-action releasing panels and programming
Connection of the water flow devices and supervisory switches to the house alarm system
Painting and preparation for painting of pipe, fittings, and equipment
Fire extinguishers and extinguisher cabinets
Standpipe system, hose stations, and hose cabinets
Clevis type hangers
Davis Bacon
MIC testing
Nitrogen systems
Clean Agent systems
Fire Pump and Accessories
Fire Department Connections
Cutting ceiling tiles
Covered warehouse storage area protection
Underground piping, Excavation, and Backfill
Hood suppression systems
Access panels
Material escalation over 30 days
Any other wet or dry fire protection systems not specifically listed above.
Performance and payment bond (May be provided for additional charges)

PRICE

The following price(s) include all material, equipment, labor, permits, and applicable sales and use taxes to perform the work as specified within this proposal:

ONE HUNDRED FORTY-SEVEN THOUSAND TWO HUNDRED FIFTY-TWO DOLLARS – $147,252.00

ADD ALTERNATE:

- PERFORMANCE AND PAYMENT BOND - $3,486.00
- DRY SYSTEM IN COVERED WAREHOUSE STORAGE - $25,586.00

COMPOSITE CLEANUP CREW: Cox Fire Protection shall provide one (1) composite cleanup crew member to participate in the contractor's composite cleanup crew per ten Cox Fire employees working on site.

- (1) DAY PER WEEK FOR A TOTAL OF EIGHT (8) HOURS PER WEEK - $2,892.00

TERMS OF PAYMENT

Progress payments shall be paid within 30 days for all work in place on a monthly basis. Retainage in the amount equal to 10% of the total progress payment may be withheld until the completion of the work, at which time the retained amount will be paid in full.

Cox Fire Protection reserves the right to withdraw this proposal for any reason if not accepted within 30 days of the date first written.

Credit Card Payment Surcharge: A surcharge applied to bill payments made with a credit card, amounting to 3% of the transaction value. This surcharge covers the additional costs incurred by the biller or service provider for processing credit card payments.

If you have any question or require additional information regarding the information specified above, please contact me at (904)-781-8227.

Sincerely,

Marcus Kinsey

Cox Fire Protection, Inc.

Christine Carasas

From: ConstructConnect <DoNotReply@constructconnectmail.com>
Sent: Tuesday, November 12, 2024 8:37 AM
To: Wharton Smith Commercial Estimating
Subject: Received bid for Port Orange Public Utilities Field Ops Bldg.

A simpler, more effective bid process

You've received a bid from Cox Fire Protection via ConstructConnect

Port Orange Public Utilities Field Ops Bldg.

Project Details

Project Name	Port Orange Public Utilities Field Ops Bldg.
Bid Date	Nov 12, 2024 @ 02:00 PM ET
Project ID	6613997

View Project

Bid Details

Company	Cox Fire Protection
Bid Amount	$147,252
Submission Date	Nov 12, 2024 @ 08:36 AM ET
Description	Fire Sprinkler
Bid Attachments	Port Orange Public Utilities.pdf

Contact Details

Primary Contact	Marcus Kinsey

Email mkinsey@coxfire.com
Phone (813) 853-1238 ext.
Website



Support Number: (877) 4CC-TOOL (422-8665)

Email: customerservice@constructconnect.com

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PROPOSAL

To: Wharton Smith

Attn: James Manyette

Re: Port Orange Public Utilities & Field Ops

Gentlemen:

We are pleased to present our fire protection proposal on the above referenced project in accordance with:

DRAWINGS: 100% CD's, dated 9/30/2024

SPECIFICATIONS: **NFPA 13, 21000, notes on FP drawings**

ADDENDUM'S: WSI 001- WSI 008, RFI 1

ALL AS PREPARED BY: Schenkel Shultz.

SCOPE OF WORK

Provide design / layout documents in accordance with Plans and Specs, & NFPA 13, latest edition for this new two-story public utilities & field Ops building This 23,973 square foot building has one wet pipe system per FP drawings. Concealed sprinklers are included located in the center of the ceiling tiles with flex hoses. **All permitting is included.**

Summit Fire & Security to develop a complete set of working drawings based upon Summit design for permitting and installation in accordance with NFPA and local jurisdiction. All 2" and smaller threaded piping to be black schedule 40 with 21/2" pipe and larger to be schedule 10 with grooved fitting and welded outlets. All sprinklers to be quick response type utilizing recessed pendants and extended recessed pendant sprinklers per FP drawings. No work is included outside the buildings. Point of connection is a spigot one- foot AFF inside the building.

WATER SUPPLY

Proposal is based upon adequate water supply to meet the fire sprinkler demand.

WORKING CONDITIONS AND LABOR

This proposal is based upon installation being made from finished, poured concrete floors, during normal working hours and days including on-sight parking. Skilled sprinkler fitters without union affiliation shall do all work. All identifiable debris will be placed in waste containers (furnished by Buyer) at a central location on site, not including composite cleanup participation. Buyer provides adequate light, water electrical services, and toilet facilities during construction, laydown, staging and storage area.

WORK, APPARATUS AND ITEMS DETAILED AS FOLLOWS ARE NOT INCLUDED IN THIS PROPOSAL:

- Underground piping, Fire Hydrant, Backflow Preventers, Remote FDC
- All fireproofing, masonry, carpentry, ceiling work, access panels, painting or redecorating.
- Fire alarm, electrical wiring, FM200 Suppression systems, connections thereto and certification / permits.
- All fire extinguishers and extinguisher cabinets.
- Any heat trace or painting of piping, caulking of non-rated walls or ceilings.
- Any other wet or dry fire protection not specified within this proposal.
- Performance and Payment bond (add 2 % to contract amount).
- Seismic Bracing
- Cutting, patching of ceilings, ceiling tiles, wall penetrations, or floors.
- Light, water electrical services, and toilet facilities during construction.
- Electrical wiring (electric devices - electrical work of any nature).
- Patching of fire- proofing or pre-installation of our hanger assemblies.
- **Cutting of ceiling tiles**
- **Davis Bacon Wages**
- **FM Standards**
- **Sleeves in drywall or unrated walls**

Seller proposes to furnish material and labor in accordance with the above specifications for the unit cost sums of:

PRICE: $109,876.00

One Hundred Nine Thousand Eight Hundred Seventy-SixThree Dollars 00/100

PAYMENT

Payment to be made as follows: Monthly Progress Payments - Invoices submitted by the (25th) due net by the (10th), with (10%) retainage. 100% due upon completion.

This proposal is subject to the General Terms and Conditions as attached. If any of these items are changed, we must re-evaluate our entire proposal.

BY: *Randy Blankenship* Date: 11/12/2024

Randy Blankenship / Sales

FOR: **Summit Fire & Security**

Note: Seller may withdraw this proposal if not accepted within 30 days. As a condition precedent to General Contractor's acceptance of proposal /offering, for this project, Summit Fire & Security has the right of review and rejection of all or part of General Contractor's form contract and attachments.

****

Subcontractor Bid Form-General

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Summit Fire & Security, Inc.
Scope of Work:	Fire Sprinklers

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	**$** 109,876.00
Amount in Words:	One Hundred Nine Thousand Eight Hundred Seventy-Six Dollars

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	Heads, valves, flex hoses
Amount:	$ 9,850.00

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$ 0
LDB	$ 0
VBE	$ 0

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	2%

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	#1	Dated:	11/8/2024	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	001	Dated:	10/22/2024	WSI No.	004	Dated:	10/28/2024
WSI No.	002	Dated:	10/24/2024	WSI No.	005	Dated:	11/1/2024
WSI No.	003	Dated:	10/24/2024	WSI No.	006-008	Dated:	11/4-11/7-24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Summit Fire & Security, Inc.
Company Name

2280 Old Lake Mary Road- Sanford, FL 32771
Address (Street, City, State, Zip)

407-912-3272 jrblankenship@summitfiresecurity.com
Phone Number **Email Address**

Type of Organization (Check One):

(x) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of ___Florida_____.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: __Summit Fire & Security, Inc._____
By: Randy Blankenship
Printed Name: Randy Blankenship
Title: Florida contract sales Rep
Dated: 11/12/2024
License No.: FPC20-000149

PROPOSAL

To: Wharton Smith

Attn: James Manyette

Re: Port Orange Public Utilities & Field Ops

Gentlemen:

We are pleased to present our fire protection proposal on the above referenced project in accordance with:

DRAWINGS: 100% CD's, dated 9/30/2024

SPECIFICATIONS: **NFPA 13, 21000, notes on FP drawings**

ADDENDUM'S: WSI 001- WSI 008, RFI 1

ALL AS PREPARED BY: Schenkel Shultz.

SCOPE OF WORK

Provide design / layout documents in accordance with Plans and Specs, & NFPA 13, latest edition for this new two-story public utilities & field Ops building This 23,973 square foot building has one wet pipe system per FP drawings. Concealed sprinklers are included located in the center of the ceiling tiles with flex hoses. **All permitting is included.**

Summit Fire & Security to develop a complete set of working drawings based upon Summit design for permitting and installation in accordance with NFPA and local jurisdiction. All 2" and smaller threaded piping to be black schedule 40 with 21/2" pipe and larger to be schedule 10 with grooved fitting and welded outlets. All sprinklers to be quick response type utilizing recessed pendants and extended recessed pendant sprinklers per FP drawings. No work is included outside the buildings. Point of connection is a spigot one- foot AFF inside the building.

WATER SUPPLY

Proposal is based upon adequate water supply to meet the fire sprinkler demand.

WORKING CONDITIONS AND LABOR

This proposal is based upon installation being made from finished, poured concrete floors, during normal working hours and days including on-sight parking. Skilled sprinkler fitters without union affiliation shall do all work. All identifiable debris will be placed in waste containers (furnished by Buyer) at a central location on site, not including composite cleanup participation. Buyer provides adequate light, water electrical services, and toilet facilities during construction, laydown, staging and storage area.

WORK, APPARATUS AND ITEMS DETAILED AS FOLLOWS ARE NOT INCLUDED IN THIS PROPOSAL:

- Underground piping, Fire Hydrant, Backflow Preventers, Remote FDC
- All fireproofing, masonry, carpentry, ceiling work, access panels, painting or redecorating.
- Fire alarm, electrical wiring, FM200 Suppression systems, connections thereto and certification / permits.
- All fire extinguishers and extinguisher cabinets.
- Any heat trace or painting of piping, caulking of non-rated walls or ceilings.
- Any other wet or dry fire protection not specified within this proposal.
- Performance and Payment bond (add 2 % to contract amount).
- Seismic Bracing
- Cutting, patching of ceilings, ceiling tiles, wall penetrations, or floors.
- Light, water electrical services, and toilet facilities during construction.
- Electrical wiring (electric devices - electrical work of any nature).
- Patching of fire- proofing or pre-installation of our hanger assemblies.
- **Cutting of ceiling tiles**
- **Davis Bacon Wages**
- **FM Standards**
- **Sleeves in drywall or unrated walls**

Seller proposes to furnish material and labor in accordance with the above specifications for the unit cost sums of:

PRICE: $109,876.00

One Hundred Nine Thousand Eight Hundred Seventy-SixThree Dollars 00/100

PAYMENT

Payment to be made as follows: Monthly Progress Payments - Invoices submitted by the (25th) due net by the (10th), with (10%) retainage. 100% due upon completion.

This proposal is subject to the General Terms and Conditions as attached. If any of these items are changed, we must re-evaluate our entire proposal.

BY: *Randy Blankenship* Date: 11/12/2024

Randy Blankenship / Sales

FOR: **Summit Fire & Security**

Note: Seller may withdraw this proposal if not accepted within 30 days. As a condition precedent to General Contractor's acceptance of proposal /offering, for this project, Summit Fire & Security has the right of review and rejection of all or part of General Contractor's form contract and attachments.

****

Christine Carasas

From: Randy Blankenship [FL-ORL] <jrblankenship@SummitFireSecurity.com>
Sent: Tuesday, November 12, 2024 3:10 PM
To: Wharton Smith Commercial Estimating
Subject: Bid form for Port Orange Public Utility & Field Ops
Attachments: Bid Form for port orange public utilities & field ops.pdf; Summit Proposal for Port Orange Public Utilities & Field Ops.pdf

Thank you for the opportunity! Please call with any questions!

Randy Blankenship
Sales Representative

D 321-344-1546
C 407-912-3272

2280 Old Lake Mary Road
Sanford, FL 32771
Office: 407-688-1949
www.summitfiresecurity.com

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PROPOSAL

To: Wharton Smith

Attn: James Manyette

Re: Port Orange Public Utilities & Field Ops

Gentlemen:

We are pleased to present our fire protection proposal on the above referenced project in accordance with:

DRAWINGS: 100% CD's, dated 9/30/2024

SPECIFICATIONS: **NFPA 13, 21000, notes on FP drawings**

ADDENDUM'S: WSI 001- WSI 008, RFI 1

ALL AS PREPARED BY: Schenkel Shultz.

SCOPE OF WORK

Provide design / layout documents in accordance with Plans and Specs, & NFPA 13, latest edition for this new two-story public utilities & field Ops building This 23,973 square foot building has one wet pipe system per FP drawings. Concealed sprinklers are included located in the center of the ceiling tiles with flex hoses. **All permitting is included.**

Summit Fire & Security to develop a complete set of working drawings based upon Summit design for permitting and installation in accordance with NFPA and local jurisdiction. All 2" and smaller threaded piping to be black schedule 40 with 21/2" pipe and larger to be schedule 10 with grooved fitting and welded outlets. All sprinklers to be quick response type utilizing recessed pendants and extended recessed pendant sprinklers per FP drawings. No work is included outside the buildings. Point of connection is a spigot one- foot AFF inside the building.

WATER SUPPLY

Proposal is based upon adequate water supply to meet the fire sprinkler demand.

WORKING CONDITIONS AND LABOR

This proposal is based upon installation being made from finished, poured concrete floors, during normal working hours and days including on-sight parking. Skilled sprinkler fitters without union affiliation shall do all work. All identifiable debris will be placed in waste containers (furnished by Buyer) at a central location on site, not including composite cleanup participation. Buyer provides adequate light, water electrical services, and toilet facilities during construction, laydown, staging and storage area.

WORK, APPARATUS AND ITEMS DETAILED AS FOLLOWS ARE NOT INCLUDED IN THIS PROPOSAL:

- Underground piping, Fire Hydrant, Backflow Preventers, Remote FDC
- All fireproofing, masonry, carpentry, ceiling work, access panels, painting or redecorating.
- Fire alarm, electrical wiring, FM200 Suppression systems, connections thereto and certification / permits.
- All fire extinguishers and extinguisher cabinets.
- Any heat trace or painting of piping, caulking of non-rated walls or ceilings.
- Any other wet or dry fire protection not specified within this proposal.
- Performance and Payment bond (add 2 % to contract amount).
- Seismic Bracing
- Cutting, patching of ceilings, ceiling tiles, wall penetrations, or floors.
- Light, water electrical services, and toilet facilities during construction.
- Electrical wiring (electric devices - electrical work of any nature).
- Patching of fire- proofing or pre-installation of our hanger assemblies.
- **Cutting of ceiling tiles**
- **Davis Bacon Wages**
- **FM Standards**
- **Sleeves in drywall or unrated walls**

Seller proposes to furnish material and labor in accordance with the above specifications for the unit cost sums of:

PRICE: $109,876.00

One Hundred Nine Thousand Eight Hundred Seventy-Six Three Dollars 00/100

ALTERNATE: Provide and install a dry pipe system complete with all material and devices, labor. Design and permitting for the covered storage area. ADD TO BASE PRICE $42,192.00

PAYMENT

Payment to be made as follows: Monthly Progress Payments - Invoices submitted by the (25th) due net by the (10th), with (10%) retainage. 100% due upon completion.

This proposal is subject to the General Terms and Conditions as attached. If any of these items are changed, we must re-evaluate our entire proposal.

BY: *Randy Blankenship* Date: 11/18/2024

Randy Blankenship / Sales

FOR: **Summit Fire & Security**

Note: Seller may withdraw this proposal if not accepted within 30 days. As a condition precedent to General Contractor's acceptance of proposal /offering, for this project, Summit Fire & Security has the right of review and rejection of all or part of General Contractor's form contract and attachments.

****

Subcontractor Bid Form-General

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Titan Fire Protection, Inc.
Scope of Work:	21a Fire Sprinkler

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	**$** 92,925.00
Amount in Words:	Ninety-Two Thousand Nine Hundred Twenty-Five Dollars

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:		Pipe, fittings, Hangers, Heads
Amount:	+/-	$ 17,000.00

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %: 1.75	

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1	Dated:	11-7-24	RFI No.		Dated:	
RFI No.	2	Dated:	11-11-24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10/22	WSI No.	4	Dated:	10/28	7	11/6
WSI No.	2	Dated:	10/24	WSI No.	5	Dated:	10/31	8	11/8
WSI No.	3	Dated:	10/24	WSI No.	6	Dated:	11/04		

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Titan Fire Protection, Inc.
Company Name

395 South Range Rd. Cocoa FL 32926
Address (Street, City, State, Zip)

321-453-2212 Nathan@TitanFire.us
Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Titan Fire Protection, Inc.

By: _____

Printed Name: Nathan Dretzka

Title: Project Manager

Dated: 11/13/24

License No.: FDC21-000012 (Sean Suggs)

395 South Range Road, Suite B
Cocoa FL, 32929

13517 65th Street
Largo, FL 33771

11/13/2024

Attn: Estimating Department

Re: Port Orange Public Utilities Field Operations Facility
Port Orange, FL

Titan Fire Protection Inc., referred to herein as the "Seller", is pleased to furnish this proposal for your company**,** referred to herein as the "Buyer".

1. The Seller agrees to furnish and install in the property described as the **Port Orange Public Utilities Field Operations Facility** located in Port Orange, FL, a Wet Pipe Automatic Fire Sprinkler System, and auxiliary equipment in accordance with the following terms, conditions, and specifications, all of which are made a part hereof.

2. The installation will be subject to inspection by the local building if fire department, whose acceptance shall be conclusive proof of the proper performance and completion of the Seller"' obligations hereunder.

3. The price for the work specified herein is**: Ninety-Two Thousand Nine Hundred Twenty-Five Dollars. ($92,925.00)**
Admin $54,425.00 Warehouse $38,500.00

4. The above price is based on the installation of the number and type of sprinklers required to conform to NFPA 13.

5. Payment shall be made on the Tenth (10th) day of each month in the sum of ninety percent (90%) of the work installed and of the materials delivered and stored at the jobsite, in the month immediately preceding, and the balance thirty (30) days after completion of the work.

6. The proposal Price is based upon material prices as of the date of this proposal. Any significant price increases in steel pipe, sprinkler heads, fire pump, and/or other material that occurs during the period of time between date of this proposal and substantial completion of the Project, shall cause the contract price to be equitably adjusted by an amount reasonably necessary to cover any increase. As used herein, a significant price increase shall mean any increase in price exceeding seven percent (7%) experienced by this contractor from the date of this proposal. This proposal is subject to acceptance by Buyer for (30) thirty days, after which time, at the option of the Seller, it becomes null and void.

Titan Fire Protection Inc.

Nathan Dretzka
Project Manager

Reviewed and accepted: _____ **Date:** _____
Signature

_____ **Title:** _____

(321) 403-5702 Direct
nathan@titanfire.us

395 South Range Road, Suite B
Cocoa FL, 32929

13517 65th Street
Largo, FL 33771

SCOPE OF WORK
Seller to furnish equipment, services, labor, tools, design, freight and handling, except where specified herein, necessary for the installation of a wet pipe Sprinkler System piping in the **Port Orange Public Utilities Field Operations Facility** as referenced above.

DESIGN CRITERIA
This Proposal is based on plans by Schenkel dated, 06/22/23.

The Sprinkler System will be designed and installed in accordance with the requirements of NFPA-13 and the project documents.

Work to begin at a properly installed, test and inspected fire main by others. If a remote FDC is being installed, Titan Fire Protection shall make connection at existing 6" main. Unless specifically included below, backflow devices are excluded and shall be provided by others.

MATERIAL, EQUIPMENT AND SERVICES:
The Fire Sprinkler Systems will consist of the following equipment and services:

Shop Drawings, Permit, and Inspections.

2 Wet pipe risers complete with control valve, tamper switch, main drain/inspectors test connection, spare headbox and flow switch.

100 Upright fire sprinklers on exposed piping in areas with no finished ceilings.

117 Pendent Fire sprinklers on concealed piping in areas with finished ceilings.

8 Dry Sidewall Sprinklers

1-year Warranty

Pipe Fittings and Hangers in accordance with NFPA-13.
Threaded piping to be schedule 40, grooved piping 1 ¼" and larger to be schedule 10
Loading, unloading, and handling of materials.

WORK NOT INCLUDED:
THE FOLLOWING ITEMS ARE **NOT** INCLUDED IN THIS PROPOSAL:
Power, control or alarm wiring.
Premium time work
Adequate water supply
Fire Pump
Painting
Freeze protection
Fire Extinguishers
Backflow device

(321) 403-5702 Direct
nathan@titanfire.us

395 South Range Road, Suite B
Cocoa FL, 32929

13517 65th Street
Largo, FL 33771

Underground fire main
Underground FDC line

SPECIAL CONDITIONS

Except where specified herein, all material and equipment will be of the Seller's manufacture or of a manufacturer selected by the Seller.

All main drains, low point drains and inspector's test lines will be piped through the building walls and discharged into the atmosphere. If necessary to discharge piping to sewers because of elevations or Buyer's requirements, Buyer will provide sewer connections and receptacles conforming to local codes, at points of system drains and discharge lines.

This proposal is based upon there being no interference by other trades, (ducts, wiring, piping, etc.), with the locations of concealed piping. Installation is restricted by the building and fire codes, and working plans showing locations and measurements of concealed piping are prepared accordingly. These working plans are furnished to the General Contractor or Architect/Engineer and will be furnished on request to other trades. Seller will not be responsible for any changes in the location of the Sprinkler piping due to the interference of the other trades' equipment, when the locations of that equipment have not been coordinated with Seller prior to the ordering of Seller's materials.

Ceilings are not to be erected and lathing of the inside of the building is not to be done until all piping has been installed and tested.

Drop nipples for pendent sprinklers are aligned at the time of installation. Seller will not be responsible for any damage and/or movement of the drop nipples by other trades and will only do the alignment and/or replacement work as an Extra to the contract. Ceiling plates will be of the adjustable type, unless specified otherwise by this proposal.

The price for this proposal is based upon our work being performed during regular working hours, Monday through Friday. If Buyer should require overtime labor, Buyer agrees to pay Seller its Additional costs plus overhead and profit as an Extra to the contract.

This proposal is based upon work being performed from finished, unobstructed floors using lifts.

Final payment of the balance due of the Contract Price shall be made to Seller within a reasonable time of his fulfillment of the contract requirements and no later than seven (7) after receipt by the Buyer of final payment from the Owner for the Sellers work.

If the Owner or his designated agent does not issue a Certificate of Payment or the Buyer does not receive payment for any cause that is not the fault of the Seller, the Buyer shall pay the Seller, on demand, a progress payment or the final payment.

Adequate water supply and freeze protection shall be by provided by others unless noted otherwise in this proposal.

This Bid Proposal shall be referenced or listed in the contract

This price is based upon a mutually agreeable contract or an AIA 401 contract.

(321) 403-5702 Direct
nathan@titanfire.us

Christine Carasas

From: Nathan Dretzka <Nathan@titanfire.us>
Sent: Wednesday, November 13, 2024 11:43 AM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Public Utilities Field Ops Bldg.
Attachments: TFP - PO Utilities Bid Form & Proposal.pdf

Good morning,

Find the attached proposal for the Fire Sprinkler Systems on this project.
Please review and contact me with any questions.

Thank you,

Please update my email to nathan@titanfire.us

Nathan Dretzka
Project Manager

TITAN FIRE PROTECTION
(321) 403-5702 cell

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ENERGY AIR, INC.
100% Employee Owned

November 12, 2024

John Gleason
Wharton Smith
750 Monroe Rd
Sanford, FL 32771
Phone: 407-284-5022
Email: JGleason@whartonsmith.com

HVAC & PLUMBING PROPOSAL

Port Orange Public Utilities

Drawings Dated: **September 30, 2024, Cover Sheet.**

Specifications Dated: **September 30, 2024, Mechanical & Plumbing.**

Addendums Acknowledged: **WSI 001 - 008**

We are pleased to offer our cost proposal for the HVAC and plumbing portion of the above referenced project. Our experience, reputation, trained team, safety program and exceptional financial standing make us the top choice for completing the HVAC and plumbing scope. Please find listed below our proposed scope of work along with qualifications.

KEY QUALIFICATIONS AND COMPETITIVE ADVANTAGES

- Employee owned
- Approximately $160 million in annual revenue
- $150 million bonding capacity
- Experience with projects in all major market segments
- Ability to self-perform the entire HVAC and plumbing scope
- In-house fabrication facility
- Trained field team with in-house F.A.C.T. training programs
- In-house CADD / BIM team

"Energy Air's team put forth a quality management effort while maintaining the utmost attention to field workmanship. Energy Air's commitment to relationship, reliability and craftsmanship is greatly appreciated by our team and evident throughout the project. Thank you."

ENERGY AIR, INC.
100% Employee Owned

HVAC SCOPE OF WORK

- Furnish and install (2) DX split system with capacities as scheduled or equal.
- Furnish and install (1) ductless DX mini split system with capacities as scheduled or equal
- Furnish and install (11) variable air volume terminal units with capacities as scheduled or equal.
- Furnish and install (2) inline exhaust fans with capacities as scheduled or equal.
- Furnish and install (3) propeller exhaust fans with capacities as scheduled or equal.
- Furnish and install (6) HVLS fans with capacities as scheduled or equal.
- Furnish and install (2) electric heaters with capacities as scheduled or equal.
- Furnish and install air distribution as scheduled on mechanical documents.
- Furnish and install fire dampers in strict accordance with quantities shown on mechanical documents.
- Furnish and install mechanical louvers with quantities shown on mechanical documents.
- Furnish and install motorized dampers with quantities shown on mechanical documents.
- Furnish and install externally insulated galvanized sheet metal ductwork for new supply and return air systems as indicated on mechanical documents, installed per our shop drawings and meeting engineer's criteria of design.
- Furnish and install externally insulated galvanized sheet metal ductwork for all new outside air systems installed per our shop drawings and meeting engineer's criteria of design.
- Furnish and install un-insulated galvanized sheet metal ductwork for all new general exhaust air systems installed per our shop drawings and meeting engineer's criteria of design.
- Furnish and install externally insulated type ACR copper pipe or tubing for all new HVAC refrigerant systems installed per our shop drawings and meeting engineer's criteria of design.
- Furnish and install externally insulated schedule 40 PVC pipe p-traps for all new HVAC condensate drain systems installed per our shop drawings and meeting engineer's criteria of design.
- Install smoke detectors per mechanical documents.
- Furnish and install DDC controls per mechanical documents.
- Provide test and balance.
- Permit, tax, and warranty.

PLUMBING SCOPE OF WORK

- Furnish and install plumbing equipment and fixtures with capacities as scheduled or equal.
- Furnish and install externally insulated type L copper pipe for all domestic hot water systems installed per our shop drawings and meeting engineer's criteria of design.
- Furnish and install externally insulated type L copper pipe for all domestic cold-water systems installed per our shop drawings and meeting engineer's criteria of design.
- Furnish and install externally insulated type L copper pipe for all compressed air systems installed per our shop drawings and meeting engineer's criteria of design.
- Furnish and install un-insulated type K copper pipe for all underground domestic water systems installed per our shop drawings and meeting engineer's criteria of design.
- Furnish and install un-insulated schedule 40 PVC DWV pipe for all underground sanitary/vent systems installed per our shop drawings and meeting engineer's criteria of design.
- Furnish and install un-insulated schedule 40 PVC DWV pipe for all aboveground sanitary/vent systems installed per our shop drawings and meeting engineer's criteria of design.

- Furnish and install un-insulated schedule 40 PVC DWV pipe for all underground storm drainage systems installed per our shop drawings and meeting engineer's criteria of design.
- Permit, tax, and warranty.

GENERAL QUALIFICATIONS

- Electrical, line voltage, interlocks by others.
- Roof opening and flashing by others.
- Concrete hole cutting, patching, repairing by others.
- Concrete housekeeping pads by others.
- After hours labor excluded.
- Alarm interlock, wiring, and relays by others.
- Structural steel for roof mounted equipment by others.
- Painting of HVAC and/or plumbing system and associated components by others.
- Weather proofing of exterior penetrations by others.
- Cleaning of all new and existing HVAC and plumbing systems is excluded.
- Gap warranties are excluded. Pricing will be adjusted if required.
- Commissioning by others. Per FBC 2023 Energy Conservation chapter 4 section C408.2, mechanical systems 40 tons or greater shall provide evidence of mechanical systems commissioning by approved 3rd party professional. Energy Air has included assistance only.

PROJECT SPECIFIC QUALIFICATIONS

- Excavation 5-ft beyond the building perimeter is excluded.
- Offsite removal of excess dirt is excluded.
- Furnish rubberized boot flashing at plumbing vents only for installation by others
- No specification for compressed air piping (Assumed Type L copper)
- Balancing and ball valves are not shown in the drawings. Quantities and locations are assumed.
- Water hammer arrestors are not shown in the drawings. Quantities and locations are assumed.
- Backwater valves and valve boxes are included. Not shown in the drawings.
- Downspout connections to civil storms are included.
- Klassikdrain Trench Drain with Heel-proof grate Drawing C-7 is excluded.
- The trench drain and grate shown on drawings AS503 and C15 is excluded.
- Domestic water on C15 is to the washdown area included
- Garbage disposal on sink S1 only.
- Metal Bellows Type water hammer arrestors as specified in specifications section 221119 are included.
- There was no specification for the compressed air piping. We assumed type L copper.
- Miscellaneous compressed air items were not specified but are included in our price. Pricing may change upon architects' approval and further details.
- Energy Air Inc. has included a $2,500.00 allowance for the temporary domestic water connection to GCs single wide trailer. Sanitary hook-up is excluded. Temporary septic tank provided and maintained by others.

- Architectural access doors are excluded. If required shall be priced accordingly.
- Architectural louvers are excluded. If required shall be priced accordingly.
- Smoke detectors furnished and wired by others.
- Motor starters and disconnects to be provided by others.
- Dumpsters by others.
- Composite cleanup is excluded.
- Painting and or epoxy coating by others.
- Davis Beacon Wages are excluded, if required shall be priced according to the most current General Decision provided by GC.
- Overtime or afterhours are excluded.
- It is assumed that there is employee parking within a reasonable walking distance. If offsite parking and bussing is required, shall be priced accordingly.
- Offsite removal of excess dirt.

Oil Water Separator

- Furnish and install one (1) Oldcastle 5,000-gallon precast concrete oil interceptor, three (3) baffles to meet FL code limit of 1250G limit chambers. Constructed to H20 load specifications and adhering to specifications for grease traps other than noted below in the "not included" section. Final design of trap to be determined.
- Supply & Install – one (1) sample station – 36" x 36" constructed to H20 load specification: - ordered and installed at the same time as the oil interceptor
- One day of 160 ton crane truck mobilization. Installation site must be accessible for crane.
- Trench shoring system for installation of trap.
- Includes CS-55 interior and exterior coating
- Two (2) standard non-coated USF 230-AA Heavy-duty H20 cast iron rings and covers for oil interceptor
- Up to 5" of grade ring extensions per tank manway given invert shown on C9 Utility Plan dated 9/30/24 – Final elevations are determined by engineer of record or general contractor and must be provided to SOS for installation of rings and covers.
- Backfilled and compacted to grade as per density requirements. We are assuming soils excavated at installation site will be adequate for use as backfill – additional costs will incur if existing soils cannot be used and must be replaced by new sand and/or rock.
- Density testing by others
- **Due to the volatility of material cost and availability, Energy Air, Inc. can only hold pricing for 15 days. Any material increases will be priced accordingly.**

Material Escalation Clause – to be added to subcontract language:

Where and when the delivery of materials is delayed or quantities are limited as a result of shortages, rationing, supply chain delays or unavailability, subcontractor shall not be liable or responsible for any delays or damages caused thereby, provided that subcontractor finalizes purchases within fourteen (14) days of the executed contract, orders materials within three (3) days of approved submittals, and adheres to the material tracking requirements of the contract. When this occurs, subcontractor may propose substitute materials or suppliers or alternate means of acquiring said materials and contractor and subcontractor shall negotiate an equitable price and time adjustment to this agreement. Additionally, when the costs of any or all labor or materials exceeds 5% more than the price originally quoted to subcontractor, then subcontractor shall notice contractor in writing of such change and the parties shall come to a mutual agreement on a new price, provided that the subcontractor provides proof of their material and labor costs at the time of contract.

ENERGY AIR, INC.
100% Employee Owned

HVAC BASE BID:	**$646,000.00**	
PLUMBING BASE BID:	**$837,000.00**	
PLUMBING DEDUCT#1:	**<$205,900.00>**	**Oil water separator.**

Add 1% of contract for bond.

Sincerely,

Ricardo E. Borja
Commercial Estimator
Direct: 407-781-1793
Email: RBorja@energyair.com

Christine Carasas

From: Ricardo Borja <RBorja@energyair.com>
Sent: Tuesday, November 12, 2024 4:01 PM
To: Wharton Smith Commercial Estimating; John Gleason
Cc: Dwight Kisner; CM Bids
Subject: Port Orange Public Utilities
Attachments: Proposal - EAI - H&P.pdf

Good afternoon,

Please see attached proposal. If you have any questions, please let us know.

Thank you,

Ricardo E. Borja
Commercial Estimator
Direct: 407-781-1793
Email: RBorja@energyair.com



CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!

ENERGY AIR, INC.
100% Employee Owned

REVISION 1

November 14, 2024

John Gleason
Wharton Smith
750 Monroe Rd
Sanford, FL 32771
Phone: 407-284-5022
Email: JGleason@whartonsmith.com

HVAC & PLUMBING PROPOSAL

Port Orange Public Utilities

Drawings Dated:	**September 30, 2024, Cover Sheet.**
Specifications Dated:	**September 30, 2024, Mechanical & Plumbing.**
Addendums Acknowledged:	**WSI 001 - 008**

We are pleased to offer our cost proposal for the HVAC and plumbing portion of the above referenced project. Our experience, reputation, trained team, safety program and exceptional financial standing make us the top choice for completing the HVAC and plumbing scope. Please find listed below our proposed scope of work along with qualifications.

KEY QUALIFICATIONS AND COMPETITIVE ADVANTAGES

- Employee owned
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ENERGY AIR, INC.
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- Architectural louvers are excluded. If required shall be priced accordingly.
- Smoke detectors furnished and wired by others.
- Motor starters and disconnects to be provided by others.
- Dumpsters by others.

ENERGY AIR, INC.
100% Employee Owned

- Composite cleanup is excluded.
- Painting and or epoxy coating by others.
- Davis Beacon Wages are excluded, if required shall be priced according to the most current General Decision provided by GC.
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- It is assumed that there is employee parking within a reasonable walking distance. If offsite parking and bussing is required, shall be priced accordingly.
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Material Escalation Clause – to be added to subcontract language:

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HVAC BASE BID: **$646,000.00**

PLUMBING BASE BID: **$421,700.00**

Add 1% of contract for bond.

Sincerely,

Ricardo E. Borja
Commercial Estimator
Direct: 407-781-1793
Email: RBorja@energyair.com

COX PLUMBING OF ORLANDO, INC

James Manyette 11/12/2024
Wharton-Smith, Inc.
750 County Road 15, Lake Monroe, FL 32747-1028
Ph. 407.321.8410 Fax 407.829.4453 E: comest@whartonsmith.com

Re: **Port Orange Public Utilities Administration & Warehouse**
Sub: **Plumbing System, Scope of Work**

Price INCLUDES the following:

1. GC's site modular waste & water connections, (Excludes meter or holding tanks).
2. PVC sch 40 DWV sanitary waste & vent piping connected at 5 feet out of bldgs.
3. Copper type L compressed air piping to (1) 80 gallons air compressor.
4. Copper type L hot & cold domestic water piping, cold K connected at 5' out of bldg.
5. Insulate domestic water piping w/ 1" fiberglass.
6. Fire stopping plumbing penetrations.
7. Applicable taxes & plumbing permit requirements.
8. Plumbing fixtures as follows: **Admin**-(7)WC1, (7)L1, (1)JS1, (4)SH1, (2)EWC1, (5)WH1, (2)S1, (1)S2, (1)TMV1, (1)RCP1, (2)GD1, (2)WB1, (2)IMB1, (8)FD1, (1)FD2, (1)HD1, (9)TP1, (1)FCO, (3)ECO, (1)EWH1. **Warehouse**-(1)SH1, (3)WH1, (3)HB1, (2)S2, (7)FD1, (7)TP1, (2)EWH1/2, (10)TD1, (1)Air Compressor, (4)Air Reels, (3)Hose Reels, (4)FCO, (2)WCO, (1)ECO, (2)AAV.

Price EXCLUDES the following:

1. Concrete scanning, cutting, hauling, forming, pouring or soil compaction testing.
2. HVAC condensate piping, chases, insulating or drywells (by HVAC Contractor).
3. Removal of trash from job site (dispose of in GC's dumpster).
4. Grab bars, exhaust fans, soap / towel dispensers or accessories for restrooms.
5. Irrigation meters, water meters or site RPZ backflow preventers (by Site Contractor).
6. Dewatering or well pointing for installation of underground plumbing systems.
7. Air filtration, security, mold remediation, dust partitions, landscaping.
8. Scuppers, down spouts, gutters or roof flashings for vents through roofs (by Others).
9. Low voltage or electrical wiring of any kind or sealing of floors.
10. Oil water separators, grease traps, lint traps or sand / sediment traps.
11. Air compressor pad, dryer, compressed air tools.

Base Price: $425,995.00

Sincerely,
Gerald Cox
Cox Plumbing of Orlando, Inc.
141 North Orange Avenue, Sanford, Florida 32771
Main: 407.332.0660 Cell: 407.402.0930

Christine Carasas

From: Gerald@coxplumbingoforlando.com
Sent: Monday, November 11, 2024 6:06 PM
To: Wharton Smith Commercial Estimating
Cc: deidra@coxplumbingoforlando.com; britta@coxplumbingoforlando.com
Subject: Port Orange public Utilities Admin & Warehouse Plumbing Bid
Attachments: Port Orange Public Utilities Admin & Warehouse (Wharton Smith).docx

James.
If you have any questions please call or email.
Thanks,

Gerald Cox
Cox Plumbing of Orlando, Inc.
www.coxplumbingoforlandoinc.com
gerald@coxplumbingoforlando.com
141 North Orange Ave.
Sanford, FL 32771
(407) 332-0660 Cell (407) 402-0930

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Proposal

G & W Welborn Plumbing, LLC

1709 N. Nova Road
Holly Hill FL 32117
Ph: 386-257-1172 Fax: 386-252-5979
CFC #1426839

Date: November 11, 2024
To: Wharton-Smith Inc.
Job Name: Port Orange Public Utilities Field Ops Building

We hereby submit specifications and estimate for:

- Sanitary waste and vent to be PVC
- Domestic water to be type L hard copper
- Compressed air piping to be type L hard copper
- Domestic water to be insulated with 1" wall armaflex
- Fixtures estimated per fixture schedule and specifications
- Sanitary and water to 5' outside of building
- No permits or fees included in proposal
- Proposal includes air compressor and trench drains
- The Davis Bacon Act was not used to estimate labor costs for this job

TOTAL $288,284.00

*****PRICE IS VALID FOR FIFTEEN (15) DAYS*****

We propose hereby to furnish material and labor – complete in accordance with above specifications for the sum of: *Two hundred eighty-eight thousand two hundred eighty-four and no/100*-----Dollars_____
Note: this proposal may be withdrawn by us if not accepted within 30 days.

Authorized signature: Bo Mack

Permits and/or fees are not included unless otherwise specified. There is no warranty on any materials supplied by the owner. There will be additional charge for sewers that are underwater or more than four foot deep. We carry worker's compensation and general liability insurance that covers damage from faulty material or workmanship. Any damage to plumbing after installation by weather, fire, vandalism, theft or other crafts will be owner's responsibility. Customer agrees to terms of Net Upon Receipt and to pay interest on unpaid accounts over 30 days at the rate of 1-1/2% per month (annual percentage rate 18%), together with reasonable attorney's fees for cost of collection.

Acceptance of Proposal-The above prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to do the work specified. Payment will be made as outlined above.

Signature: _____ Date of Acceptance: _____

Christine Carasas

From: Kim Harty <kim@gandwplumbing.com>
Sent: Monday, November 11, 2024 9:06 AM
To: Wharton Smith Commercial Estimating
Subject: Plumbing proposal for Port Orange Public Utilities Field Ops Bldg.
Attachments: Proposal - Port Orange Public Utilities Field Ops Bldg.pdf

Call Bo Mack with any questions.

Kim Harty
Office Manager
Accounting

G & W Welborn Plumbing LLC
CFC1426839
1709 N. Nova Road
Holly Hill FL 32117
Phone: 386-257-1172

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Subcontractor Bid Form-General

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	HEICHEL PLUMBING
Scope of Work:	PLUMBING

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	$ 2688,000
Amount in Words:	Two Hundred Eighty Eight Thousand

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $5,000) 50,000

Material/Equipment Types:	None
Amount:	$

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	1.5%

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1	Dated:	11-7-24	RFI No.		Dated:	
RFI No.	2	Dated:	11-11-24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10-22-24	WSI No.	4	Dated:	10-28-24
WSI No.	2	Dated:	10-24-24	WSI No.	5	Dated:	10-31-24
WSI No.	3	Dated:	10-24-24	WSI No.	6	Dated:	11-4-24

WSI No. 7 DATED: 11-6-24 WSI No. 8 DATED 11-8-24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

HEICHEL PLUMBING
Company Name

1260 MARSHALL FARMS ROAD OCOEE, FL. 34761
Address (Street, City, State, Zip)

407.656.7073 drogers@heichelplumbing.com
Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of FLORIDA.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: HEICHEL PLUMBING
By: C Dad Conto
Printed Name: C. David Conto
Title: PM
Dated: 11-12-24
License No.: CFC056690

SECTION 5 – BID PROPOSAL EVALUATION

5.1 GENERAL

5.1.1 Bid Proposals will be evaluated based upon review of the following:

A. Cost – The evaluation of this criterion will be based on the Bidder's total base bid, bid alternates, unit prices.

B. Value Engineering – This criterion measures the ability of the Bidder to identify potential areas of cost savings or improvements of the final project.

C. Bidder's ability to meet all other criteria outlined herein.

5.1.2 Reference the Instructions to Bidders section of this Bid Manual and the Bid Form for more information regarding detailed requirements of the Bid Proposals.

5.1.3 In evaluating Bids, Wharton-Smith, Inc. shall consider the submission of the Bidders, and whether or not the Bids comply with the prescribed requirements as outlined in these Instructions, the Bid Form, this Bid Manual, and all associated Owner and Bid Related documents provided with this Bid Package.

5.1.4 Wharton-Smith, Inc. may conduct such investigations and require supplemental information as it deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of the Bidders, proposed Subcontractors, proposed equipment and material suppliers, and other persons and organizations to provide the materials in accordance with the Contract Documents to Wharton-Smith, Inc.'s satisfaction within the prescribed time.

5.1.5 Bidder shall, upon request of Wharton-Smith, Inc., submit documentation evidencing its capability to execute the work properly within the time specified. This information must be received by Wharton-Smith, Inc. within ten (10) calendar days of Bidder receiving written request.

5.2 RECOMMENDATION AND APPROVAL OF RANKING

5.2.1 The CMAR will review all Bid Proposals that are received in conformance of the requirements herein and provide a recommendation to the Owner. The Owner, at its sole discretion, may accept the CMAR's recommendation or re-evaluate the Bid Proposals. The Owner will establish and approve the final recommended of award for the Bid Package. The Owner will be the sole judge of its own interests, the proposals, and the resulting agreements. The Owner's decision will be final.

5.3 AWARD OF CONTRACT

5.3.1 Award shall be based on products, equipment and materials named in the Contract Documents. Consideration of any decisions regarding substitution shall not be made until after Award of Contracts.

5.3.2 If the Contract is to be awarded, Wharton-Smith, Inc. will give the Bidder a Notice of Award after the Owner's agreement of the Bidder to receive Award.

5.3.3 The Awarded Bidder will be required to enter into a Purchase Order Agreement or Subcontract Agreement with Wharton-Smith, Inc. This agreement will contain the same terms and conditions as shown in the sample agreement provided in this Bid Manual. The Purchase Order or Subcontract will also contain the defined work scope as shown in this Bid Manual. Modifications to this Agreement will not be allowed.

SECTION 6 – SCOPE OF WORK

The Bidder shall utilize the information within this section of the Bid Manual to assist in development of the Bid Proposal. The outlined scopes herein are not intended to detail the complete scope of the Bid Package. The Bidder is responsible for reviewing the Contract Documents to understand the full scope and requirements.

The Subcontractor is to furnish all labor, equipment, material, subcontracts, and supervision required to complete the Scope of Work generally described as the **PLUMBING PACKAGE**, detailed herein, for the Public Utilities Field Operations Facility. All work shall be complete and in accordance with the Contract Documents. In the event of conflicts between the Scope of Work and other parts of the Contract Documents, this section shall take precedence.

6.1 WORK OVERVIEW

Provide complete, all required **Plumbing Work**, for the Project known as **City of Port Orange Public Works Facility.**

The Work included in this Subcontract is project specific and outlines the general Scope of Work for this Subcontract, all in complete accordance with the Plans and Specifications as defined in Exhibit "C" attached hereto.

Other Specification Sections may form a part of this Subcontract, whether listed or not.

The Scope of this Subcontract includes, but is not necessarily limited to the furnishing and installation of the following Work by this Subcontractor.

1. Visitors - No one shall be admitted to the jobsite by the Subcontractor, except as necessary to perform the Work hereunder, without, in each instance, first obtaining the approval of the Contractor.
2. Replace Guardrails - This Subcontractor shall install, maintain and replace all required guardrails in accordance with OSHA Standards for the purpose of safety at all openings and suspended work at the locations not protected and where Subcontractor is performing work. Subcontractor is also responsible for all construction fencing, temporary walkways, overhead protection, signage, and/or barricades to perform work outside the boundaries of Contractor furnished construction fencing.
3. Ongoing Operations/Residential Environment/Parking - Without limitation of the foregoing, Subcontractor understands that the Work may be constructed near on-going business or facility operations and may be in and around private residences and neighborhoods. Subcontractor shall use its best efforts, in conformity with the applicable standard of care, to perform the services hereunder in a manner which will not interfere with the on-going business operations and residences. All construction employees are to enter and park in the construction parking area designated by Contractor. Subcontractors are responsible for all off-site parking of employees which may be required and busing to jobsite via route identified by Contractor. Busing of employees, jobsite vehicles or deliveries shall not be routed through surrounding neighborhoods.
4. Jobsite Storage - Subcontractor is aware of the existing site conditions and the limited space availability. On-site storage and staging of materials and equipment will be allowed, only as specifically approved by Contractor's Project Superintendent or Project Manager. All deliveries of Subcontractor will be coordinated through Contractor. If scheduled deliveries are not ready at appointed time, Contractor may refuse acceptance and deliveries will be rescheduled. All cost and/or delays associated with the refusal of deliveries will be the responsibility of the Subcontractor. Subcontractor has included in this Subcontract price, all off-site storage as may be required, including, but not limited to transportation of materials from staging area to site.
5. Phased Turnover - This Subcontractor acknowledges that the Project may have phased turnover in accordance with the Project Schedule and that several mobilizations may be required and are included as part of this Subcontract. Additionally, Subcontractor acknowledges that the Project may have multi-buildings and that concurrent work on each building will be required in order to complete some phases ahead of the Project Schedule and all costs for doing same are included.
6. Owner's Facilities - All Project employees are subject to the Owner's rules and regulations while employed within their property limits. Use of the Owner's other parking lots and facilities by this Project's workmen are not permitted.

7. Limitation of Noise/Hours of Work - Subcontractor shall comply with all city, county, state and local jurisdictional authorities' Noise and Hours of Work Regulations.

8. This Subcontractor shall preserve all benchmark stakes and other survey marks, regardless of location or purpose. In the event these items are removed or destroyed by the Subcontractor's employees or others working on its behalf, the Subcontractor shall bear the full replacement cost.

9. This Subcontractor shall be responsible for all flagmen and traffic control personnel as necessary to get trucks in and out of the Project site in a safe and effective manner.

10. This Subcontractor shall provide all excavation, trenching, backfill, compaction, casual dewatering, pumping, shoring, personnel protection, traffic control, filter materials, bedding materials, grading, and all other earthwork which may be required to complete this scope of work. This Subcontractor shall provide a competent person at all times trenching is taking place.

11. This Subcontractor shall be responsible for all re-inspection fees required for this scope of work and the work of all others working on its behalf.

12. This Subcontractor shall provide and install all plumbing services necessary to provide temporary water for construction purposes, and for the Contractor's office facility. Temporary meters and consumption costs are to be provided by the Contractor.

13. This Subcontractor understands and agrees that all temporary excavations must have sides sloped at 1-1/2 to 1 ratio or utilize a trench box. If conditions do not allow for this sloping a trench box must be utilized. This Subcontractor has specifically reviewed the Geotechnical Report and understands that earth forming of trenches for the installation of underground pipe may not be possible on site.

14. This Subcontractor shall provide and install plumbing equipment, pipe, valves, mixing valves, valve boxes, fixtures, drains, water distribution system, in slab condensate piping and associated drain bodies, air handling unit condensate drains, vent systems, sanitary piping, lint traps, clean outs, thermal insulation, including at horizontal roof drains, and all miscellaneous accessories required for a complete and turnkey installation in strict accordance with the Contract Documents, governing buildings codes and the Authority Having Jurisdiction.

15. This Subcontractor shall provide and install all plumbing fixtures and equipment including, but not limited to, air admittance valves, backwater valves, carriers, electric water coolers, bottle fillers, pedestal drinking fountains, lavatories, water closets, urinals, lay in sinks, floor sinks, mop sinks, laundry sinks, bath tubs, electric water heaters, gas water heaters, water recirculating pumps, hub drains, floor drains, area drains, roof drains, overflow drains, trench drains, washing machine box, ice-maker/refrigerator box, hose bibs, wall hydrants (freeze proof), emergency eyewash stations, cleanouts, acid neutralizing bottle traps, faucets, and trim.

16. This Subcontractor shall provide and install all required grouting of equipment for plumbing fixtures and equipment.

17. This Subcontractor understands that the trench drains will need to be ordered early in order to be procured and installed in accordance with the Contractor's project schedule and prior to pouring the SOG for the building(s).

18. This Subcontractor shall hook-up all plumbing related fixtures and equipment that is provided and set by others. All miscellaneous materials required are included in this scope of work.

19. This Subcontractor shall provide and install hammer arrestors in strict accordance with the Contract Documents, properly sized for the number of fixtures served. Also included are access doors at each location of hammer arrestor.

20. This Subcontractor shall provide and install all beauty caulking around their installations.

21. This Subcontractor shall provide and install a complete interior sanitary sewer system to 5' outside of each building including, but not limited to, final hook up, piping, fittings, equipment, valves, labeling, and accessories.

22. This Subcontractor shall provide, through a Second Tier Subcontractor, all videoing required at all under slab sanitary piping. Videos are to be turned over to the Contractor as part of the closeout documents. Re-videoing of the piping is included, if required, in this Subcontract.

23. This Subcontractor shall provide and install a complete interior domestic water system to 5' outside of each building including, but not limited to, final hook up, piping, fittings, equipment, valves, pumps, labeling, and accessories.

24. This Subcontractor shall provide all flushing, disinfecting, and sampling of domestic water piping by a certified laboratory prior to the system being placed into service. All satisfactory laboratory reports are to be provided to Contractor prior to any supply valves being opened.

25. This Subcontractor shall provide and install a complete compressed air system in accordance with the Contract Documents, including but not limited to air compressors, reels, specialties and receivers in both the Administration and Fleet Maintenance Building.

26. This Subcontractor shall provide and install all identification required for this scope of work including, but not limited to, stenciling, tags, labels, flow stickers, signage, name plates, etc. of all piping and equipment in strict accordance with the Contract Documents.

27. This Subcontractor shall be responsible for all wall, floor, and roof penetrations required to complete this scope of work and provide and install all sleeves and block outs required. All core drilling and cutting of metal deck required, if necessary, is included in this scope of work.

28. The Subcontractor shall prepare detailed shop drawings and layout of all openings or embedded items in CMU walls required for this scope of work. The Subcontractor shall provide and install all plates, inserts, standoffs, rough in materials, and accessories required for a complete installation.

29. This Subcontractor shall submit coordination drawings to coordinate their installation with all above ceiling fire protection, mechanical, and electrical work. This Subcontractor has included attendance at multiple overhead coordination meetings as deemed necessary by the Contractor.

30. This Subcontractor shall provide all templates for lavatories and/or sinks that are scheduled to be mounted in another trades' work.

31. This Subcontractor shall take special care to meet all quality control measures required for exposed piping including, but not limited to, material selection and neat installation. All exposed piping shall be installed in a manner that allows it to be left ready for paint. Painting is by others.

32. This Subcontractor shall provide and install all required fire caulking and/or fire safing at all through wall, through floor, and through ceiling penetrations for this scope of work requiring a fire rating in strict accordance with the Contract Documents. All fire caulking and/or fire safing is to be equal to or greater than the rated assembly penetrated.

33. This Subcontractor shall provide and install all required caulking for smoke and/or sound rated walls at all through wall, through floor, and through ceiling penetrations for this scope of work requiring a smoke and/or sound rating in strict accordance with the Contract Documents. All caulking is to be equal to or greater than the rated assembly penetrated. Direction will be provided by Wharton-Smith, Inc. Superintendent where only one (1) side of a wall is required to be caulked.

34. This Subcontractor shall provide and install all required caulking and/or safing at all through wall roof drain penetrations in strict accordance with the Contract Documents.

35. This Subcontractor shall provide all access panels required for this scope of work. Layout for access panels is included in this scope of work. Panels are to be turned over to the Contractor and installed by others.

36. This Subcontractor shall coordinate with other Subcontractors for locations of hangers, fire sprinkler heads, diffusers, grilles, ductwork, VAVs, light fixtures, piping, and all other items for proper installation of their work. It is understood and agreed that material installed as part of this scope of work cannot negatively impact the required working clearances of any mechanical or electrical equipment.

37. This Subcontractor shall provide and install all required supports and anchors for this scope of work including, but not limited to, carriers, hangers, isolators, channels, angles, embeds, stands, unistrut, rods, straps, etc. This Subcontractor shall be responsible to reasonably distribute the applied loads to the structure so to not overload any element. Should additional supports be needed, they are included in this Subcontractor's scope of work. This

Subcontractor understands and acknowledges that all support framing and/or hangers shall be supported off of the structure and that no framing and/or hangers of any kind are to be supported off of the metal deck above.

38. This Subcontractor shall install all required beam clamps for hangers prior to the spray applied fire proofing being installed. It is understood and agreed that if spray applied fire proofing work in place is damaged because of hangers for this scope of work being added after spray on fire proofing installation, this Subcontractor shall bear all remediation costs.

39. This Subcontractor shall be responsible for fire sprinkler drain tie-in to storm drain in strict accordance with the Contract Documents.

40. This Subcontractor shall layout all concrete housekeeping pads required for this scope of work. Concrete pads to be formed and placed by others.

41. This Subcontractor shall be responsible for all tie-ins of sanitary sewer and domestic water within 5' of the building including, but not limited to, sanitary piping, domestic piping, fittings, excavation, and backfill. This includes storm stub-outs to 5' from the buildings. Final tie-in to storm stub-outs and canopy downspouts are by this Subcontractor.

42. This Subcontractor shall layout all concrete housekeeping pads required for this scope of work. Concrete pads to be formed and placed by others.

43. This Subcontractor shall provide all system startup/commissioning along with Owner training for all equipment provided by this Subcontractor. Owner training must be videotaped, and videos provided with closeout documentation.

44. This Subcontractor shall provide continuous supervision during all concrete placements. Supervision for inspections for others working on this Subcontractor's behalf are also included.

45. This Subcontractor shall provide continuous supervision during all plumbing inspections. Supervision for inspections for others working on this Subcontractor's behalf are also included.

46. This Subcontractor shall provide all labor, material, and equipment in strict accordance with final plumbing testing procedures as required by the Contract Documents, governing building codes, and the Authority Having Jurisdiction. This Subcontractor shall bear all costs associated with retesting required because this Subcontractor failed to meet performance data outlined in the Contract Documents.

47. This Subcontractor shall provide and install all compressed air, hydraulic oil, Engine Coolant, Engine Oil, and all associated lubrication lines and accessories in the Fleet Maintenance Building for a full and complete installation of the hose line and reel systems in accordance with the Contract Documents.

48. This Subcontractor shall be responsible for all rough-in associated with the automotive lubrication lines and appurtenances in strict accordance with the Contract Documents.

49. This Subcontractor shall provide in writing a delivery schedule for all plumbing equipment and fixtures required at the project and broken out by building number.

50. This Subcontractor shall provide all required coordination with Contractor and Roofing Subcontractor specifically regarding plumbing roof penetrations and roof drain installations. Roofing boots and flashings will be provided and installed by others.

51. This Subcontractor shall provide all rough-in and final hook up of all items requiring plumbing service no matter if it is Owner provided, Contractor provided, or provided by another Subcontractor, including, but not limited to, all kitchen equipment. This scope of work includes all piping, tubing, and miscellaneous fittings required.

52. This Subcontractor shall provide adequate working platforms, walkways, scaffolding, railings, and safety rails as required at all times work is taking place on site. It is this Subcontractor's responsibility to furnish, erect, brace, and dismantle all scaffold required to complete this scope of work. Inspection and tagging of all scaffold provided by this Subcontractor is to be completed on a daily basis prior to work commencing.

53. This Subcontractor shall receive, handle, distribute, and properly store all materials in strict accordance with the manufacturer's written instructions. At the discretion of the Authority Having Jurisdiction and/or the Contractor, this Subcontractor shall replace all damaged and/or weathered material at no additional costs.

54. This Subcontractor shall clean all equipment and fixtures supplied by this scope of work from all shipping labels and other temporary labels and debris.

55. This Subcontractor shall provide and install all oil/water separator. This includes, but is not limited to, coordination with the Site Contractor to establish inverts and all miscellaneous materials required by this Scope of Work all in strict accordance with the Contract Documents and manufacturer's specifications.

56. The Subcontractor shall provide a list of all intended material and equipment to be purchased under the Owner Direct Material/Equipment Purchase Program no later than 10 days after the issuance of a Notice of Intent or execution of this Agreement, whichever comes first.

Other Items of Note:

A. Wharton-Smith will be utilizing a software called **Team Player** to process monthly pay applications. The fee for this service is $10.00 per Pay Application, regardless on the number of revisions in each month. Please review the Team Player Welcome Letter that has been included in the Bidding Documents which contains embedded links for training documentation and videos. This will be a requirement for all subcontractors on this project.

B. With respect to Article 22 of this Subcontract Agreement, the Owner will exercise the right to purchase materials directly as part of the Owner Direct Purchase Program. This Subcontractor shall actively participate in the Owner Direct Purchase Program for this Project Prior to the Subcontractor's final payment, a final reconciliation of Owner Direct Purchases against this Subcontract will be performed. This does not apply to temporary fence.

C. On-Site Work Hours: Limit work to between 7 a.m. to 5 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.

D. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site. Subcontractor shall maintain list of approved screened personnel with Owner's representative.

6.2 BID PRICING / ALTERNATES

The bid pricing shall be broken out as follows and as indicated on the bid form. The City of Port Orange has the sole discretion to accept any, all, or none of the work items for this scope of work based on the bid pricing received. Subcontractor to price the work accordingly.

6.2.1 This bid does not include any bid alternates.

6.2.2 Retainage will be held at 5% for the duration of the Contract and will be released upon retainage release by the Owner.

6.3 CLARIFICATIONS

6.3.1 The Subcontractor will be responsible for protecting all new and existing work throughout the site from damage that could be caused by performing the Scope of Work. Any damage caused by Subcontractor is the responsibility of Subcontractor and Subcontractor will bear the costs of said damage.

6.3.2 The Subcontractor will be required to attend all project progress and coordination meetings as requested by Wharton-Smith, Inc. or the owner.

6.3.3 All materials must be submitted upon and approved prior to being sent to the jobsite, all non-approved items may be rejected and returned at the Subcontractor's cost.

6.3.4 Subcontractor is responsible to coordinate with the CMAR and all other Subcontractors as necessary.

6.3.5 Subcontractor will be responsible for all general notes indicated on the drawings that pertain to this scope of work.

6.3.6 Subcontractor will obtain all permits, licenses, certificates, and coordination efforts, or any such approvals of plans or specifications as may be required by federal, state and local laws, ordinances, rules and regulations, for the proper execution and completion of the work specified herein.

6.3.7 Subcontractor will be responsible for offloading all equipment deliveries and proper short-term and long-term storage requirements per the manufacturer's requirements. Provide all equipment necessary to offload and set equipment including cranes.

6.4 GENERAL REQUIREMENTS

6.4.1 The Subcontractor will be bound to the CMAR to the same extent the CMAR is bound to the Owner by the terms of the Contract Documents.

6.4.2 The Scope of Work will be in compliance with all Federal, State and Local Codes.

6.4.3 This is a lump sum agreement, including freight, incidental fees, and all applicable taxes. A schedule of values for submittals, materials, checkout, startup and closeout paperwork will be submitted with the return of the signed agreement for review and approval by the CMAR's Project Manager.

6.4.4 If requested by the CMAR, the Subcontractor will assist in cost loading of the project's master schedule. Schedule of Values will follow the cost loaded actives provided by Subcontractor.

6.4.5 No billing will be accepted without an approved Schedule of Values.

6.4.6 A detailed Schedule of Values must be provided within two (2) weeks of a contract being executed should your bid be accepted.

6.4.7 No escalation costs are permitted, pricing will remain firm through the project duration.

6.4.8 The Subcontractor is required to abide by the Wharton-Smith, Inc. safety program and OSHA standards. Excavation, confined space plans, and MSDS sheets will be required for all applicable work.

6.4.9 Subcontractor is responsible to develop and provide a site-specific safety plan for this scope of work.

A. Safety plan will list all potential hazards and competent persons who will be supervising the work.

6.4.10 Subcontractor will maintain an OSHA Certified competent person on site at all times while the work is conducted.

6.4.11 All Subcontractors will be required to follow security protocol of the City of Port Orange and Wharton-Smith at all times.

6.4.12 OSHA and the CMAR's safety standards will be followed at all times.

6.4.13 Proper PPE will be worn by any personnel on the jobsite, including but not limited to delivery drivers, startup and commissioning representatives, manufacturer's representatives, and other personnel.

6.4.14 Materials are to be released as required to maintain Schedule, but Subcontractor is to inform CMAR of material releases and deliveries. No item will be released for production without approval from the Engineer.

6.4.15 All equipment will be labeled and tagged in accordance with the Contract Documents.

6.4.16 Provide all management necessary to adequately support field activities and maintain the Project Schedule.

6.4.17 Fulltime and onsite supervision is required while any work by Subcontractor is being performed. If Subcontractor fails to do so, the CMAR will provide supervision and all costs will be back charged to Subcontractor. The Subcontractor's superintendent will be required to attend all requested progress, safety, scheduling, coordination, and quality control meetings. Meetings of other natures may be required as requested by Engineer, Owner, or the CMAR.

6.4.18 The Subcontractor will be required to coordinate with all other construction trades as required to complete this Scope of Work.

6.4.19 Anticipated (general) sequencing – Your crews may be interfacing with several other trades including mechanical, concrete, piping, and, testing agencies. Reasonable time provisions need to be made for coordination and time for these trades to complete their work.

6.4.20 All deliveries will be made between 7am-3pm M-F; all deliveries will be escorted onto the site by WSI. A 72-hour notice to WSI's Superintendent will be required prior to any deliveries.

6.4.21 The Subcontractor may not utilize any area of the project site for storage without approval from the CMAR. If the Subcontractor plans to utilize storage space, the Subcontractor will submit, to the CMAR, a site plan detailing the areas being requested for storage.

6.4.22 An emergency contact list will be provided by the Subcontractor. This list will include at least one point of contact that is available 24 hours a day.

6.4.23 Furnish appropriate Material Safety & Data Sheets (MSDS) and warranty documentation with shop drawings for approval.

6.4.24 Subcontractor is required to coordinate with all applicable authorities as required

6.4.25 The Subcontractor utilizing an Employee Leasing Company for Workers Compensation Insurance coverage will not be allowed to use any Subcontractor on the project (i.e. no third-party subs)

6.4.26 It is the sole responsibility of the Subcontractor to secure any and all tools, materials, and equipment stored on the site. Wharton-Smith, nor the Owner, will be responsible for any theft, vandalism, or damage to the Subcontractors property. The Subcontractor is responsible for all security measures required to secure their resources.

6.4.27 Subcontractor will provide temporary generators as needed and fresh drinking water for their employees. Subcontractor is only responsible for their work and personnel.

6.4.28 The Subcontractor is responsible to follow all site plan details and to adhere to all specifications applicable to the Scope of Work items above.

6.4.29 All hazardous material will be properly disposed of at an offsite location.

6.4.30 The Subcontractor will be responsible to utilize available dumpsters for debris and daily clean-up. All areas will be left clean at the end of each day.

6.4.31 A representative of the Subcontractor knowledgeable of the work will be present at weekly coordination meetings with the General Contractor.

6.4.32 Subcontractor is to provide Daily Reports.

6.4.33 A Superintendent (not Foreman) must be present at all times the Subcontractor's crews are onsite.

6.4.34 Pre-Mobilization Jobsite QC/QA Conference - Subcontractor to participate in WSI Quality Control Plan as outlined in the Subcontract Agreement. Subcontractor's Project Superintendent and or Foremen will attend Quality Control Meetings as deemed necessary by WSI including a minimum of one (1) pre-mobilization meeting to be held in advance of Subcontractor's mobilization on site.

6.4.35 Subcontractor must have approval for additional work (not included in this Scope) in writing by an authorized W/S representative prior to proceeding with said work.

6.4.36 No claim for extra services rendered or materials furnished will be valid by either party unless agreed to in writing by both parties.

6.5 PROJECT SCHEDULE

6.5.1 The Subcontractor is to provide a detailed schedule for the Scope of Work with the submission of bid. The Subcontractor will coordinate with the CMAR to ensure the detailed schedule conforms to the overall Project Schedule. The Subcontractor will update this Scope of Work Schedule each month and provide a written update to the CMAR.

6.5.2 The Subcontractor will account for not working on holidays and still plan for the Scope of Work to be completed per the overall Project Schedule. Holidays will include those observed by the Owner, the CMAR, and the Subcontractor. The CMAR or Owner observes the following holidays:

A. New Year's Day
B. Martin Luther King Day
C. President's Day
D. Memorial Day
E. Independence Day
F. Labor Day
G. Thanksgiving
H. Day after Thanksgiving
I. Christmas Eve
J. Christmas Day

6.6 SUBMITTAL REQUIREMENTS

6.6.1 The Subcontractor will provide submittal documentation as required within the Contract Documents. Upon execution of this Agreement the Subcontractor will provide a list of anticipated submittals for the Scope of Work. The Subcontractor will provide any additional submittal documentation requested for any materials or services related to the Scope of Work.

6.6.2 All submittals which have any deviation will be supplied with a letter addressing all deviations.

6.6.3 All submittals will be provided with a cover page listing the following information:

A. Project name
B. Submittal title
C. Relevant specification sections
    a. Specification sections, with addendum updates included, are to have each paragraph check-marked to indicate specification compliance. Check marks shall denote full compliance with a paragraph as a whole. Any deviation shall be clearly marked by an "X" and numbered to indicate a requested deviation. If deviations from the specifications are indicated, and therefore requested, each deviation shall be underlined and denoted by a unique number in the margin to the right of the identified paragraph, referenced to a detailed written explanation of the reasons requesting the deviation. The remaining portions of the paragraph not underlined will signify

compliance with the specifications. Failure to include a copy of the marked-up specification sections along with justifications for any requested deviations to the specification requirements shall be cause for return of the entire submittal with no further review.

D. Subcontractor's contact information

E. Manufacturer's contact information

6.6.4 All submittals will including the following information for each individual piece of equipment or fabrication:

A. Complete model number

B. The tag number of each per the Contract Documents (if applicable)

C. List of major components

D. Specification section (if varied from the submittal prime specification section)

6.6.5 It is the Subcontractor's sole responsibility to ensure submittals are complete and accurate for the complete scope of this agreement. Coordination of submittal information from others working under the Subcontractor is the sole responsibility of the Subcontractor. Subcontractor will not provide submittals with any items marked out of scope or by others if such items are part of the scope of this agreement.

6.6.6 Revised submittals will include a comment response document, this document will respond to every comment in writing and reference the location of all corrections within the revised submittal. Revised submittals will be at no additional cost to the Purchaser.

6.6.7 The Subcontractor may be responsible for any costs incurred by the CMAR due to excessive submittal revisions.

6.7 RECORD DOCUMENTS

6.7.1 The Subcontractor will maintain accurate and current as-built documents. These documents will meet the requirements within the Contract Documents. All survey information will be certified by a licensed surveyor.

6.7.2 Prior to approval of the Subcontractor's monthly pay application, the CMAR may elect to review the Subcontractor's as-built documents. If these documents are found to be inaccurate or not current, up to the date of the pay application, the CMAR may reject the pay application until the Subcontractor provides accurate and current as-built documents. Subcontractor will not be entitled for any additional costs, fees, or other compensation due to rejected pay applications and delayed payments as a result of Subcontractor's failure to provide accurate and current as-built documents.

6.7.3 After completion of the Scope of Work, the Subcontractor will provide complete and final as-built documents within two (2) weeks. As-built documents will be provided as detailed in the Contract Documents

6.8 INSURANCE

6.8.1 Subcontractor will provide the minimum insurance limits required to meet the requirements in this purchase order and all the requirements detailed within the Contract Documents. A sample insurance document is included within the Contract Documents for additional reference.

6.8.2 The Subcontractor will maintain a worker's compensation insurance policy for the complete scope of services. The Subcontractor will not utilize a Professional Employer Organization (PEO) to provide workers compensation insurance.

HEICHEL PLUMBING, INC.

1260 Marshall Farms Rd.
Ocoee, FL. 34761
407-656-7073/407-588-0659

PROPOSAL

PROPOSAL DATE:	November 12, 2024
PROPOSAL SUBMITTED:	**WHARTON SMITH**
ATTN:	ESTIMATING DEPT.
EMAIL ADDRESS:	comest@whartonsmith.com
WORK TO BE PERFORMED AT:	**PORT ORANGE PUBLIC UTILITIES FIELD OPS**

DESCRIPTION OF WORK:

- **ADMIN BUILDING:** SUPPLY AND INSTALL COPPER WATER PIPE TO 5' OUT
  SUPPLY AND INSTALL PVC DWV TO 5' OUT
  SUPPLY AND INSTALL FIXTURES PER SCHEDULE
- **WAREHOUSE:** TRENCH DRAINS, COPPER WATER TO 5' OUT**,** DWV TO 5' OUT
  SUPPLY AND INSTALL FIXTURES PER SCHEDULE
  AIR COMPRESSOR AS SHOWN
  AIR AND WATER REELS
  10" STORM LINE AS SHOWN CONNECTING
  (4) TRENCH DRAINS AND STOP AT CORNER OF BUILDING FOR CIVIL TO CONTINUE
- **BID:** ONLY INCLUDES ITEMS SHOWN ON P001, P101A, P101B, P300, P301, P302, P303
  NOT SHOWN ARE OIL / WATER SEPERATOR, SO BY OTHERS
  NOT SHOWN OIL, COOLANT AND LUBERCATION LINES, SO BY OTHERS
- **NOTE:** SEE ATTACHED INSURANCE CERTIFICATE

ALL MATERIAL IS GUARANTEED TO BE AS SPECIFIED, AND THE ABOVE WORK TO BE PERFORMED IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS SUBMITTED FOR ABOVE WORK AND COMPLETED IN A SUBSTANTIAL WORKMANLIKE MANNER FOR THE SUM OF **$288,000.00**

ANY ALTERATION OR DEVIATION FROM THE ABOVE SPECIFICATIONS INVOLVING EXTRA COSTS WILL BE EXECUTED ONLY UPON WRITTEN ORDERS AND WILL BECOME AN EXTRA CHARGE OVER AND ABOVE THE ESTIMATE. ALL AGREEMENTS CONTINGENT UPON STRIKES, ACCIDENTS OR DELAYS BEYOND OUR CONTROL. OWNER TO CARRY FIRE, TORNADO, AND OTHER NECESSARY INSURANCE UPON ABOVE WORK. WORKMEN'S COMPENSATION AND PUBLIC LIABILITY INSURANCE ON ABOVE WORK TO BE TAKEN OUT BY HEICHEL PLUMBING, INC.

RESPECTFULLY SUBMITTED BY: DAVE CONTO HEICHEL PLUMBING INC.
NOTE: THIS PROPOSAL MAY BE WITHDRAWN BY US IF NOT ACCEPTED WITHIN 30 DAYS.

ACCEPTANCE OF PROPOSAL

THE ABOVE PRICES, SPECIFICATIONS AND CONDITIONS ARE SATISFACTORY AND ARE HEREBY ACCEPTED. YOU ARE AUTHORIZED TO DO THE WORK AS SPECIFIED. PAYMENT WILL BE MADE AS OUTLINED ABOVE.
ACCEPTED BY: _____ DATE: _____

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 12/28/2023

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER		CONTACT NAME:	Christine McCrary	
Closson Insurance Agency, LLC		PHONE (A/C, No, Ext):	(407) 898-2211	FAX (A/C, No): (407) 898-1850
1201 S. Orlando Avenue		E-MAIL ADDRESS:	CMcCrary@ClossonInsurance.com	
Suite 200		INSURER(S) AFFORDING COVERAGE		NAIC #
Winter Park	FL 32789	INSURER A :	National Fire Insurance of Hartford	20478
INSURED		INSURER B :	The Continental Insurance Company	35289
Heichel Plumbing, Inc.		INSURER C :	Bridgefield Casualty Ins Co	10335
1260 Marshall Farms Rd		INSURER D :		
		INSURER E :		
Ocoee	FL 34761	INSURER F :		

COVERAGES **CERTIFICATE NUMBER:** 12.31.23 Heichel **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	[X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: [ ] POLICY [X] PRO-JECT [ ] LOC [ ] OTHER:			7063548824	12/31/2023	12/31/2024	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 100,000 $ 15,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
B	AUTOMOBILE LIABILITY [X] ANY AUTO [ ] OWNED AUTOS ONLY [ ] SCHEDULED AUTOS [ ] HIRED AUTOS ONLY [ ] NON-OWNED AUTOS ONLY			7063548807	12/31/2023	12/31/2024	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) FL PIP Basic	$ 1,000,000 $ $ $ $ 10,000
B	[X] UMBRELLA LIAB [X] OCCUR [ ] EXCESS LIAB [ ] CLAIMS-MADE [ ] DED [X] RETENTION $ 10,000			7063548810	12/31/2023	12/31/2024	EACH OCCURRENCE AGGREGATE	$ 5,000,000 $ 5,000,000
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y / N: Y If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		0196-59322	12/31/2023	12/31/2024	[X] PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ 1,000,000 $ 1,000,000 $ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

FOR INFORMATION ONLY Workers Compensation Exemption Holders: William Heichel & Charles Conto

The certificate holder is included as additional insured, regarding the General Liability, on a primary and non-contributory basis including on-going and completed operations as required by written contract per attached policy forms. Blanket additional insured status applies to the Auto Liability per attached policy forms. Blanket Waiver of Subrogation endorsements apply to the General Liability, Auto Liability and Workers Compensation as required by contract per attached policy form. Umbrella policy is follow form.

CERTIFICATE HOLDER

** FOR INFO ONLY **

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE



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CONTRACTORS EXTENDED COVERAGE ENDORSEMENT - BUSINESS AUTO PLUS

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE FORM

I. LIABILITY COVERAGE

A. Who Is An Insured

The following is added to **Section II, Paragraph A.1., Who Is An Insured**:

1. **a.** Any incorporated entity of which the Named Insured owns a majority of the voting stock on the date of inception of this Coverage Form; provided that,

   b. The insurance afforded by this provision **A.1.** does not apply to any such entity that is an **insured** under any other liability "policy" providing **auto** coverage.

2. Any organization you newly acquire or form, other than a limited liability company, partnership or joint venture, and over which you maintain majority ownership interest.

   The insurance afforded by this provision **A.2.**:

   a. Is effective on the acquisition or formation date, and is afforded only until the end of the policy period of this Coverage Form, or the next anniversary of its inception date, whichever is earlier.

   b. Does not apply to:

   (1) **Bodily injury** or **property damage** caused by an **accident** that occurred before you acquired or formed the organization; or

   (2) Any such organization that is an **insured** under any other liability "policy" providing **auto** coverage.

3. Any person or organization that you are required by a written contract to name as an additional insured is an **insured** but only with respect to their legal liability for acts or omissions of a person, who qualifies as an **insured** under **SECTION II – WHO IS AN INSURED** and for whom Liability Coverage is afforded under this policy. If required by written contract, this insurance will be primary and non-contributory to insurance on which the additional insured is a Named Insured.

4. An **employee** of yours is an **insured** while operating an **auto** hired or rented under a contract or agreement in that **employee's** name, with your permission, while performing duties related to the conduct of your business.

"Policy", as used in this provision **A. Who Is An Insured,** includes those policies that were in force on the inception date of this Coverage Form but:

1. Which are no longer in force; or

2. Whose limits have been exhausted.

B. Bail Bonds and Loss of Earnings

Section II, Paragraphs A.2. (2) and A.2. (4) are revised as follows:

1. In **a.(2),** the limit for the cost of bail bonds is changed from $2,000 to $5,000; and

2. In **a.(4),** the limit for the loss of earnings is changed from $250 to $500 a day.

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C. Fellow Employee

Section II, Paragraph B.5 does not apply.

Such coverage as is afforded by this provision C. is excess over any other collectible insurance.

II. PHYSICAL DAMAGE COVERAGE

A. Glass Breakage – Hitting A Bird Or Animal – Falling Objects Or Missiles

The following is added to **Section III, Paragraph A.3.**:

With respect to any covered **auto**, any deductible shown in the Declarations will not apply to glass breakage if such glass is repaired, in a manner acceptable to us, rather than replaced.

B. Transportation Expenses

Section III, Paragraph A.4.a. is revised, with respect to transportation expense incurred by you, to provide:

a. $60 per day, in lieu of $20; subject to

b. $1,800 maximum, in lieu of $600.

C. Loss of Use Expenses

Section III, Paragraph A.4.b. is revised, with respect to loss of use expenses incurred by you, to provide:

a. $1,000 maximum, in lieu of $600.

D. Hired "Autos"

The following is added to **Section III. Paragraph A.**:

5. Hired "Autos"

If Physical Damage coverage is provided under this policy, and such coverage does not extend to Hired Autos, then Physical Damage coverage is extended to:

a. Any covered **auto** you lease, hire, rent or borrow without a driver; and

b. Any covered **auto** hired or rented by your **employee** without a driver, under a contract in that individual **employee's** name, with your permission, while performing duties related to the conduct of your business.

c. The most we will pay for any one **accident** or **loss** is the actual cash value, cost of repair, cost of replacement or $75,000, whichever is less, minus a $500 deductible for each covered auto. No deductible applies to **loss** caused by fire or lightning.

d. The physical damage coverage as is provided by this provision is equal to the physical damage coverage(s) provided on your owned **autos**.

e. Such physical damage coverage for hired **autos** will:

(1) Include loss of use, provided it is the consequence of an **accident** for which the Named Insured is legally liable, and as a result of which a monetary loss is sustained by the leasing or rental concern.

(2) Such coverage as is provided by this provision will be subject to a limit of $750 per **accident**.

E. Airbag Coverage

The following is added to **Section III, Paragraph B.3.**:

The accidental discharge of an airbag shall not be considered mechanical breakdown.

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F. Electronic Equipment

Section III, Paragraphs B.4.c and B.4.d. are deleted and replaced by the following:

c. Physical Damage Coverage on a covered **auto** also applies to **loss** to any permanently installed electronic equipment including its antennas and other accessories

d. A $100 per occurrence deductible applies to the coverage provided by this provision.

G. Diminution In Value

The following is added to **Section III, Paragraph B.6.**:

Subject to the following, the **diminution in value** exclusion does not apply to:

a. Any covered **auto** of the private passenger type you lease, hire, rent or borrow, without a driver for a period of 30 days or less, while performing duties related to the conduct of your business; and

b. Any covered **auto** of the private passenger type hired or rented by your **employee** without a driver for a period of 30 days or less, under a contract in that individual **employee's** name, with your permission, while performing duties related to the conduct of your business.

c. Such coverage as is provided by this provision is limited to a **diminution in value** loss arising directly out of accidental damage and not as a result of the failure to make repairs; faulty or incomplete maintenance or repairs; or the installation of substandard parts.

d. The most we will pay for **loss** to a covered **auto** in any one accident is the lesser of:

(1) $5,000; or

(2) 20% of the **auto's** actual cash value (ACV).

III. Drive Other Car Coverage – Executive Officers

The following is added to **Sections II and III**:

1. Any **auto** you don't own, hire or borrow is a covered **auto** for Liability Coverage while being used by, and for Physical Damage Coverage while in the care, custody or control of, any of your "executive officers", except:

a. An **auto** owned by that "executive officer" or a member of that person's household; or

b. An **auto** used by that "executive officer" while working in a business of selling, servicing, repairing or parking **autos**.

Such Liability and/or Physical Damage Coverage as is afforded by this provision.

(1) Equal to the greatest of those coverages afforded any covered **auto**; and

(2) Excess over any other collectible insurance.

2. For purposes of this provision, "executive officer" means a person holding any of the officer positions created by your charter, constitution, by-laws or any other similar governing document, and, while a resident of the same household, includes that person's spouse.

Such "executive officers" are **insureds** while using a covered **auto** described in this provision.

IV. BUSINESS AUTO CONDITIONS

A. Duties In The Event Of Accident, Claim, Suit Or Loss

The following is added to **Section IV, Paragraph A.2.a.**:

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(4) Your **employees** may know of an **accident** or **loss**. This will not mean that you have such knowledge, unless such **accident** or **loss** is known to you or if you are not an individual, to any of your executive officers or partners or your insurance manager.

The following is added to **Section IV, Paragraph A.2.b.**:

(6) Your **employees** may know of documents received concerning a claim or **suit**. This will not mean that you have such knowledge, unless receipt of such documents is known to you or if you are not an individual, to any of your executive officers or partners or your insurance manager.

B. Transfer Of Rights Of Recovery Against Others To Us

The following is added to **Section IV, Paragraph A.5. Transfer Of Rights Of Recovery Against Others To Us**:

We waive any right of recovery we may have, because of payments we make for injury or damage, against any person or organization for whom or which you are required by written contract or agreement to obtain this waiver from us.

This injury or damage must arise out of your activities under a contract with that person or organization.

You must agree to that requirement prior to an **accident** or **loss**.

C. Concealment, Misrepresentation or Fraud

The following is added to **Section IV, Paragraph B.2.**:

Your failure to disclose all hazards existing on the date of inception of this Coverage Form shall not prejudice you with respect to the coverage afforded provided such failure or omission is not intentional.

D. Other Insurance

The following is added to **Section IV, Paragraph B.5.**:

Regardless of the provisions of Paragraphs **5.a.** and **5.d.** above, the coverage provided by this policy shall be on a primary non-contributory basis. This provision is applicable only when required by a written contract.

That written contract must have been entered into prior to **Accident** or **Loss**.

E. Policy Period, Coverage Territory

Section IV, Paragraph B. 7.(5).(a). is revised to provide:

a. 45 days of coverage in lieu of 30 days.

V. DEFINITIONS

Section V. paragraph C. is deleted and replaced by the following:

Bodily injury means bodily injury, sickness or disease sustained by a person, including mental anguish, mental injury or death resulting from any of these.

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CNA PARAMOUNT

Contractors' General Liability Extension Endorsement

It is understood and agreed that this endorsement amends the **COMMERCIAL GENERAL LIABILITY COVERAGE PART** as follows. If any other endorsement attached to this policy amends any provision also amended by this endorsement, then that other endorsement controls with respect to such provision, and the changes made by this endorsement with respect to such provision do not apply.

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CNA PARAMOUNT

Contractors' General Liability Extension Endorsement

1. ADDITIONAL INSUREDS

a. **WHO IS AN INSURED** is amended to include as an **Insured** any person or organization described in paragraphs **A.** through **H.** below whom a **Named Insured** is required to add as an additional insured on this **Coverage Part** under a written contract or written agreement, provided such contract or agreement:

(1) is currently in effect or becomes effective during the term of this **Coverage Part**; and

(2) was executed prior to:

(a) the **bodily injury** or **property damage**; or

(b) the offense that caused the **personal and advertising injury**,

for which such additional insured seeks coverage.

b. However, subject always to the terms and conditions of this policy, including the limits of insurance, the Insurer will not provide such additional insured with:

(1) a higher limit of insurance than required by such contract or agreement; or

(2) coverage broader than required by such contract or agreement, and in no event broader than that described by the applicable paragraph **A.** through **H.** below.

Any coverage granted by this endorsement shall apply only to the extent permissible by law.

A. Controlling Interest

Any person or organization with a controlling interest in a **Named Insured**, but only with respect to such person or organization's liability for **bodily injury**, **property damage** or **personal and advertising injury** arising out of:

1. such person or organization's financial control of a **Named Insured**; or

2. premises such person or organization owns, maintains or controls while a **Named Insured** leases or occupies such premises;

provided that the coverage granted by this paragraph does not apply to structural alterations, new construction or demolition operations performed by, on behalf of, or for such additional insured.

B. Co-owner of Insured Premises

A co-owner of a premises co-owned by a **Named Insured** and covered under this insurance but only with respect to such co-owner's liability for **bodily injury**, **property damage** or **personal and advertising injury** as co-owner of such premises.

C. Lessor of Equipment

Any person or organization from whom a **Named Insured** leases equipment, but only with respect to liability for **bodily injury**, **property damage** or **personal and advertising injury** caused, in whole or in part, by the **Named Insured's** maintenance, operation or use of such equipment, provided that the **occurrence** giving rise to such **bodily injury**, **property damage** or the offense giving rise to such **personal and advertising injury** takes place prior to the termination of such lease.

D. Lessor of Land

Any person or organization from whom a **Named Insured** leases land but only with respect to liability for **bodily injury**, **property damage** or **personal and advertising injury** arising out of the ownership, maintenance or use of such land, provided that the **occurrence** giving rise to such **bodily injury**, **property damage** or the offense giving rise to such **personal and advertising injury** takes place prior to the termination of such lease. The

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coverage granted by this paragraph does not apply to structural alterations, new construction or demolition operations performed by, on behalf of, or for such additional insured.

E. Lessor of Premises

An owner or lessor of premises leased to the **Named Insured**, or such owner or lessor's real estate manager, but only with respect to liability for **bodily injury**, **property damage** or **personal and advertising injury** arising out of the ownership, maintenance or use of such part of the premises leased to the **Named Insured**, and provided that the **occurrence** giving rise to such **bodily injury** or **property damage**, or the offense giving rise to such **personal and advertising injury**, takes place prior to the termination of such lease. The coverage granted by this paragraph does not apply to structural alterations, new construction or demolition operations performed by, on behalf of, or for such additional insured.

F. Mortgagee, Assignee or Receiver

A mortgagee, assignee or receiver of premises but only with respect to such mortgagee, assignee or receiver's liability for **bodily injury**, **property damage** or **personal and advertising injury** arising out of the **Named Insured's** ownership, maintenance, or use of a premises by a **Named Insured**.

The coverage granted by this paragraph does not apply to structural alterations, new construction or demolition operations performed by, on behalf of, or for such additional insured.

G. State or Governmental Agency or Subdivision or Political Subdivisions – Permits

A state or governmental agency or subdivision or political subdivision that has issued a permit or authorization but only with respect to such state or governmental agency or subdivision or political subdivision's liability for **bodily injury**, **property damage** or **personal and advertising injury** arising out of:

1. the following hazards in connection with premises a **Named Insured** owns, rents, or controls and to which this insurance applies:

a. the existence, maintenance, repair, construction, erection, or removal of advertising signs, awnings, canopies, cellar entrances, coal holes, driveways, manholes, marquees, hoistaway openings, sidewalk vaults, street banners, or decorations and similar exposures; or

b. the construction, erection, or removal of elevators; or

c. the ownership, maintenance or use of any elevators covered by this insurance; or

2. the permitted or authorized operations performed by a **Named Insured** or on a **Named Insured's** behalf.

The coverage granted by this paragraph does not apply to:

a. **Bodily injury**, **property damage** or **personal and advertising injury** arising out of operations performed for the state or governmental agency or subdivision or political subdivision; or

b. **Bodily injury** or **property damage** included within the **products-completed operations hazard**.

With respect to this provision's requirement that additional insured status must be requested under a written contract or agreement, the Insurer will treat as a written contract any governmental permit that requires the **Named Insured** to add the governmental entity as an additional insured.

H. Trade Show Event Lessor

1. With respect to a **Named Insured's** participation in a trade show event as an exhibitor, presenter or displayer, any person or organization whom the **Named Insured** is required to include as an additional insured, but only with respect to such person or organization's liability for **bodily injury**, **property damage** or **personal and advertising injury** caused by:

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a. the **Named Insured's** acts or omissions; or

b. the acts or omissions of those acting on the **Named Insured's** behalf,

in the performance of the **Named Insured's** ongoing operations at the trade show event premises during the trade show event.

2. The coverage granted by this paragraph does not apply to **bodily injury** or **property damage** included within the **products-completed operations hazard**.

2. ADDITIONAL INSURED - PRIMARY AND NON-CONTRIBUTORY TO ADDITIONAL INSURED'S INSURANCE

The **Other Insurance** Condition in the **COMMERCIAL GENERAL LIABILITY CONDITIONS** Section is amended to add the following paragraph:

If the **Named Insured** has agreed in writing in a contract or agreement that this insurance is primary and non-contributory relative to an additional insured's own insurance, then this insurance is primary, and the Insurer will not seek contribution from that other insurance. For the purpose of this Provision **2.**, the additional insured's own insurance means insurance on which the additional insured is a named insured. Otherwise, and notwithstanding anything to the contrary elsewhere in this Condition, the insurance provided to such person or organization is excess of any other insurance available to such person or organization.

3. BODILY INJURY – EXPANDED DEFINITION

Under **DEFINITIONS**, the definition of **bodily injury** is deleted and replaced by the following:

Bodily injury means physical injury, sickness or disease sustained by a person, including death, humiliation, shock, mental anguish or mental injury sustained by that person at any time which results as a consequence of the physical injury, sickness or disease.

4. BROAD KNOWLEDGE OF OCCURRENCE/ NOTICE OF OCCURRENCE

Under **CONDITIONS**, the condition entitled **Duties in The Event of Occurrence, Offense, Claim or Suit** is amended to add the following provisions:

A. BROAD KNOWLEDGE OF OCCURRENCE

The **Named Insured** must give the Insurer or the Insurer's authorized representative notice of an **occurrence**, offense or **claim** only when the **occurrence**, offense or **claim** is known to a natural person **Named Insured**, to a partner, executive officer, manager or member of a **Named Insured**, or an **employee** designated by any of the above to give such notice.

B. NOTICE OF OCCURRENCE

The **Named Insured's** rights under this **Coverage Part** will not be prejudiced if the **Named Insured** fails to give the Insurer notice of an **occurrence**, offense or **claim** and that failure is solely due to the **Named Insured's** reasonable belief that the **bodily injury** or **property damage** is not covered under this **Coverage Part**. However, the **Named Insured** shall give written notice of such **occurrence**, offense or **claim** to the Insurer as soon as the **Named Insured** is aware that this insurance may apply to such **occurrence**, offense or **claim**.

5. BROAD NAMED INSURED

WHO IS AN INSURED is amended to delete its Paragraph **3.** in its entirety and replace it with the following:

3. Pursuant to the limitations described in Paragraph **4.** below, any organization in which a **Named Insured** has management control:

a. on the effective date of this **Coverage Part**; or

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b. by reason of a **Named Insured** creating or acquiring the organization during the **policy period**,

qualifies as a **Named Insured**, provided that there is no other similar liability insurance, whether primary, contributory, excess, contingent or otherwise, which provides coverage to such organization, or which would have provided coverage but for the exhaustion of its limit, and without regard to whether its coverage is broader or narrower than that provided by this insurance.

But this **BROAD NAMED INSURED** provision does not apply to:

(a) any partnership, limited liability company or joint venture; or

(b) any organization for which coverage is excluded by another endorsement attached to this **Coverage Part**.

For the purpose of this provision, management control means:

A. owning interests representing more than 50% of the voting, appointment or designation power for the selection of a majority of the Board of Directors of a corporation; or

B. having the right, pursuant to a written trust agreement, to protect, control the use of, encumber or transfer or sell property held by a trust.

4. With respect to organizations which qualify as **Named Insureds** by virtue of Paragraph **3.** above, this insurance does not apply to:

a. bodily injury or **property damage** that first occurred prior to the date of management control, or that first occurs after management control ceases; nor

b. personal or advertising injury caused by an offense that first occurred prior to the date of management control or that first occurs after management control ceases.

5. The insurance provided by this **Coverage Part** applies to **Named Insureds** when trading under their own names or under such other trading names or doing-business-as names (dba) as any **Named Insured** should choose to employ.

6. BROADENED LIABILITY COVERAGE FOR DAMAGE TO YOUR PRODUCT AND YOUR WORK

A. Under **COVERAGES**, **Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Exclusions** is amended to delete exclusions **k.** and **l.** and replace them with the following:

This insurance does not apply to:

k. Damage to Your Product

Property damage to **your product** arising out of it, or any part of it except when caused by or resulting from:

(1) fire;

(2) smoke;

(3) collapse; or

(4) explosion.

l. Damage to Your Work

Property damage to **your work** arising out of it, or any part of it and included in the **products-completed operations hazard**.

This exclusion does not apply:

(1) If the damaged work, or the work out of which the damage arises, was performed on the **Named Insured's** behalf by a subcontractor; or

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(2) If the cause of loss to the damaged work arises as a result of:

(a) fire;

(b) smoke;

(c) collapse; or

(d) explosion.

B. The following paragraph is added to **LIMITS OF INSURANCE**:

Subject to **5.** above, $100,000 is the most the Insurer will pay under **Coverage A** for the sum of **damages** arising out of any one **occurrence** because of **property damage** to **your product** and **your work** that is caused by fire, smoke, collapse or explosion and is included within the **product-completed operations hazard**. This sublimit does not apply to **property damage** to **your work** if the damaged work, or the work out of which the damage arises, was performed on the **Named Insured's** behalf by a subcontractor.

C. This **Broadened Liability Coverage For Damage To Your Product And Your Work** Provision does not apply if an endorsement of the same name is attached to this policy.

7. CONTRACTUAL LIABILITY – RAILROADS

With respect to operations performed within 50 feet of railroad property, the definition of **insured contract** is replaced by the following:

Insured Contract means:

a. A contract for a lease of premises. However, that portion of the contract for a lease of premises that indemnifies any person or organization for damage by fire to premises while rented to a **Named Insured** or temporarily occupied by a **Named Insured** with permission of the owner is not an **insured contract**;

b. A sidetrack agreement;

c. Any easement or license agreement;

d. An obligation, as required by ordinance, to indemnify a municipality, except in connection with work for a municipality;

e. An elevator maintenance agreement;

f. That part of any other contract or agreement pertaining to the **Named Insured's** business (including an indemnification of a municipality in connection with work performed for a municipality) under which the **Named Insured** assumes the tort liability of another party to pay for **bodily injury** or **property damage** to a third person or organization. Tort liability means a liability that would be imposed by law in the absence of any contract or agreement.

Paragraph **f.** does not include that part of any contract or agreement:

(1) That indemnifies an architect, engineer or surveyor for injury or damage arising out of:

(a) Preparing, approving or failing to prepare or approve maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; or

(b) Giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage;

(2) Under which the **Insured**, if an architect, engineer or surveyor, assumes liability for an injury or damage arising out of the insured's rendering or failure to render professional services, including those listed in **(1)** above and supervisory, inspection, architectural or engineering activities.

8. ELECTRONIC DATA LIABILITY

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A. Under **COVERAGES**, **Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Exclusions** is amended to delete exclusion **p. Electronic Data** and replace it with the following:

This insurance does not apply to:

p. Access Or Disclosure Of Confidential Or Personal Information And Data-related Liability

Damages arising out of:

(1) any access to or disclosure of any person's or organization's confidential or personal information, including patents, trade secrets, processing methods, customer lists, financial information, credit card information, health information or any other type of nonpublic information; or

(2) the loss of, loss of use of, damage to, corruption of, inability to access, or inability to manipulate **electronic data** that does not result from physical injury to tangible property.

However, unless Paragraph **(1)** above applies, this exclusion does not apply to **damages** because of **bodily injury**.

This exclusion applies even if damages are claimed for notification costs, credit monitoring expenses, forensic expenses, public relation expenses or any other loss, cost or expense incurred by the **Named Insured** or others arising out of that which is described in Paragraph **(1)** or **(2)** above.

B. The following paragraph is added to **LIMITS OF INSURANCE**:

Subject to **5.** above, $100,000 is the most the Insurer will pay under **Coverage A** for all **damages** arising out of any one **occurrence** because of **property damage** that results from physical injury to tangible property and arises out of **electronic data**.

C. The following definition is added to **DEFINITIONS**:

Electronic data means information, facts or programs stored as or on, created or used on, or transmitted to or from computer software (including systems and applications software), hard or floppy disks, CD-ROMS, tapes, drives, cells, data processing devices or any other media which are used with electronically controlled equipment.

D. For the purpose of the coverage provided by this **ELECTRONIC DATA LIABILITY** Provision, the definition of **property damage** in **DEFINITIONS** is replaced by the following:

Property damage means:

a. Physical injury to tangible property, including all resulting loss of use of that property. All such loss of use shall be deemed to occur at the time of the physical injury that caused it;

b. Loss of use of tangible property that is not physically injured. All such loss of use shall be deemed to occur at the time of the **occurrence** that caused it; or

c. Loss of, loss of use of, damage to, corruption of, inability to access, or inability to properly manipulate **electronic data**, resulting from physical injury to tangible property. All such loss of **electronic data** shall be deemed to occur at the time of the **occurrence** that caused it.

For the purposes of this insurance, **electronic data** is not tangible property.

E. If Electronic Data Liability is provided at a higher limit by another endorsement attached to this policy, then the $100,000 limit provided by this **ELECTRONIC DATA LIABILITY** Provision is part of, and not in addition to, that higher limit.

9. ESTATES, LEGAL REPRESENTATIVES, AND SPOUSES

The estates, heirs, legal representatives and **spouses** of any natural person **Insured** shall also be insured under this policy; provided, however, coverage is afforded to such estates, heirs, legal representatives, and **spouses** only for

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claims arising solely out of their capacity or status as such and, in the case of a **spouse**, where such **claim** seeks **damages** from marital community property, jointly held property or property transferred from such natural person **Insured** to such **spouse**. No coverage is provided for any act, error or omission of an estate, heir, legal representative, or **spouse** outside the scope of such person's capacity or status as such, provided however that the **spouse** of a natural person **Named Insured** and the **spouses** of members or partners of joint venture or partnership **Named Insureds** are **Insureds** with respect to such **spouses'** acts, errors or omissions in the conduct of the **Named Insured's** business.

10. EXPECTED OR INTENDED INJURY – EXCEPTION FOR REASONABLE FORCE

Under **COVERAGES**, **Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Exclusions** is amended to delete the exclusion entitled **Expected or Intended Injury** and replace it with the following:

This insurance does not apply to:

Expected or Intended Injury

Bodily injury or **property damage** expected or intended from the standpoint of the **Insured**. This exclusion does not apply to **bodily injury** or **property damage** resulting from the use of reasonable force to protect persons or property.

11. GENERAL AGGREGATE LIMITS OF INSURANCE - PER PROJECT

A. For each construction project away from premises the **Named Insured** owns or rents, a separate Construction Project General Aggregate Limit, equal to the amount of the General Aggregate Limit shown in the Declarations, is the most the Insurer will pay for the sum of:

1. All **damages** under **Coverage A**, except **damages** because of **bodily injury** or **property damage** included in the **products-completed operations hazard**; and
2. All medical expenses under **Coverage C**,

that arise from **occurrences** or accidents which can be attributed solely to ongoing operations at that construction project. Such payments shall not reduce the General Aggregate Limit shown in the Declarations, nor the Construction Project General Aggregate Limit of any other construction project.

B. All:

1. **Damages** under **Coverage B**, regardless of the number of locations or construction projects involved;
2. **Damages** under **Coverage A**, caused by **occurrences** which cannot be attributed solely to ongoing operations at a single construction project, except **damages** because of **bodily injury** or **property damage** included in the **products-completed operations hazard**; and
3. Medical expenses under **Coverage C** caused by accidents which cannot be attributed solely to ongoing operations at a single construction project,

will reduce the General Aggregate Limit shown in the Declarations.

C. The limits shown in the Declarations for Each Occurrence, for Damage To Premises Rented To You and for Medical Expense continue to apply, but will be subject to either the Construction Project General Aggregate Limit or the General Aggregate Limit shown in the Declarations, depending on whether the **occurrence** can be attributed solely to ongoing operations at a particular construction project.

D. When coverage for liability arising out of the **products-completed operations hazard** is provided, any payments for **damages** because of **bodily injury** or **property damage** included in the **products-completed operations hazard** will reduce the Products-Completed Operations Aggregate Limit shown in the Declarations, regardless of the number of projects involved.

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E. If a single construction project away from premises owned by or rented to the **Insured** has been abandoned and then restarted, or if the authorized contracting parties deviate from plans, blueprints, designs, specifications or timetables, the project will still be deemed to be the same construction project.

F. The provisions of **LIMITS OF INSURANCE** not otherwise modified by this endorsement shall continue to apply as stipulated.

12. IN REM ACTIONS

A quasi in rem action against any vessel owned or operated by or for the **Named Insured**, or chartered by or for the **Named Insured**, will be treated in the same manner as though the action were in personam against the **Named Insured**.

13. INCIDENTAL HEALTH CARE MALPRACTICE COVERAGE

Solely with respect to **bodily injury** that arises out of a **health care incident**:

A. Under **COVERAGES**, **Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Insuring Agreement** is amended to replace Paragraphs **1.b.(1)** and **1.b.(2)** with the following:

b. This insurance applies to **bodily injury** provided that the professional health care services are incidental to the **Named Insured's** primary business purpose, and only if:

(1) such **bodily injury** is caused by an **occurrence** that takes place in the **coverage territory**.

(2) the **bodily injury** first occurs during the **policy period**. All **bodily injury** arising from an **occurrence** will be deemed to have occurred at the time of the first act, error, or omission that is part of the **occurrence**; and

B. Under **COVERAGES**, **Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Exclusions** is amended to:

i. add the following to the **Employers Liability** exclusion:

This exclusion applies only if the **bodily injury** arising from a **health care incident** is covered by other liability insurance available to the **Insured** (or which would have been available but for exhaustion of its limits).

ii. delete the exclusion entitled **Contractual Liability** and replace it with the following:

This insurance does not apply to:

Contractual Liability

the **Insured's** actual or alleged liability under any oral or written contract or agreement, including but not limited to express warranties or guarantees.

iii. add the following additional exclusions:

This insurance does not apply to:

Discrimination

any actual or alleged discrimination, humiliation or harassment, including but not limited to **claims** based on an individual's race, creed, color, age, gender, national origin, religion, disability, marital status or sexual orientation.

Dishonesty or Crime

Any actual or alleged dishonest, criminal or malicious act, error or omission.

Medicare/Medicaid Fraud

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any actual or alleged violation of law with respect to Medicare, Medicaid, Tricare or any similar federal, state or local governmental program.

Services Excluded by Endorsement

Any **health care incident** for which coverage is excluded by endorsement.

C. DEFINITIONS is amended to:

i. add the following definitions:

Health care incident means an act, error or omission by the **Named Insured's employees** or **volunteer workers** in the rendering of:

a. **professional health care services** on behalf of the **Named Insured** or

b. Good Samaritan services rendered in an emergency and for which no payment is demanded or received.

Professional health care services means any health care services or the related furnishing of food, beverages, medical supplies or appliances by the following providers in their capacity as such but solely to the extent they are duly licensed as required:

a. Physician;

b. Nurse;

c. Nurse practitioner;

d. Emergency medical technician;

e. Paramedic;

f. Dentist;

g. Physical therapist;

h. Psychologist;

i. Speech therapist;

j. Other allied health professional; or

Professional health care services does not include any services rendered in connection with human clinical trials or product testing.

ii. delete the definition of **occurrence** and replace it with the following:

Occurrence means a **health care incident**. All acts, errors or omissions that are logically connected by any common fact, circumstance, situation, transaction, event, advice or decision will be considered to constitute a single **occurrence**;

iii. amend the definition of **Insured** to:

a. add the following:

the **Named Insured's employees** are **Insureds** with respect to:

(1) **bodily injury** to a co-**employee** while in the course of the co-**employee's** employment by the **Named Insured** or while performing duties related to the conduct of the **Named Insured's** business; and

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(2) **bodily injury** to a **volunteer worker** while performing duties related to the conduct of the **Named Insured's** business;

when such **bodily injury** arises out of a **health care incident**.

the **Named Insured's volunteer workers** are **Insureds** with respect to:

(1) **bodily injury** to a co-**volunteer worker** while performing duties related to the conduct of the **Named Insured's** business; and

(2) **bodily injury** to an **employee** while in the course of the **employee's** employment by the **Named Insured** or while performing duties related to the conduct of the **Named Insured's** business;

when such **bodily injury** arises out of a **health care incident**.

b. delete Subparagraphs **(a)**, **(b)**, **(c) and (d)** of Paragraph **2.a.(1)** of **WHO IS AN INSURED**.

D. The **Other Insurance** condition is amended to delete Paragraph **b.(1)** in its entirety and replace it with the following:

Other Insurance

b. Excess Insurance

(1) To the extent this insurance applies, it is excess over any other insurance, self insurance or risk transfer instrument, whether primary, excess, contingent or on any other basis, except for insurance purchased specifically by the **Named Insured** to be excess of this coverage.

14. JOINT VENTURES / PARTNERSHIP / LIMITED LIABILITY COMPANIES

WHO IS AN INSURED is amended to delete its last paragraph and replace it with the following:

No person or organization is an **Insured** with respect to the conduct of any current or past partnership, joint venture or limited liability company that is not shown as a **Named Insured** in the Declarations, except that if the **Named Insured** was a joint venturer, partner, or member of a limited liability company and such joint venture, partnership or limited liability company terminated prior to or during the **policy period**, such **Named Insured** is an **Insured** with respect to its interest in such joint venture, partnership or limited liability company but only to the extent that:

a. any offense giving rise to **personal and advertising injury** occurred prior to such termination date, and the **personal and advertising injury** arising out of such offense first occurred after such termination date;

b. the **bodily injury** or **property damage** first occurred after such termination date; and

c. there is no other valid and collectible insurance purchased specifically to insure the partnership, joint venture or limited liability company; and

If the joint venture, partnership or limited liability company is or was insured under a **consolidated (wrap-up) insurance program**, then such insurance will always be considered valid and collectible for the purpose of paragraph **c.** above. But this provision will not serve to exclude **bodily injury**, **property damage** or **personal and advertising injury** that would otherwise be covered under the **Contractors General Liability Extension Endorsement** provision entitled **WRAP-UP EXTENSION: OCIP, CCIP, OR CONSOLIDATED (WRAP-UP) INSURANCE PROGRAMS**. Please see that provision for the definition of **consolidated (wrap-up) insurance program**.

15. LEGAL LIABILITY – DAMAGE TO PREMISES / ALIENATED PREMISES / PROPERTY IN THE NAMED INSURED'S CARE, CUSTODY OR CONTROL

A. Under **COVERAGES, Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Exclusions** is amended to delete exclusion **j. Damage to Property** in its entirety and replace it with the following:

This insurance does not apply to:

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j. Damage to Property

Property damage to:

(1) Property the **Named Insured** owns, rents, or occupies, including any costs or expenses incurred by you, or any other person, organization or entity, for repair, replacement, enhancement, restoration or maintenance of such property for any reason, including prevention of injury to a person or damage to another's property;

(2) Premises the **Named Insured** sells, gives away or abandons, if the **property damage** arises out of any part of those premises;

(3) Property loaned to the **Named Insured**;

(4) Personal property in the care, custody or control of the **Insured**;

(5) That particular part of real property on which the **Named Insured** or any contractors or subcontractors working directly or indirectly on the **Named Insured's** behalf are performing operations, if the **property damage** arises out of those operations; or

(6) That particular part of any property that must be restored, repaired or replaced because **your work** was incorrectly performed on it.

Paragraphs **(1), (3)** and **(4)** of this exclusion do not apply to **property damage** (other than damage by fire) to premises rented to the **Named Insured** or temporarily occupied by the **Named Insured** with the permission of the owner, nor to the contents of premises rented to the **Named Insured** for a period of 7 or fewer consecutive days. A separate limit of insurance applies to Damage To Premises Rented To You as described in **LIMITS OF INSURANCE**.

Paragraph **(2)** of this exclusion does not apply if the premises are **your work**.

Paragraphs **(3), (4), (5)** and **(6)** of this exclusion do not apply to liability assumed under a sidetrack agreement.

Paragraph **(6)** of this exclusion does not apply to **property damage** included in the **products-completed operations hazard**.

Paragraphs **(3)** and **(4)** of this exclusion do not apply to **property damage** to:

i. tools, or equipment the **Named Insured** borrows from others, nor

ii. other personal property of others in the **Named Insured's** care, custody or control while being used in the **Named Insured's** operations away from any **Named Insured's** premises.

However, the coverage granted by this exception to Paragraphs **(3)** and **(4)** does not apply to:

a. property at a job site awaiting or during such property's installation, fabrication, or erection;

b. property that is **mobile equipment** leased by an **Insured**;

c. property that is an **auto**, aircraft or watercraft;

d. property in transit; or

e. any portion of **property damage** for which the **Insured** has available other valid and collectible insurance, or would have such insurance but for exhaustion of its limits, or but for application of one of its exclusions.

A separate limit of insurance and deductible apply to such property of others. See **LIMITS OF INSURANCE** as amended below.

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B. Under **COVERAGES**, **Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Exclusions** is amended to delete its last paragraph and replace it with the following:

Exclusions **c.** through **n.** do not apply to damage by fire to premises while rented to a **Named Insured** or temporarily occupied by a **Named Insured** with permission of the owner, nor to damage to the contents of premises rented to a **Named Insured** for a period of 7 or fewer consecutive days.

A separate limit of insurance applies to this coverage as described in **LIMITS OF INSURANCE**.

C. The following paragraph is added to **LIMITS OF INSURANCE**:

Subject to **5.** above, $25,000 is the most the Insurer will pay under **Coverage A** for **damages** arising out of any one **occurrence** because of the sum of all **property damage** to borrowed tools or equipment, and to other personal property of others in the **Named Insured's** care, custody or control, while being used in the **Named Insured's** operations away from any **Named Insured's** premises. The Insurer's obligation to pay such **property damage** does not apply until the amount of such **property damage** exceeds $1,000. The Insurer has the right but not the duty to pay any portion of this $1,000 in order to effect settlement. If the Insurer exercises that right, the **Named Insured** will promptly reimburse the Insurer for any such amount.

D. Paragraph **6.**, Damage To Premises Rented To You Limit, of **LIMITS OF INSURANCE** is deleted and replaced by the following:

6. Subject to Paragraph **5.** above, (the Each Occurrence Limit), the Damage To Premises Rented To You Limit is the most the Insurer will pay under **Coverage A** for **damages** because of **property damage** to any one premises while rented to the **Named Insured** or temporarily occupied by the **Named Insured** with the permission of the owner, including contents of such premises rented to the **Named Insured** for a period of 7 or fewer consecutive days. The Damage To Premises Rented To You Limit is the greater of:

a. $500,000; or

b. The Damage To Premises Rented To You Limit shown in the Declarations.

E. Paragraph **4.b.(1)(a)(ii)** of the **Other Insurance** Condition is deleted and replaced by the following:

(ii) That is property insurance for premises rented to the **Named Insured**, for premises temporarily occupied by the **Named Insured** with the permission of the owner; or for personal property of others in the **Named Insured's** care, custody or control;

16. LIQUOR LIABILITY

Under **COVERAGES**, **Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Exclusions** is amended to delete the exclusion entitled **Liquor Liability**.

This **LIQUOR LIABILITY** provision does not apply to any person or organization who otherwise qualifies as an additional insured on this **Coverage Part**.

17. MEDICAL PAYMENTS

A. **LIMITS OF INSURANCE** is amended to delete Paragraph **7.** (the Medical Expense Limit) and replace it with the following:

7. Subject to Paragraph **5.** above (the Each Occurrence Limit), the Medical Expense Limit is the most the Insurer will pay under **Coverage C – Medical Payments** for all medical expenses because of **bodily injury** sustained by any one person. The Medical Expense Limit is the greater of:

(1) $15,000 unless a different amount is shown here: $N,NNN,NNN,NNN; or

(2) the amount shown in the Declarations for Medical Expense Limit.

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B. Under **COVERAGES**, the **Insuring Agreement** of **Coverage C – Medical Payments** is amended to replace Paragraph **1.a.(3)(b)** with the following:

(b) The expenses are incurred and reported to the Insurer within three years of the date of the accident; and

18. NON-OWNED AIRCRAFT

Under **COVERAGES, Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Exclusions** is amended as follows:

The exclusion entitled **Aircraft, Auto or Watercraft** is amended to add the following:

This exclusion does not apply to an aircraft not owned by any **Named Insured**, provided that:

1. the pilot in command holds a currently effective certificate issued by the duly constituted authority of the United States of America or Canada, designating that person as a commercial or airline transport pilot;

2. the aircraft is rented with a trained, paid crew to the **Named Insured**; and

3. the aircraft is not being used to carry persons or property for a charge.

19. NON-OWNED WATERCRAFT

Under **COVERAGES, Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Exclusions** is amended to delete subparagraph **(2)** of the exclusion entitled **Aircraft, Auto or Watercraft**, and replace it with the following.

This exclusion does not apply to:

(2) a watercraft that is not owned by any **Named Insured**, provided the watercraft is:

(a) less than 75 feet long; and

(b) not being used to carry persons or property for a charge.

20. PERSONAL AND ADVERTISING INJURY –DISCRIMINATION OR HUMILIATION

A. Under **DEFINITIONS**, the definition of **personal and advertising injury** is amended to add the following tort:

Discrimination or humiliation that results in injury to the feelings or reputation of a natural person.

B. Under **COVERAGES**, **Coverage B – Personal and Advertising Injury Liability**, the paragraph entitled **Exclusions** is amended to:

1. delete the Exclusion entitled **Knowing Violation Of Rights Of Another** and replace it with the following:

This insurance does not apply to:

Knowing Violation of Rights of Another

Personal and advertising injury caused by or at the direction of the **Insured** with the knowledge that the act would violate the rights of another and would inflict **personal and advertising injury**. This exclusion shall not apply to discrimination or humiliation that results in injury to the feelings or reputation of a natural person, but only if such discrimination or humiliation is not done intentionally by or at the direction of:

(a) the **Named Insured**; or

(b) any **executive officer**, director, stockholder, partner, member or manager (if the **Named Insured** is a limited liability company) of the **Named Insured**.

2. add the following exclusions:

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This insurance does not apply to:

Employment Related Discrimination

Discrimination or humiliation directly or indirectly related to the employment, prospective employment, past employment or termination of employment of any person by any **Insured**.

Premises Related Discrimination

discrimination or humiliation arising out of the sale, rental, lease or sub-lease or prospective sale, rental, lease or sub-lease of any room, dwelling or premises by or at the direction of any **Insured**.

Notwithstanding the above, there is no coverage for fines or penalties levied or imposed by a governmental entity because of discrimination.

The coverage provided by this **PERSONAL AND ADVERTISING INJURY –DISCRIMINATION OR HUMILIATION** Provision does not apply to any person or organization whose status as an **Insured** derives solely from

Provision **1. ADDITIONAL INSURED** of this endorsement; or

attachment of an additional insured endorsement to this **Coverage Part**.

This **PERSONAL AND ADVERTISING INJURY –DISCRIMINATION OR HUMILIATION** Provision does not apply to any person or organization who otherwise qualifies as an additional insured on this **Coverage Part**.

21. PERSONAL AND ADVERTISING INJURY - CONTRACTUAL LIABILITY

A. Under **COVERAGES**, **Coverage B –Personal and Advertising Injury Liability**, the paragraph entitled **Exclusions** is amended to delete the exclusion entitled **Contractual Liability**.

B. Solely for the purpose of the coverage provided by this **PERSONAL AND ADVERTISING INJURY - CONTRACTUAL LIABILITY** provision, the following changes are made to the section entitled **SUPPLEMENTARY PAYMENTS – COVERAGES A AND B**:

1. Paragraph **2.d.** is replaced by the following:

d. The allegations in the **suit** and the information the Insurer knows about the offense alleged in such **suit** are such that no conflict appears to exist between the interests of the **Insured** and the interests of the indemnitee;

2. The first unnumbered paragraph beneath Paragraph **2.f.(2)(b)** is deleted and replaced by the following:

So long as the above conditions are met, attorneys fees incurred by the Insurer in the defense of that indemnitee, necessary litigation expenses incurred by the Insurer, and necessary litigation expenses incurred by the indemnitee at the Insurer's request will be paid as **defense costs**. Such payments will not be deemed to be **damages** for **personal and advertising injury** and will not reduce the limits of insurance.

C. This **PERSONAL AND ADVERTISING INJURY - CONTRACTUAL LIABILITY** Provision does not apply if **Coverage B –Personal and Advertising Injury Liability** is excluded by another endorsement attached to this **Coverage Part**.

This **PERSONAL AND ADVERTISING INJURY - CONTRACTUAL LIABILITY** Provision does not apply to any person or organization who otherwise qualifies as an additional insured on this **Coverage Part**.

22. PROPERTY DAMAGE – ELEVATORS

A. Under **COVERAGES**, **Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Exclusions** is amended such that the **Damage to Your Product** Exclusion and subparagraphs **(3)**, **(4)** and **(6)** of the **Damage to Property** Exclusion do not apply to **property damage** that results from the use of elevators.

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B. Solely for the purpose of the coverage provided by this **PROPERTY DAMAGE – ELEVATORS** Provision, the **Other Insurance** conditions is amended to add the following paragraph:

This insurance is excess over any of the other insurance, whether primary, excess, contingent or on any other basis that is Property insurance covering property of others damaged from the use of elevators.

23. SUPPLEMENTARY PAYMENTS

The section entitled **SUPPLEMENTARY PAYMENTS – COVERAGES A AND B** is amended as follows:

A. Paragraph **1.b.** is amended to delete the $250 limit shown for the cost of bail bonds and replace it with a $5,000. limit; and

B. Paragraph **1.d.** is amended to delete the limit of $250 shown for daily loss of earnings and replace it with a $1,000. limit.

24. UNINTENTIONAL FAILURE TO DISCLOSE HAZARDS

If the **Named Insured** unintentionally fails to disclose all existing hazards at the inception date of the **Named Insured's Coverage Part**, the Insurer will not deny coverage under this **Coverage Part** because of such failure.

25. WAIVER OF SUBROGATION - BLANKET

Under **CONDITIONS**, the condition entitled **Transfer Of Rights Of Recovery Against Others To Us** is amended to add the following:

The Insurer waives any right of recovery the Insurer may have against any person or organization because of payments the Insurer makes for injury or damage arising out of:

1. the **Named Insured's** ongoing operations; or

2. **your work** included in the **products-completed operations hazard**.

However, this waiver applies only when the **Named Insured** has agreed in writing to waive such rights of recovery in a written contract or written agreement, and only if such contract or agreement:

1. is in effect or becomes effective during the term of this **Coverage Part**; and

2. was executed prior to the **bodily injury**, **property damage** or **personal and advertising injury** giving rise to the **claim**.

26. WRAP-UP EXTENSION: OCIP, CCIP, OR CONSOLIDATED (WRAP-UP) INSURANCE PROGRAMS

Note: The following provision does not apply to any public construction project in the state of Oklahoma, nor to any construction project in the state of Alaska, that is not permitted to be insured under a **consolidated (wrap-up) insurance program** by applicable state statute or regulation.

If the endorsement **EXCLUSION – CONSTRUCTION WRAP-UP** is attached to this policy, or another exclusionary endorsement pertaining to Owner Controlled Insurance Programs (O.C.I.P.) or Contractor Controlled Insurance Programs (C.C.I.P.) is attached, then the following changes apply:

A. The following wording is added to the above-referenced endorsement:

With respect to a **consolidated (wrap-up) insurance program** project in which the **Named Insured** is or was involved, this exclusion does not apply to those sums the **Named Insured** become legally obligated to pay as **damages** because of:

1. **Bodily injury**, **property damage**, or **personal or advertising injury** that occurs during the **Named Insured's** ongoing operations at the project, or during such operations of anyone acting on the **Named Insured's** behalf; nor

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2. **Bodily injury** or **property damage** included within the **products-completed operations hazard** that arises out of those portions of the project that are not **residential structures**.

B. Condition **4. Other Insurance** is amended to add the following subparagraph **4.b.(1)(c)**:

This insurance is excess over:

(c) Any of the other insurance whether primary, excess, contingent or any other basis that is insurance available to the **Named Insured** as a result of the **Named Insured** being a participant in a **consolidated (wrap-up) insurance program**, but only as respects the **Named Insured's** involvement in that **consolidated (wrap-up) insurance program**.

C. **DEFINITIONS** is amended to add the following definitions:

Consolidated (wrap-up) insurance program means a construction, erection or demolition project for which the prime contractor/project manager or owner of the construction project has secured general liability insurance covering some or all of the contractors or subcontractors involved in the project, such as an Owner Controlled Insurance Program (O.C.I.P.) or Contractor Controlled Insurance Program (C.C.I.P.).

Residential structure means any structure where 30% or more of the square foot area is used or is intended to be used for human residency, including but not limited to:

1. single or multifamily housing, apartments, condominiums, townhouses, co-operatives or planned unit developments; and

2. the common areas and structures appurtenant to the structures in paragraph **1.** (including pools, hot tubs, detached garages, guest houses or any similar structures).

However, when there is no individual ownership of units, **residential structure** does not include military housing, college/university housing or dormitories, long term care facilities, hotels or motels. **Residential structure** also does not include hospitals or prisons.

This **WRAP-UP EXTENSION: OCIP, CCIP, OR CONSOLIDATED (WRAP-UP) INSURANCE PROGRAMS** Provision does not apply to any person or organization who otherwise qualifies as an additional insured on this **Coverage Part**.

All other terms and conditions of the Policy remain unchanged.

This endorsement, which forms a part of and is for attachment to the Policy issued by the designated Insurers, takes effect on the effective date of said Policy at the hour stated in said Policy, unless another effective date is shown below, and expires concurrently with said Policy.

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CNA

CNA PARAMOUNT

Blanket Additional Insured - Owners, Lessees or Contractors - with Products-Completed Operations Coverage Endorsement

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

It is understood and agreed as follows:

I. **WHO IS AN INSURED** is amended to include as an **Insured** any person or organization whom you are required by **written contract** to add as an additional insured on this **Coverage Part**, but only with respect to liability for **bodily injury**, **property damage** or **personal and advertising injury** caused in whole or in part by your acts or omissions, or the acts or omissions of those acting on your behalf:

A. In the performance of your ongoing operations subject to such **written contract**; or

B. In the performance of **your work** subject to such **written contract**, but only with respect to **bodily injury** or **property damage** included in the **products-completed operations hazard**, and only if:

1. The **written contract** requires you to provide the additional insured such coverage; and

2. This **Coverage Part** provides such coverage; and

C. Subject always to the terms and conditions of this policy, including the limits of insurance, the Insurer will not provide such additional insured with:

1. Coverage broader than what you are required to provide by the **written contract**; or

2. A higher limit of insurance than what you are required to provide by the **written contract**.

Any coverage granted by this Paragraph **I.** shall apply solely to the extent permissible by law.

II. If the written contract requires additional insured coverage under the 07-04 edition of CG2010 or CG2037, then paragraph **I.** above is deleted in its entirety and replaced by the following:

WHO IS AN INSURED is amended to include as an **Insured** any person or organization whom you are required by **written contract** to add as an additional insured on this **Coverage Part**, but only with respect to liability for **bodily injury**, **property damage** or **personal and advertising injury** caused in whole or in part by your acts or omissions, or the acts or omissions of those acting on your behalf:

A. In the performance of your ongoing operations subject to such **written contract**; or

B. In the performance of **your work** subject to such **written contract**, but only with respect to **bodily injury** or **property damage** included in the **products-completed operations hazard**, and only if:

1. The **written contract** requires you to provide the additional insured such coverage; and

2. This **Coverage Part** provides such coverage.

III. But if the **written contract** requires:

A. Additional insured coverage under the 11-85 edition, 10-93 edition, or 10-01 edition of CG2010, or under the 10-01 edition of CG2037; or

B. Additional insured coverage with "arising out of" language;

then paragraph **I.** above is deleted in its entirety and replaced by the following:

WHO IS AN INSURED is amended to include as an **Insured** any person or organization whom you are required by **written contract** to add as an additional insured on this **Coverage Part**, but only with respect to liability for **bodily injury**, **property damage** or **personal and advertising injury** arising out of **your work** that is subject to such **written contract**.

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IV. But if the **written contract** requires additional insured coverage to the greatest extent permissible by law, then paragraph **I.** above is deleted in its entirety and replaced by the following:

WHO IS AN INSURED is amended to include as an **Insured** any person or organization whom you are required by **written contract** to add as an additional insured on this **Coverage Part**, but only with respect to liability for **bodily injury**, **property damage** or **personal and advertising injury** arising out of **your work** that is subject to such **written contract**.

V. The insurance granted by this endorsement to the additional insured does not apply to **bodily injury**, **property damage**, or **personal and advertising injury** arising out of:

A. The rendering of, or the failure to render, any professional architectural, engineering, or surveying services, including:

1. The preparing, approving, or failing to prepare or approve maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; and

2. Supervisory, inspection, architectural or engineering activities; or

B. Any premises or work for which the additional insured is specifically listed as an additional insured on another endorsement attached to this **Coverage Part**.

VI. Under **COMMERCIAL GENERAL LIABILITY CONDITIONS,** the Condition entitled **Other Insurance** is amended to add the following, which supersedes any provision to the contrary in this Condition or elsewhere in this **Coverage Part**:

Primary and Noncontributory Insurance

With respect to other insurance available to the additional insured under which the additional insured is a named insured, this insurance is primary to and will not seek contribution from such other insurance, provided that a **written contract** requires the insurance provided by this policy to be:

1. Primary and non-contributing with other insurance available to the additional insured; or

2. Primary and to not seek contribution from any other insurance available to the additional insured.

But except as specified above, this insurance will be excess of all other insurance available to the additional insured.

VII. Solely with respect to the insurance granted by this endorsement, the section entitled **COMMERCIAL GENERAL LIABILITY CONDITIONS** is amended as follows:

The Condition entitled **Duties In The Event of Occurrence, Offense, Claim or Suit** is amended with the addition of the following:

Any additional insured pursuant to this endorsement will as soon as practicable:

1. Give the Insurer written notice of any **claim**, or any **occurrence** or offense which may result in a **claim**;

2. Send the Insurer copies of all legal papers received, and otherwise cooperate with the Insurer in the investigation, defense, or settlement of the **claim**; and

3. Make available any other insurance, and endeavor to tender the defense and indemnity of any **claim** to any other insurer or self-insurer, whose policy or program applies to a loss that the Insurer covers under this **coverage part**. However, if the **written contract** requires this insurance to be primary and non-contributory, this paragraph **3.** does not apply to other insurance under which the additional insured is a named insured.

The Insurer has no duty to defend or indemnify an additional insured under this endorsement until the Insurer receives written notice of a **claim** from the additional insured.

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Blanket Additional Insured - Owners, Lessees or Contractors - with Products-Completed Operations Coverage Endorsement

VIII. Solely with respect to the insurance granted by this endorsement, the section entitled **DEFINITIONS** is amended to add the following definition:

Written contract means a written contract or written agreement that requires you to make a person or organization an additional insured on this **Coverage Part**, provided the contract or agreement:

A. Was executed prior to:

1. The **bodily injury** or **property damage**; or

2. The offense that caused the **personal and advertising injury**;

for which the additional insured seeks coverage; and

B. Is still in effect at the time of the **bodily injury** or **property damage occurrence** or **personal and advertising injury** offense.

All other terms and conditions of the Policy remain unchanged.

This endorsement, which forms a part of and is for attachment to the Policy issued by the designated Insurers, takes effect on the effective date of said Policy at the hour stated in said Policy, unless another effective date is shown below, and expires concurrently with said Policy.

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WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

This agreement shall not operate directly or indirectly to benefit anyone not named in the Schedule.

Schedule

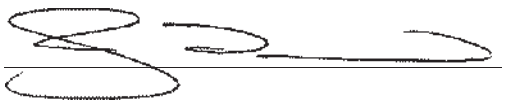
Blanket Waiver of Subrogation Applies

This endorsement changes the policy to which it is attached and is effective on the date issued unless otherwise stated.

Date Prepared: November 22, 2023

Carrier: Bridgefield Casualty Insurance Company

Effective Date of Endorsement: December 31, 2023

Policy Number: 196-59322 Countersigned by: 

Insured: Heichel Plumbing, Inc.

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Christine Carasas

From: drogers@heichelplumbing.com
Sent: Tuesday, November 12, 2024 10:45 AM
To: Wharton Smith Commercial Estimating
Subject: PORT ORANGE PUBLIC UTILITIES FIELD OPS BLDG PROPOSAL
Attachments: PORT ORANGE PUBLIC UTILITIES FIELD OPS BLDG- WHARTON SMITH.doc; bid form filled out.pdf; Heichel Plumbing For Info Only COI.pdf

Thank You,

Debbie Rogers
Project Coordinator
Heichel Plumbing, Inc

1260 Marshall Farms Road
Ocoee, Florida 34761
Phone: 407-656-7073 Ext 0201

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(407) 422-3551
FAX # (407) 648-0961

ACCOUNTING FAX #
(407) 872-1445

4420 EASTPORT PARK WAY
PORT ORANGE, FL 32127-6044
(386) 322-6168
FAX (386) 322-2259

This Agreement, between Ferran Services & Contracting, Inc. hereinafter called Seller and Wharton-Smith inc., the Purchaser, we respectfully offer a Mechanical proposal per plans & specifications (*Dated 9/30/2024)*, AIA or equal contract for work at

Port Orange Public Utilities Field Ops Bldg.

for the cost of $698,984

*Additive alternate #1: For Mechanical BIM please add $5,950
*Additive alternate #2: For Duct Leak Testing please add $2,162
*Additive alternate #3: For bond rate please use 2% or $13,290

WORK DESCRIPTION:

- Furnish and Installation of the following:
  - **(3)** DX systems (25-ton, 2.5-ton & 1-ton)
  - **(11)** Variable Air Volume Terminal Units
  - **(108)** Diffusers
  - **(7)** Fire dampers with access doors
  - **(2)** Gravity backdraft dampers
  - **(2)** Inline exhaust fans
  - **(3)** Propellor exhaust fans
  - **(6)** HVLS exhaust fans
  - **(10)** Hurricane rated louvers
  - **(80)** Round Manual volume dampers
  - **(2)** Unit heaters
  - Metal rectangular duct **(9,259 lbs.)**
    - All ducts to be G-90 GALVANIZED SHEETMETAL and constructed to SMACNA duct construction- ASTM Standards.
    - Ducts constructed to 2”, 3” and 4” WATER GAUGE built to Min. 26GA.
    - Single wall medium pressure spiral seam duct and. Elbows 12” and smaller are stamped, larger are gored, duct 16”ID and larger are flanged, smaller are slip fit connections, and taps installed.
    - Turning vanes included in all 90-degree elbows. Double wall type.
    - All seams to be Pittsburg Locke.

- Galvanized Spiral Duct (**404 lbs**)
- Snaplock and flex duct for low pressure duct
- Duct and pipe insulation
  - EA (Between isolation damper and penetration of building exterior), SA, RA & OA duct will receive 2" 1.5lb Fiberglass Blanket insulation with Fab & Mastic; Exposed duct in Mech room will receive 2" 3lb Fiberglass Board insulation finished with 0.032 Aluminum Jacketing.
  - Refrigerant suction line will receive 1" Flexible Elastomeric insulation finished with 0.032 Aluminum Jacketing.
  - CD piping will receive ¾" Flexible Elastomeric insulation finished with 0.032 Aluminum Jacketing.
- **(30)** Plastic equipment labels
- Refrigerant piping
- **Controls:**
  - Furnish and install one (1) JACE 8000 Series with Niagara4 HTML Supervisory Controller to host the entire systems Graphics, Scheduling, Monitoring, Setpoint changes and Night setback features; this supervisor controller comes with BACnet MS/TP protocol, a web user interface, programming software and Embedded Configuration Tools
  - Included is an operator workstation as specified
  - Furnish and install system router and materials for a local area BACnet communication network and connect to the owner's LAN to allow secure access to the system
  - Furnish and install KMC BACnet DDC Controllers for (2) Air Handling Units (AHU 1 & 2) and include all temperature, humidity, static pressure sensors and control points as shown in mechanical controls print M500
  - Furnish and control (1) Outside Air Flow Monitor Station (AFS Installation by MC)
  - Furnish and control (2) Outside Air and (1) return damper with actuators.
  - Furnish and install wall mounted Net-Sensors with temperature, humidity, setpoint and data port for each AHU as shown on M500
  - Furnish and Install (11) KMC BACnet VAV controllers for each VAV box
  - Furnish and install (11) NetSensors with temperature adjustment LCD Display and data port in locations as shown on drawings M101A and M101B

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- Furnish and install exhaust fan interlock with AHU as listed on Schedule M600
- Install wall-mounted hardwired thermostat for (1) Ductless Split System (IDU-1 & 2) as listed on Schedule M500 (simple thermostat supplied by unit manufacturer)
- Furnish and install exhaust fan interlock for EF-1 as listed on Schedule M600
- Install wall-mounted unit heater thermostats
- Furnish and install all control cabinets, wiring, conduit, and multi-cable as required Cables above ceiling will be plenum-rated cable and be properly supported.
- Provide engineering, and programming to include front end graphics, scheduling, monitoring, setpoint changes, alarming, logs, and histories as needed
- Furnish as-built prints and O&Ms upon completion of project
- Furnish training and instruction for the owner designated personnel in operation and maintenance as specified.
- Warrant all parts, peripherals, controllers, labor, and programming for a full twelve (12) months

Inclusions

- Test and Balance
- Commission assist
- Owner training
- Equipment start up
- Daily Cleanup

QUOTATION EXCLUDES:

- **Demolition, Permit, Abatement, Cad shop drawings, BIM, Roofing, Cutting and patching, Framing, Concrete, Drywell, Ceiling/wall access doors, Electrical, Painting, Bonds, Dumpsters, Duct pressure tests, Cleaning of existing duct systems and Door undercut.**

Final payment due at the completion of our scope of work.

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The proposal expires if not accepted by the Purchaser, by 4:00 PM on 12/12/2024
Acceptance shall be effective upon receipt of contract by Seller.

Unpaid balances will be additionally charged a 1.5% monthly service charge as detailed on back. (The General Conditions and Warranties on the reverse side are part of this agreement and the Purchaser agrees that he has read, and understands, these provisions before signing). In consideration of the sale, delivery or installation of the above-described materials, the undersigned guarantees payment of the amounts contained herein.

Accepted this day: By:

Purchaser:
Phone number:
Email:
Fax number:

Proposed this day: 11/12/2024 By: Paul Parker
Seller: Ferran Services and Contracting

Digitally signed by Paul Parker
Date: 2024.11.12 12:20:50-05'00'

CERTIFIED Air Conditioning CONTRACTOR **CAC 1817254**
CERTIFIED Plumbing CONTRACTOR **CFC 1429785**
CERTIFIED Electrical CONTRACTOR **EC 13003653**

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GENERAL CONDITIONS & WARRANTY

1. It is understood that the Seller may have to remove certain old, existing equipment and materials in order to perform the work described. At the Seller's option, this material will be deemed the property of the Seller and will be promptly removed from the premises.
2. Purchaser agrees to provide Seller free access to the premises so that he may accomplish his work without undue hindrance or delay.
3. Purchaser shall notify the Seller in writing within thirty (30) days of installation of any defects in either the installation or in the equipment itself. Failure to notify Seller within this period of time shall constitute an acceptance of the equipment and work as in compliance with the Contract and a waiver of any and all claims for defect or deficiency.
4. In the event the Purchaser is not the owner of the premises, he is obligated to so state this before signing and provide evidence, including a copy of the lease and/or written permission from the building's owner, acceptable to the Seller, of his authority to proceed. Purchaser agrees to hold the Seller harmless from any claims or damages sought by the building owner, for work done under the authority of this contract.
5. Seller will, if not in privity with the owner and accordance with Chapter 713 of the Florida Statutes, serve "Notice to Owner" and, if account not paid, will file a Claim of Lien on the property.
6. It is understood and agreed that the Seller is liable only for its own work, and not adjacent existing work or services supplied by the purchaser. Should government or insurance authorities require other existing work to be upgraded to current code requirements it will be done only upon the Purchaser's authorization and at Purchaser's sole expense.
7. All equipment sold under this agreement, whether affixed to realty so as to become part thereof, or not, shall be deemed personal property and severable without injury to the freehold, and the title thereto shall remain in Seller until the entire purchase price is paid to the Seller in Cash and Purchaser agrees to perform all acts necessary to perfect and maintain the above title.
8. On default of any payment, all equipment and materials may at the option of the Seller, be removed and held or sold by Seller at public or private sale; Seller being permitted to purchase at any sale. If unpaid balance is not satisfied by the net proceeds of any such sale, then the sum of the deficiency shall become due and payable by Purchaser to Seller as damages for breach of the contract: this provision shall not be construed as an addition to and not in limitation of any other right of Seller.
9. It is understood and agreed that the Seller is not to be held liable for any consequential damages or losses resulting from the installation, operation, or use of the products and materials furnished or installed by the Seller. It is further understood that the Seller is not responsible or liable for any loss or damage which is incurred as a result of any delay, in provision or availability of labor, material or equipment due to strikes, storms, fires, floods, or any other act of God, or any other cause, whatsoever, beyond the control of the Seller.
10. Should a project condition pose a safety or health hazard to an employee of Seller, Seller reserves the right to discontinue work until the safety or health hazard has been eliminated or to terminate work, either option at Seller's non-reviewable discretion. In the event Seller elects to discontinue work, Seller shall be entitled to reasonable demobilization and re-mobilization expenses in addition to regular contract compensation. Should Seller elect to terminate its work, Seller shall be entitled to Contract compensation to date of termination.
11. This constitutes the entire contract affecting this purchase, and no other understanding exists. The masculine includes the feminine, the singular includes the plural.
12. In the event a balance is unpaid, Purchaser agrees to pay Seller all costs and expenses of collection, suit or other legal action, including actual attorney's fee, and shall also pay cost, expenses and actual attorney's fees incurred on appeal or in any administrative or arbitration proceedings brought as a result of the commercial relationship between them.
13. The service charge is computed by a periodic rate of 1.5% per month which is an ANNUAL PERCENTAGE RATE OF 18% applied to the previous Unpaid Balance, less any previously billed Service Charge which has not been paid and less any current credits in excess of the previously billed Service Charge which has not been paid.
14. Purchaser waives any and all privileges and rights which it may have under Chapter 47, Florida Statutes, relating to venue, as it now exists or may hereafter be amended or construed and under any other applicable statue. Purchaser and Seller agree that any legal action brought by either to ensure

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payment or compliance with terms and conditions of sale shall be brought and tried without jury in the appropriate court in the County of Seller's choice: Orange, Volusia or Brevard County, Florida.

15. Orders placed as a result of quotations made by Seller are subject to the Terms and Conditions herein, which shall prevail over any inconsistent terms of Purchaser's purchase order.

16. Price extensions, when made, are for Purchaser's convenience only, and they, as well as any mathematical, stenographic or clerical errors are subject to correction. Prices shown include any sales; excise, or other governmental charge paid by Seller to Federal, State, or local authority. Sales tax is not charged to the PURCHASER when work is done on real property; the SELLER has paid all applicable state and local sales tax on any material used. Sales tax must be collected from the PURCHASER on the full selling price, including installation charges, for work done or tangible personal property.

17. WARRANTY WORK WILL BE PERFORMED MONDAY-FRIDAY - 8AM TO 5PM. Regular service calls carry a 1-year parts and labor warranty. Labor warranty on installation of systems or equipment vary according to the type of installation. Materials are warranted and guaranteed only the extent and in the manner warranted and guaranteed by the original manufacturer of such materials and then only to the extent that is reasonable and that the Purchaser is able to enforce such warranty or guarantee against the manufacturer of such materials. Seller's warranty is limited to the replacement or repair of such parts as may be warranted by manufacturer, which parts are unable to perform their assigned functions. Expendable items such as filters and fuses are not included. Plumbing drain stoppages are not defects. DEFECTS CAUSED BY IMPROPER MAINTENANCE OR DAMAGE CAUSED BY PURCHASER OR ITS EMPLOYEES OR AGENTS IS NOT WARRANTED. Where equipment is being provided with longer than (1) year manufacturer's warranty, the Seller extends to the Purchaser the additional warranty provided by the manufacturer.

ALL WARRANTIES ARE EXCLUDED, WHETHER EXPRESSED OR IMPLIED BY OPERATION OF LAW OR OTHERWISE, INCLUDING ALL IMPLIED WARRANTIES OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SELLER SHALL NOT BE LIABLE (DIRECTLY OR INDIRECTLY) UNDER ANY CIRCUMSTANCES FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES ARISIING OR RESULTING FROM A BREACH OF WARRANTY UNDER THE SALE, HANDLING OR USE OF THE MATERIALS SOLD. SELLER'S LIABILITY HEREUNDER AND PURCHASER'S EXCLUSIVE REMEDIES HEREUNDER, EITHER FOR BREACH OF WARRANTY OR FOR NEGLIGENCE, ARE EXPRESSLY LIMITED TO THE GIVING OF CREDIT OR REPLACEMENT OR REPAIR. SELLER'S RESPONSIBILITY TO GIVE CREDIT OR REPLACEMENT IS LIMITED TO THE EXTENT THAT SELLER IS ABLE TO OBTAIN EQUIVALENT CREDIT OR REPLACEMENT FROM THE ORIGINAL MANUFACTURER OF SUCH MATERIALS. NO CREDIT FOR MATERIALS RETURNED BY PURCHASER SHALL BE GIVEN WITHOUT SELLER'S WRITTEN AUTHORIZATION

Christine Carasas

From: ConstructConnect <DoNotReply@constructconnectmail.com>
Sent: Tuesday, November 12, 2024 12:22 PM
To: Wharton Smith Commercial Estimating
Subject: Received bid for Port Orange Public Utilities Field Ops Bldg.

A simpler, more effective bid process

You've received a bid from Ferran Services and Contracting, Inc. via ConstructConnect

Port Orange Public Utilities Field Ops Bldg.

Project Details

Project Name	Port Orange Public Utilities Field Ops Bldg.
Bid Date	Nov 12, 2024 @ 02:00 PM ET
Project ID	6613997

View Project

Bid Details

Company	Ferran Services and Contracting, Inc.
Bid Amount	$698,984
Submission Date	Nov 12, 2024 @ 12:21 PM ET
Description	Please see attached detailed proposal.
Bid Attachments	Port Orange Public Utilities Field Ops Bldg Proposal.pdf

Contact Details

Primary Contact	Paul Parker
Email	pparker@ferran-services.com
Phone	
Website	



Support Number: (877) 4CC-TOOL (422-8665)

Email: customerservice@constructconnect.com

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CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!

PROJECT:
City Port Orange Public Utilities Field Operations Building

CUSTOMER:

Wharton Smith
c/o: James Manyette
750 Monroe Rd.
Sanford, FL 32724

JOB ADDRESS:
4505 Clyde Morris Blvd
Pt. Orange, FL 32129

EMAIL: jmanyette@whartonsmith.com
PARCEL ID: 630600000062
PROPERTY DESCRIPTION: 6 16 33 W 10 AC OF S 1/2 OF SE 1/4 OF SE 1/4 EXC IRREG PARCE L MEAS 150 FT ON N/L & MEAS 304.78 FT ON W/L & EXC W 30 FT I N R/W PER OR 5655 PGS 4508-4509 PER OR 5655 PGS 4510-4512 IN

GA-TER AIR Inc.
Cooling • Heating
STATE LICENSE # CAC045900
521 W. NEW YORK AVE
DELAND, FL 32720
OFFICE: (386) 232-8064
DIRECT: (407) 587-5599

November 12, 2024

Ga-Ter Air, Inc. is pleased to provide the following proposal for your review and approval. The following proposal is based on drawings provided by Schenkel Shultz sheets; M001, M101A, M101B, M400, M500, M600, dated 09/30/2024. No other drawings, modifications, addendums, or specifications are recognized unless itemized in this instrument.

Proposal

COMFORT COOLING

Mark For	Qty	Model Number	Description
AHU-CU-2	1	24SCA530WC03/ FG4ANXC36L00	CARRIER 15 SEER AC, 1-STAGE, SW, STD, CSTL -W/5 KW Heater
CU-1	1	38APD025	CARRIER 25 Ton Air-Cooled Condensing Unit, 208/3/60 • Dual Refrigeration Circuit • E-Coated Condenser Coil • Scrolling Marquee Display • Digital Compressor - Allows for increased unloading capability with Std SCCR (5K) • Security Grilles/Hail Guards
AHU-1	1	39MN17	CARRIER Modular Air Handling Unit • Insulation: R-13 Double Wall Sealed Panel • Exterior Finish: Galvanized Exterior Panels • Interior Finish: Galvanized Interior Panels • Level I Thermal Break • 6 inch tall Base Rail • Filter Mixing Box • Direct Expansion Coil and Plenum • Draw-Thru Supply Fan

MINI SPLIT SYSTEM SCHEDULE (INDOOR UNIT)

PLAN MARK	MODEL NO.	NOMINAL TONS	FAN DATA		COOLING COIL DATA			FLA
			NOMINAL CFM	VOLT/PHASE	ENT. DB/WB	SEN. MBH	TOTAL MBH	
AC-1	40MAQ	1.0	360	208/1	75/62	10.2	12.0	0.2

MINI SPLIT SYSTEM SCHEDULE (OUTDOOR UNIT)

PLAN MARK	MODEL	TONS	REFRIGERANT DATA	VOLT/PHASE	COMP. / FAN FLA	MCA	MOCP	MIN. SEER	WEIGHT (LBS)
			TYPE						
MS-1	38MAR	1.0	R-410A	208/1	5.7/0.4	9	15	23.0	92

NOTES:
1. PROVIDE WITH ANTI-RECYCLE COMPRESSOR TIMER
2. PROVIDE CONDENSER GUARDS
3. PROVIDE A 5-YEAR COMPRESSOR WARRANTY
4. SIZE REFRIGERANT PER MANUFACTURER'S REQUIREMENTS
5. PROVIDE WITH DISCONNECT SWITCH
6. PROVIDE BRONZE-GLOW CONDENSER COIL COATING
7. PROVIDE SIMPLE WALL MOUNTED REMOTE CONTROLLER
8. PROVIDE CONDENSATE PUMP

WARRANTY:

1 – YEAR LABOR/WORKMANSHIP
1- YEAR COMPRESSOR WARRANTY,
1- YEAR EQUIPMENT PARTS.

INDOOR EXHAUST FAN:

FAN SCHEDULE

MARK	MANUFACTURER	MODEL	FAN TYPE	AIRFLOW (CFM)	ESP	DRIVE TYPE	MOTOR (RPM)	VOLT / PHASE	HP	INTERLOCK/CONTROL
EF-1	GREENHECK	SQ	INLINE	575	0.5	DIRECT	1239	115/1	1/4	AHU-1
EF-2	GREENHECK	SQ	INLINE	450	0.3	DIRECT	1445	115/1	1/10	OCCUPANCY
EF-3A	GREENHECK	AER	PROPELLER	3000	0.2	DIRECT	953	115/1	1/2	OCCUPANCY
EF-3B	GREENHECK	AER	PROPELLER	3000	0.2	DIRECT	953	115/1	1/2	OCCUPANCY
EF-4	GREENHECK	AER	PROPELLER	3750	0.2	DIRECT	1154	115/1	1/2	OCCUPANCY
HVLSF-1	GREENHECK	DC-5-4	HVLS CEILING	3800	-	DIRECT	-	115/1	1/10	SWITCH
HVLSF-2	GREENHECK	DC-5-4	HVLS CEILING	3800	-	DIRECT	-	115/1	1/10	SWITCH
HVLSF-3	GREENHECK	DC-5-4	HVLS CEILING	3800	-	DIRECT	-	115/1	1/10	SWITCH
HVLSF-4	GREENHECK	DC-5-14	HVLS CEILING	55000	-	DIRECT	-	115/1	1/4	SWITCH
HVLSF-5	GREENHECK	DC-5-12	HVLS CEILING	20500	-	DIRECT	-	115/1	1/4	SWITCH
HVLSF-6	GREENHECK	DC-5-12	HVLS CEILING	20500	-	DIRECT	-	115/1	1/4	SWITCH

NOTES:

PROVIDE WITH THE FOLLOWING:
1. BACKDRAFT DAMPER
2. SPEED CONTROLLER
3. VIBRATION ISOLATOR
4. DISCONNECT SWITCH

AIR DUCTS AND DEVICES:

1028 LF- Sheetmetal Duct Work Assorted Sizes.
108 Piece- Metal-Aire (or equivalent) white finish, mounting hardware, assorted sizes.

CONTROLS: ABC Control Package or equivalent.

EXCLUSIONS:

A. Concrete cutting, core drilling, envelope penetrations.
B. Protective masking/ covering.
C. Plans, drawings, private inspections.
D. Third party inspections.
E. Waterproofing.
F. Drywall repairs or Painting.
G. Engineering, testing, or designs.

CLARIFICATIONS:

1. HVAC DIVISION 23 SHALL BE GIVEN PRIORITY ACCESS TO ALL SPACES OVER OTHER TRADES.
2. WORK TO BE PERFORMED USING MULTIPLE ELECTRIC SCISSORLIFTS DURING PROJECT, NO SCAFFOLD WORK SHALL BE PERFORMED.
3. MECHANICAL CONTRACTOR IS NOT RESPONSIBLE FOR DELAYS DUE TO SUPPLY CHAIN ISSUES.
4. MATERIAL & EQUIPMENT STORAGE PERMITTED ONSITE.
5. MATERIALS LISTED ARE SUBJECT TO “EQUIVALENT” MATERIAL PROVIDED DEPENDING ON AVAILABILITY.
6. MECHANICAL PERMIT OBTAIN BY GA-TER AIR, INC SHALL ONLY APPLY TO DIVISION 23 -HVAC SCOPE OF WORK.
7. EQUIPMENT USE TO CONDITION SPACE DURING THE CONSTRUCTION PROCESS IS NOT RECOMMENDED.

TERMS & CONDITIONS

In the event payment is not made promptly in accordance with agreed terms it shall be the seller's option to charge a service charge not exceeding two (2%) percent per month. The first service charge becomes due 15 days from the date of the billing of our amount due on the job. In the event of collection by the attorney, all attorneys, court costs and other legal fees shall be borne by the buyer in nonpayment, purchaser agrees to allow seller on premises to remove equipment installed. The sales agreement shall be binding upon the heirs, successor, or assigns of the parties hereto.

It is understood that the title to all products and equipment covered by the contract remains solely in the seller until the entire purchase price has been paid in full and the manner of installation and/or attachment to any equipment and/or any portion of the building structure in which the installation is made shall not in any manner jeopardize the seller's title.

If compliance with any building ordinance, rule, regulation, or permit in any state, county or city requires changes or additions to be made in premises or buildings, where installation is to be made, such changes or additions shall be made by buyer at his own expense. All purchase orders, contracts, and directives from the buyer are hereby made subject to the provisions of this sales agreement.

The seller's failure to object to any provisions contained in buyers purchase orders, contracts, and directives shall not be deemed a waiver of the terms and conditions of this sales agreement. No written or verbal statements, agreement or guarantees other than those contained herein shall be binding upon the seller. We agree that any claim or dispute between the parties herein shall be resolved by arbitration in the state of Florida, in Volusia County, City of Deland.

Extended delay: In the event the project is delayed for a period exceeding 45 calendar days the buyer assumes all additional charges included but not limited to storage, interest cost, tool rentals, & additional labor. An administration fee of 0.005% of the contract balance shall be collected monthly.

Warranty:

All electrical apparatus, controls, motors, fans, thermostats, gas burners and oil burners are guaranteed only by their respective manufacturer's limited warranty against defects in materials or workmanship by the equipment manufacturer as so stated in their warranty certificate, if applicable. The seller is not to be held responsible for normal wear and tear or any damage arising out of neglect, misuse, abuse, failure to use proper supplies and materials in the operation of equipment, any unit that has been tampered with, altered in any way, or which has the serial numbers altered, defaced or removed. It is further understood and agreed that the seller is not to be held responsible for any failure in operation of performance which may result from the connection to or operation of installed equipment in conjunction with any other equipment furnished by the buyer at the time of original installation or added subsequently. Buyer or customer assumes all freight charges on warranty parts. There is no warranty or guarantee on used equipment, units and parts sold by the seller. Seller has no temperature or humidity guarantee beyond (ARI) American Refrigeration institute Standards nor from conditions arising from conditions created by current user out of the scope of design. Seller shall not be held liable for any issues involving replacement warranty parts that are not available from Manufacturer.

Service:

The seller agrees to provide free advice on the operations of the specified equipment installed by them. This agreement does not cover service necessitated when no part of the equipment is at fault, for example, power surges, the failure on the part of the owner or user to maintain, failure on the part of the owner or user to set thermostat at a temperature calling for heat or cool, malfunction of equipment due to erratic voltage, dirty filters, lightning damage or similar causes. In such cases a charge will be made by the seller for services rendered. All warranty services shall be during normal working hours, during normal working days. After hours and holiday service will be charged at the regular fee for such service. The seller is not responsible for service resulting from water or condensation getting into oil tank. Normal out of warranty service work carries a 30-day labor guarantee, but only on the exact work performed. The dollar amount of guaranteed labor during the first 30 days shall not exceed the original amount paid by the customer.

Insurance: No claims shall be filed with our insurance company without first reporting the incident to the seller.

PAYMENTS: A initial draw of 25% is due at contract signing with remaining three draws (3) on a progress bill format. An invoice and/or application for payment shall be submitted every 21 days during the progression of the project and payment shall be received by the seller within 10 days.

NO CREDIT CARD PAYMENTS ARE ACCEPTED. The seller agrees to issue all forms of payment with a paper check for a U.S bank in U.S dollar currency.

GRAND TOTAL:

SEVEN HUNDRED TENTY-EIGHT THOUSAND SEVEN HUNDRED DOLLARS----------$ 728, 700.00

CUSTOMER ACCEPTANCE: _____ TITLE: D A T E :

CUSTOMER PRINT NAME: _____

CONTRACTOR ACCEPTANCE: _____

-**END OF PROPOSAL.**

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Christine Carasas

From: ConstructConnect <DoNotReply@constructconnectmail.com>
Sent: Tuesday, November 12, 2024 4:06 PM
To: Wharton Smith Commercial Estimating
Subject: Received bid for Port Orange Public Utilities Field Ops Bldg.

A simpler, more effective bid process

You've received a bid from Ga-Ter Air via ConstructConnect

Port Orange Public Utilities Field Ops Bldg.

Project Details

Project Name	Port Orange Public Utilities Field Ops Bldg.
Bid Date	Nov 12, 2024 @ 02:00 PM ET
Project ID	6613997

View Project

Bid Details

Company	Ga-Ter Air
Bid Amount	$728,700
Submission Date	Nov 12, 2024 @ 04:06 PM ET
Description	
Bid Attachments	PROPOSAL-Pt Orange Public Utilities.pdf

Contact Details

Primary Contact	Ralph Salmon

Email	ralphsalmon@icloud.com
Phone	(386) 232-8064
Website	



Support Number: (877) 4CC-TOOL (422-8665)

Email: customerservice@constructconnect.com

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CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!

PROJECT:
City Port Orange Public Utilities Field Operations Building

CUSTOMER:

Wharton Smith
c/o: James Manyette
750 Monroe Rd.
Sanford, FL 32724

JOB ADDRESS:
4505 Clyde Morris Blvd
Pt. Orange, FL 32129

EMAIL: jmanyette@whartonsmith.com
PARCEL ID: 630600000062
PROPERTY DESCRIPTION: 6 16 33 W 10 AC OF S 1/2 OF SE 1/4 OF SE 1/4 EXC IRREG PARCE L MEAS 150 FT ON N/L & MEAS 304.78 FT ON W/L & EXC W 30 FT I N R/W PER OR 5655 PGS 4508-4509 PER OR 5655 PGS 4510-4512 IN

GA-TER AIR Inc.
Cooling • Heating
STATE LICENSE # CAC045900
521 W. NEW YORK AVE
DELAND, FL 32720
OFFICE: (386) 232-8064
DIRECT: (407) 587-5599

November 12, 2024

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Proposal

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Mark For	Qty	Model Number	Description
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MINI SPLIT SYSTEM SCHEDULE (INDOOR UNIT)

PLAN MARK	MODEL NO.	NOMINAL TONS	FAN DATA		COOLING COIL DATA			FLA
			NOMINAL CFM	VOLT/PHASE	ENT. DB/WB	SEN. MBH	TOTAL MBH	
AC-1	40MAQ	1.0	380	208/1	75/62	10.2	12.0	0.2

MINI SPLIT SYSTEM SCHEDULE (OUTDOOR UNIT)

PLAN MARK	MODEL	TONS	REFRIGERANT DATA	VOLT/PHASE	COMP. / FAN FLA	MCA	MOCP	MIN. SEER	WEIGHT (LBS)
			TYPE						
MS-1	38MAR	1.0	R-410A	208/1	5.7/0.4	9	15	23.0	92

NOTES:
1. PROVIDE WITH ANTI-RECYCLE COMPRESSOR TIMER
2. PROVIDE CONDENSER GUARDS
3. PROVIDE A 5-YEAR COMPRESSOR WARRANTY
4. SIZE REFRIGERANT PER MANUFACTURER'S REQUIREMENTS
5. PROVIDE WITH DISCONNECT SWITCH
6. PROVIDE BRONZE-GLOW CONDENSER COIL COATING
7. PROVIDE SIMPLE WALL MOUNTED REMOTE CONTROLLER
8. PROVIDE CONDENSATE PUMP

WARRANTY:

1 – YEAR LABOR/WORKMANSHIP
1- YEAR COMPRESSOR WARRANTY,
1- YEAR EQUIPMENT PARTS.

INDOOR EXHAUST FAN:

FAN SCHEDULE

MARK	MANUFACTURER	MODEL	FAN TYPE	AIRFLOW (CFM)	ESP	DRIVE TYPE	MOTOR (RPM)	VOLT / PHASE	HP	INTERLOCK/CONTROL
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EF-3A	GREENHECK	AER	PROPELLER	3000	0.2	DIRECT	953	115/1	1/2	OCCUPANCY
EF-3B	GREENHECK	AER	PROPELLER	3000	0.2	DIRECT	953	115/1	1/2	OCCUPANCY
EF-4	GREENHECK	AER	PROPELLER	3750	0.2	DIRECT	1154	115/1	1/2	OCCUPANCY
HVLSF-1	GREENHECK	DC-5-4	HVLS CEILING	3800	-	DIRECT	-	115/1	1/10	SWITCH
HVLSF-2	GREENHECK	DC-5-4	HVLS CEILING	3800	-	DIRECT	-	115/1	1/10	SWITCH
HVLSF-3	GREENHECK	DC-5-4	HVLS CEILING	3800	-	DIRECT	-	115/1	1/10	SWITCH
HVLSF-4	GREENHECK	DC-5-14	HVLS CEILING	55000	-	DIRECT	-	115/1	1/4	SWITCH
HVLSF-5	GREENHECK	DC-5-12	HVLS CEILING	20500	-	DIRECT	-	115/1	1/4	SWITCH
HVLSF-6	GREENHECK	DC-5-12	HVLS CEILING	20500	-	DIRECT	-	115/1	1/4	SWITCH

NOTES:

PROVIDE WITH THE FOLLOWING:
1. BACKDRAFT DAMPER
2. SPEED CONTROLLER
3. VIBRATION ISOLATOR
4. DISCONNECT SWITCH

AIR DUCTS AND DEVICES:

1028 LF- Sheetmetal Duct Work Assorted Sizes.
108 Piece- Metal-Aire (or equivalent) white finish, mounting hardware, assorted sizes.

CONTROLS: ABC Control Package or equivalent.

EXCLUSIONS:

A. Concrete cutting, core drilling, envelope penetrations.
B. Protective masking/ covering.
C. Plans, drawings, private inspections.
D. Third party inspections.
E. Waterproofing.
F. Drywall repairs or Painting.
G. Engineering, testing, or designs.

CLARIFICATIONS:

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2. WORK TO BE PERFORMED USING MULTIPLE ELECTRIC SCISSORLIFTS DURING PROJECT, NO SCAFFOLD WORK SHALL BE PERFORMED.
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5. MATERIALS LISTED ARE SUBJECT TO “EQUIVALENT” MATERIAL PROVIDED DEPENDING ON AVAILABILITY.
6. MECHANICAL PERMIT OBTAIN BY GA-TER AIR, INC SHALL ONLY APPLY TO DIVISION 23 -HVAC SCOPE OF WORK.
7. EQUIPMENT USE TO CONDITION SPACE DURING THE CONSTRUCTION PROCESS IS NOT RECOMMENDED.

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If compliance with any building ordinance, rule, regulation, or permit in any state, county or city requires changes or additions to be made in premises or buildings, where installation is to be made, such changes or additions shall be made by buyer at his own expense. All purchase orders, contracts, and directives from the buyer are hereby made subject to the provisions of this sales agreement.

The seller's failure to object to any provisions contained in buyers purchase orders, contracts, and directives shall not be deemed a waiver of the terms and conditions of this sales agreement. No written or verbal statements, agreement or guarantees other than those contained herein shall be binding upon the seller. We agree that any claim or dispute between the parties herein shall be resolved by arbitration in the state of Florida, in Volusia County, City of Deland.

Extended delay: In the event the project is delayed for a period exceeding 45 calendar days the buyer assumes all additional charges included but not limited to storage, interest cost, tool rentals, & additional labor. An administration fee of 0.005% of the contract balance shall be collected monthly.

Warranty:

All electrical apparatus, controls, motors, fans, thermostats, gas burners and oil burners are guaranteed only by their respective manufacturer's limited warranty against defects in materials or workmanship by the equipment manufacturer as so stated in their warranty certificate, if applicable. The seller is not to be held responsible for normal wear and tear or any damage arising out of neglect, misuse, abuse, failure to use proper supplies and materials in the operation of equipment, any unit that has been tampered with, altered in any way, or which has the serial numbers altered, defaced or removed. It is further understood and agreed that the seller is not to be held responsible for any failure in operation of performance which may result from the connection to or operation of installed equipment in conjunction with any other equipment furnished by the buyer at the time of original installation or added subsequently. Buyer or customer assumes all freight charges on warranty parts. There is no warranty or guarantee on used equipment, units and parts sold by the seller. Seller has no temperature or humidity guarantee beyond (ARI) American Refrigeration institute Standards nor from conditions arising from conditions created by current user out of the scope of design. Seller shall not be held liable for any issues involving replacement warranty parts that are not available from Manufacturer.

Service:

The seller agrees to provide free advice on the operations of the specified equipment installed by them. This agreement does not cover service necessitated when no part of the equipment is at fault, for example, power surges, the failure on the part of the owner or user to maintain, failure on the part of the owner or user to set thermostat at a temperature calling for heat or cool, malfunction of equipment due to erratic voltage, dirty filters, lightning damage or similar causes. In such cases a charge will be made by the seller for services rendered. All warranty services shall be during normal working hours, during normal working days. After hours and holiday service will be charged at the regular fee for such service. The seller is not responsible for service resulting from water or condensation getting into oil tank. Normal out of warranty service work carries a 30-day labor guarantee, but only on the exact work performed. The dollar amount of guaranteed labor during the first 30 days shall not exceed the original amount paid by the customer.

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NO CREDIT CARD PAYMENTS ARE ACCEPTED. The seller agrees to issue all forms of payment with a paper check for a U.S bank in U.S dollar currency.

GRAND TOTAL:

SEVEN HUNDRED TENTY-EIGHT THOUSAND SEVEN HUNDRED DOLLARS----------$ 728, 700.00

CUSTOMER ACCEPTANCE: _____ TITLE: D A T E :

CUSTOMER PRINT NAME: _____

CONTRACTOR ACCEPTANCE: _____

-**END OF PROPOSAL.**

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Christine Carasas

From: James Manyette
Sent: Tuesday, November 12, 2024 8:05 PM
To: Wharton Smith Commercial Estimating
Cc: Greg Keresi
Subject: 23_HVAC_Ga-Ter Air Port Orange Public Utilities
Attachments: PROPOSAL-Pt Orange Public Utilities.pdf

23_HVAC_Ga-Ter Air

Respectfully,

James R. Manyette | Senior Preconstruction Services Manager
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771 | Cell: (407) 810-9590

From: Ralph Salmon <ralphsalmon@hotmail.com>
Sent: Tuesday, November 12, 2024 4:08 PM
To: James Manyette <jmanyette@whartonsmith.com>
Cc: jacob.osterhout ga-terair.com <jacob.osterhout@ga-terair.com>
Subject: Port Orange Public Utilities

Good Afternoon James,

Please see attached.

Regards,
Ralph Salmon

GA-TER AIR inc.
Cooling • Heating
521 NEW YORK AVENUE W.
DELAND, FL 32720
OFFICE: (386) 232-8064 DIRECT: (407) 587-5599

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!

Subcontractor Bid Form-Electrical

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Carter Electric Company INC
Scope of Work:	Electrical, Low Voltage & Fire Alarm

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

Electrical subcontractors are to provide a **complete turnkey proposal** including, but not be limited to: Low voltage/technology systems for complete and operable Access Control, CCTV, Security, DAS/BDA, Lightning Protection, Fire Alarm, Emergency Generator, etc., for complete and operable systems.

PART 1: PRICING

(1.1) Total Electrical Base Bid

Amount in Figures:	$ 1,679,495.00
Amount in Words:	$ One Million Six Hundred & Seventy Nine Thousand Four Hundred and Ninety Five

Provide accounting breakout prices as follows (to be included in the above base bid):

Electrical (incl. fire alarm)	$ 1,225,949.00
Technology Voice/Data (premises distr., cabling, tray, devices, terminations)	$166,350.00
Access Control System	$ 114,426.00
CCTV System	$ 39,085.00
DAS/BDA Systems	$ 77,000.00
A/V Systems	$ n/a
Emergency Generator	$ 133,685.00
TOTAL	$ 1,679,495.00

Continued Next Page

(1.2) Alternates (Voluntary)

N/A	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	GEAR, LIGHTING, GENERATOR
Amount:	$ 310,954.00

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1	N/A AT THIS TIME	$
2		$
3		$

(1.5) MWBE Participation

MWBE	$ N/A
LDB	$ N/A
VBE	$ N/A

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	1.4

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)
MDP	15-20		
GENERATOR	22-28		
FIXTURES	4-8		

Continued Next Page

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1	Dated:	11/8/24	RFI No.		Dated:	
RFI No.	2	Dated:	11/11/24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:		WSI No.	4	Dated:	10/28/24
WSI No.	2	Dated:	10/24/24	WSI No.	5	Dated:	10/31/24
WSI No.	3	Dated:	10/25/24	WSI No.	6	Dated:	11/6/24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

Continued Next Page

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

PART 3: BIDDER INFORMATION

Carter Electric Company INC

Company Name

231 Jean St Daytona Beach FL 32114

Address (Street, City, State, Zip)

321-412-0224 tmatarazzo@carterelectric.com

Phone Number **Email Address**

Type of Organization (Check One):

(✓) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Carter Electric Company INC

By: Todd Matarazzo

Printed Name: Todd Matarazzo

Title: Estimator

Dated: 11/12/24

License No.: EC0002058

arter Electric Co., Inc. Contractors - Engineers

231 JEAN STREET ● DAYTONA BEACH, FLORIDA 32114 ● 386-255-1418

TRUMAN E. (ROY) GAILEY, JR., CEO
STATE CERTIFIED EC0000265

MATTHEW J WITTWER, PRESIDENT
STATE CERTIFIED EC0002058; NC 14911-U

11/12/2024

James Manyette
Wharton-Smith INC

Re: Port Orange Public Utilities Field Ops Bldg.

Dear James

At this time, we propose to furnish the necessary materials, tools, equipment, labor, and PPE to provide a price for the installation in accordance with electrical drawings E001 – ES102 & FA001-FA201 & T001-T601 dated 9/30/2024

This electrical proposal includes revisions, as prepared by TLC Engineering Solutions, our interpretation of the intended electrical design and per the following scope of work.

Price Includes:

- **We acknowledge thru WS008 as of this proposal date**
- Material sales tax and insurance certificates.
- One (1) year warranty for all items provided and installed by Carter Electric Co. Inc.
  - Labor warranty ONLY for items not furnished by Carter Electric Co. Inc.
- Provide a complete electrical installation in accordance with NEC as shown on the electrical drawings.
- Installation shall be done in accordance with the control lines established by the general contractor or surveyor.
- Raceways will be in accordance with NEC for PVC, GRC (though slab and elbows) and EMT conduit systems.
- Complete lighting fixture and controls package per plans and specs.
- Distribution package:
  - Switchgear: MDP
  - Panels: A, B, C, D, E, F
  - Disconnects: Per plans and specs
  - Misc: (7) SPD
- Wiring devices to be commercial grade and hospital grade type where applicable
  - Receptacles to be protected by GFI type where required by code.
  - Device plates shall be Nylon unless specified otherwise.
- Grounding per NEC
- Emergency Power
  - MTU (a Rolls-Royce Solution) Engine-Generator Set (“Genset”)
  - 1 250KW 208V Diesel Stationary Emergency Standby
  - Standard Accessories Included:
    - Std Controller, Mounted Radiator, Lead-Acid Engine Batteries, Battery Charger, Engine Block Heater, Flexible Fuel Line; Exhaust Flex Connector, Critical Muffler, Pad Vibration Isolators ,One (1) O&M Manual, Standard Factory Test
  - Genset Circuit Breaker: 1000 amps, 100% Rated LSI with Shunt Trip
  - Weather Protective Enclosure: Steel 195 MPH Wind Rated Sound Attenuated AC/DC Lights Convenience Receptacle
  - UL-142 Subbase Fuel Tank: 72 Hour/1676 Gallons (useable 1,590 Gallons)
  - MTU Manufacturer’s Limited Warranty: 2 Year/3000 Hour Basic Limited

- Remote Annunciator Panel
- Remote Break Glass E-Stop Station
- 1 Set of Oil, Air & Fuel Filters
- 12 Month Maintenance Service

- BDA Testing after building completion.
- Fire alarm
  - This proposal is based on providing a Notifier Fire Alarm System with Horn Evacuation.
  - This proposal is based on Class "B" SLC and NAC Circuits.
  - This proposal includes connecting the Fire Sprinkler Flow and Tamper Switches provided by others.
  - This proposal includes duct smoke detectors as shown on drawings. DynaFire to furnish the duct smoke detector housings and sampling tubes to the Mechanical Contractor for installation into their duct system by them.
  - furnish, install, and program the smoke detector head, as well as the shutdown relay. Please note the Mechanical Contractor to make the terminal on their equipment for the shutdown operation, to ensure proper connection and operation.
  - This proposal includes shutdown relays for HVLS Fans as shown on drawings. DynaFire to Furnish, install, and program the shutdown relay. Please note the HVLS Fan Contractor to make the terminal on their equipment for the shutdown operation, to ensure proper connection and operation.
  - This proposal includes monitor module for Kitchen Hood System provided by others. DynaFire to furnish, install, and program the monitor module. Please note the Kitchen Hood System Contractor to make the terminal on their equipment for the shutdown operation, to ensure proper connection and operation.
  - This proposal includes monitor modules for generator status monitoring provided by others. DynaFire to furnish, install, and program the monitor module. Please note the Generator Contractor to make the terminal on their equipment for the shutdown operation, to ensure proper connection and operation.
  - This proposal includes one (1) General Alarm Relay for interface to Access Control System provided by others at the FACP. DynaFire to furnish, install, and program the Control relay. Please note the Access Control Contractor to provide wire to FACP and make the terminal on their equipment to ensure proper connection and operation.
  - This proposal does not include any lock boxes.
  - Fire Alarm System Monitoring pricing is not included but can be provided on separate proposal if requested.
  - Permit Fees are included in this price.
- Structured Cabling
  - Furnish and install non-continuous cable support, where required for installed cabling.
  - Furnish and install 2" x 6" cable basket tray as indicated.
  - Furnish and install 2" fire rated sleeves in locations and quantities indicated.
  - Furnish and install Category 6 patch cords in the specified quantities and lengths.
  - Furnish and install horizontal Category 6 cable for voice, data, TV, WAP outlets located throughout the Administrative and Warehouse buildings, utilizing IT Telecom Room 141 as the MDF for the Administrative and Warehouse buildings.
  - Includes terminations, trim-out, testing, labeling, cable certification.
  - Furnish and install 12" cable tray located in IT Telecom Room 141.
  - Furnish and install (2) 19" 4-post data racks with (8) vertical wire managements.
  - Furnish and install Isolation kit and vertical rack bus bar for each rack.
  - Furnish and install Category 6 patch panels with horizontal wire management above and below each patch panel.
- Access control
  - Provide & install plenum-rated composite access control cabling to (26) door locations and (3) gate locations.
  - Provide & install (2) Intelligent System Controllers.
  - Provide & install (2) LSP Power Supplies.
  - Provide & install (16) Reader Input Modules.
  - Provide & install (34) HID Card Readers along with Door Contacts, and wired connections to

locking hardware.
    - Provide & install Access Control Workstation & Software.
    - Provide (50) Access Cards.
    - Commission and test the system.
    - Provide all close out documents and as-built drawings.
- CCTV
    - Provide and install Cat6 cabling from MDF to (10) camera locations, midspan PoE extenders as necessary.
    - Provide & install (6) 180 Dome Cameras w/ mounting accessories.
    - Provide & install (4) 360 Dome Cameras w/ mounting accessories.
    - Provide and install (1) 6TB 12-Channel Video Server with VMS Software, Camera Licenses and
    - PoE Switch.
    - Provide (1) 27" Security Monitor.
    - Commission and test the system.
    - Provide all close out documents and as-built drawings.
- Lightning Protection
    - Furnish and install a class I Aluminum Lightning Protection System with copper down leads connecting to 3/4" x 10' Ground Rods and interconnected with a 2/0 ground loop per roof plans E121
- Electrical Testing
    - 260519 Low-Voltage Electrical Power Conductors and Cables – Quantity 24 Sets
    - 260526 Grounding and Bonding for Electrical Systems
    - 262416 Panelboards – Quantity 11
        - 2021 NETA ATS 7.6 Circuit Breakers (100A and larger) – Quantity 11
        - 2021 NETA ATS 7.19 Surge Arrestors – Quantity 7
    - 262816 Enclosed Switches and Circuit Breakers – Quantity 0 Switches & 2 Circuit Breakers
    - Thermographic Survey – Panelboards (new work only)
        - Perform initial scan upon completion, and follow up scan at 11 months
    - Test records will be prepared and submitted following services.
- Fireproofing
    - Installation of firestop systems adhering to AFI's submitted manufacture and UL specifications to meet required fire ratings and AHJ requirements
    - AFI representative present for inspections with a 48-hour notice
    - Includes Sleeves
- Single point electrical connection to any equipment provided and installed by others.
- Clean up for electrical only.
    - Debris generated by Carter Electric Co. Inc. shall be placed in an onsite dumpster.
- Work is based on five (5) days Monday – Friday, forty (40) hours per week, from 7:00am – 3:30pm If no schedule has been provided then this proposal is based on standard manpower graphs for similar projects.

Price Does Not Include:

- Bond (add 1.4%).
- Electrical Permit
- Camera Poles
- LV transformers for plumbing hardware
- LV plumbing connections
- Any A/V equipment (provide, install & configure)
- BIM Coordination
- Security gate equipment, installation and configuration
- Any Utility provider primary conduit, cabling, transformer, or other equipment and or materials.
- Any Utility, television, or telephone provider charges, conduit and equipment.
- Electrical power to tower crane or buck hoist for construction.
- HVAC conduit, control wiring, interlocking equipment and devices.
- **Any type of starters or variable frequency drive or equipment.**
- Fire pump and jockey pump controllers, control devices or control wiring.
- Domestic water system controls, control devices or wiring.
    - Furnish or install unit bath exhaust fans.
- Roof pitch pockets, if needed.

- BDA system if required.
- Configuration of any owner supplied equipment
- Dumpster (to be provided by general contractor).
    - We will collect the trash and construction debris generated by Carter Electric Co. Inc. and deposit in an onsite dumpster provided by the general contractor.
- Irrigation control power, control wiring or connections.
- Compaction and or dewatering of trench excavation.
- Concrete or equipment pads, i.e., transformer, equipment rack, housekeeping pads and generator
    - Including parking bollards, if required.
- Layout / surveying of the site lighting shall be performed by the general contractor.
- Any existing concealed or unforeseen circumstances that impact the electrical installation.
- We specifically exclude the use of any third-party billing computer software which may cause us to alter the price below.
- We specifically exclude any specific client contract issues that may cause us to adjust the bid price below such as.
- Duct detectors are to be mounted by the mechanical contractor.
- Indemnification costs, however in no event are we able to identify our clients or owners from their own negligence.
- Any delays caused due to material delays that are out of our control. We are experiencing impacts daily from our Vendors and Manufactures due supply chain disruption related delays.
- Lien releases shall conform to Florida Statue 713; any diversions from the verbiage contained within the approved releases may cause us to adjust the price below.
    - Prepayment to any of our subcontractors and vendors. our partner agreements with our subcontractors and vendors rely on the owner's payment for them to receive their payment; therefore, we do NOT provide any prepayments. Any requirements that differ from this agreement may be cause for us to adjust the price below.
- Professional electric design, which is the responsibility of the electrical engineer. All changes necessary to bring the installation into code compliance are excluded.
- This proposal is limited to extent of the work reflected on the electrical drawings noted above, relative to the quantity of the electrical devices, light fixtures, equipment wiring, and the systems shown on the plans and shall be contingent upon acceptance of an AIA or other mutually agreeable subcontract agreement.

Base Bid:	**$1,679,495.00**
Adder for BDA system if required	**$77,000.00**

Due to changes in market conditions and material pricing and availability, our proposal shall be good if accepted within thirty (30) days of the date of this proposal. We reserve the right to adjust this proposal based on the volatility of material and the market conditions at the time of award.

We appreciate the opportunity to provide you with this proposal. Please feel free to contact me if you have any questions or comments.

Sincerely,

Todd Matarazzo

Estimator

Christine Carasas

From: James Manyette
Sent: Tuesday, November 12, 2024 1:57 PM
To: Wharton Smith Commercial Estimating
Subject: 26_Electrical_Cartrer Electric Port Orange Field Ops
Attachments: Port Orange Field Ops - Carter Electric Proposal.pdf; Bid Form_Electrical_Rev.10-25.pdf

Importance: High

26_Electrical_Cartrer Electric

Respectfully,

James R. Manyette | Senior Preconstruction Services Manager
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771 | Cell: (407) 810-9590

From: Todd Matarazzo <Tmatarazzo@carterelectric.com>
Sent: Tuesday, November 12, 2024 1:54 PM
To: James Manyette <jmanyette@whartonsmith.com>
Subject: Port Orange Field Ops
Importance: High

James, please see the attached proposal and bid for this project.

Let me know if you have any questions.

Thanks

Todd Matarazzo
Estimator
Carter Electric Company
M (321)-412-0224
O (386)-255-1418
EC0002058

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!

arter Electric Co., Inc. Contractors - Engineers

231 JEAN STREET ● DAYTONA BEACH, FLORIDA 32114 ● 386-255-1418

TRUMAN E. (ROY) GAILEY, JR., CEO
STATE CERTIFIED EC0000265

MATTHEW J WITTWER, PRESIDENT
STATE CERTIFIED EC0002058; NC 14911-U

11/18/2024

James Manyette
Wharton-Smith INC

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Dear James

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- Emergency Power
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  - Thermographic Survey – Panelboards (new work only)
    - Perform initial scan upon completion, and follow up scan at 11 months
  - Test records will be prepared and submitted following services.
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  - Installation of firestop systems adhering to AFI's submitted manufacture and UL specifications to meet required fire ratings and AHJ requirements
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- We specifically exclude any specific client contract issues that may cause us to adjust the bid price below such as.
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- Indemnification costs, however in no event are we able to identify our clients or owners from their own negligence.
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Estimator

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11/18/2024

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- Raceways will be in accordance with NEC for PVC, GRC (though slab and elbows) and EMT conduit systems.
- **Electrical Permit**
- **Temporary power and lighting per OSHA standard**
  - **Includes 1 trailer connection to temp power**
- Complete lighting fixture and controls package per plans and specs.
- Distribution package:
  - Switchgear: MDP
  - Panels: A, B, C, D, E, F
  - Disconnects: Per plans and specs
  - Misc: (7) SPD
- Wiring devices to be commercial grade and hospital grade type where applicable
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  - Device plates shall be Nylon unless specified otherwise.
- Grounding per NEC
- Emergency Power
  - MTU (a Rolls-Royce Solution) Engine-Generator Set (“Genset”)
  - 1 250KW 208V Diesel Stationary Emergency Standby
  - Standard Accessories Included:
    - Std Controller, Mounted Radiator, Lead-Acid Engine Batteries, Battery Charger, Engine Block Heater, Flexible Fuel Line; Exhaust Flex Connector, Critical Muffler, Pad Vibration Isolators ,One (1) O&M Manual, Standard Factory Test

- Genset Circuit Breaker: 1000 amps, 100% Rated LSI with Shunt Trip
- Weather Protective Enclosure: Steel 195 MPH Wind Rated Sound Attenuated AC/DC Lights Convenience Receptacle
- UL-142 Subbase Fuel Tank: 72 Hour/1676 Gallons (useable 1,590 Gallons)
- MTU Manufacturer's Limited Warranty: 2 Year/3000 Hour Basic Limited
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  - This proposal is based on Class "B" SLC and NAC Circuits.
  - This proposal includes connecting the Fire Sprinkler Flow and Tamper Switches provided by others.
  - This proposal includes duct smoke detectors as shown on drawings. DynaFire to furnish the duct smoke detector housings and sampling tubes to the Mechanical Contractor for installation into their duct system by them.
  - furnish, install, and program the smoke detector head, as well as the shutdown relay. Please note the Mechanical Contractor to make the terminal on their equipment for the shutdown operation, to ensure proper connection and operation.
  - This proposal includes shutdown relays for HVLS Fans as shown on drawings. DynaFire to Furnish, install, and program the shutdown relay. Please note the HVLS Fan Contractor to make the terminal on their equipment for the shutdown operation, to ensure proper connection and operation.
  - This proposal includes monitor module for Kitchen Hood System provided by others. DynaFire to furnish, install, and program the monitor module. Please note the Kitchen Hood System Contractor to make the terminal on their equipment for the shutdown operation, to ensure proper connection and operation.
  - This proposal includes monitor modules for generator status monitoring provided by others. DynaFire to furnish, install, and program the monitor module. Please note the Generator Contractor to make the terminal on their equipment for the shutdown operation, to ensure proper connection and operation.
  - This proposal includes one (1) General Alarm Relay for interface to Access Control System provided by others at the FACP. DynaFire to furnish, install, and program the Control relay. Please note the Access Control Contractor to provide wire to FACP and make the terminal on their equipment to ensure proper connection and operation.
  - This proposal does not include any lock boxes.
  - Fire Alarm System Monitoring pricing is not included but can be provided on separate proposal if requested.
  - Permit Fees are included in this price.
- Structured Cabling
  - Furnish and install non-continuous cable support, where required for installed cabling.
  - Furnish and install 2" x 6" cable basket tray as indicated.
  - Furnish and install 2" fire rated sleeves in locations and quantities indicated.
  - Furnish and install Category 6 patch cords in the specified quantities and lengths.
  - Furnish and install horizontal Category 6 cable for voice, data, TV, WAP outlets located throughout the Administrative and Warehouse buildings, utilizing IT Telecom Room 141 as the MDF for the Administrative and Warehouse buildings.
  - Includes terminations, trim-out, testing, labeling, cable certification.
  - Furnish and install 12" cable tray located in IT Telecom Room 141.
  - Furnish and install (2) 19" 4-post data racks with (8) vertical wire managements.
  - Furnish and install Isolation kit and vertical rack bus bar for each rack.
  - Furnish and install Category 6 patch panels with horizontal wire management above and below each patch panel.
- Access control
  - Provide & install plenum-rated composite access control cabling to (26) door locations and (3)

gate locations.
    - Provide & install (2) Intelligent System Controllers.
    - Provide & install (2) LSP Power Supplies.
    - Provide & install (16) Reader Input Modules.
    - Provide & install (34) HID Card Readers along with Door Contacts, and wired connections to locking hardware.
    - Provide & install Access Control Workstation & Software.
    - Provide (50) Access Cards.
    - Commission and test the system.
    - Provide all close out documents and as-built drawings.
- CCTV
    - Provide and install Cat6 cabling from MDF to (10) camera locations, midspan PoE extenders as necessary.
    - Provide & install (6) 180 Dome Cameras w/ mounting accessories.
    - Provide & install (4) 360 Dome Cameras w/ mounting accessories.
    - Provide and install (1) 6TB 12-Channel Video Server with VMS Software, Camera Licenses and
    - PoE Switch.
    - Provide (1) 27" Security Monitor.
    - Commission and test the system.
    - Provide all close out documents and as-built drawings.
- Lightning Protection
    - Furnish and install a class I Aluminum Lightning Protection System with copper down leads connecting to 3/4" x 10' Ground Rods and interconnected with a 2/0 ground loop per roof plans E121
- A/v System
    - Full installation per tech drawings dated 9/30/24
    - Full Rack Width, 1U AAP Mounting Frame - Black
    - 8x2 Seamless 4K Scaling Presentation Matrix Switcher with AV LAN - 100 Watt 70 Volt Mono Power Amplifier, LinkLicense for User Interfaces Upgrade
    - HDMI Twisted Pair Transmitter with Input Loop-Through - 230 feet (70 m)
    - HDMI Twisted Pair Receiver - 230 feet (70 m)
    - eBUS Partition Sensor
    - XTP Power Injector
    - Recessed Wall Mount Kit for TLP Pro 1025M, TLP Pro 725M, TLS 1025M, and TLS 725M
    - 7" Wall Mount TouchLink Pro Touchpanel
    - Extron 3.5" Wall Mount TouchLink Pro Touchpanel
    - DTP Transmitter for HDMI - Decorator-Style Wallplate, Black - 230 feet (70 m
    - Mono 70 V Amplifier - 60 Watts
    - SoundField XD 6.5" Two-Way Ceiling Speaker with 8" Composite Back Can and 70/100 V Transformer
    - "Middle Atlantic Reference 16RU Furniture Rack - 28.3in Depth - 27.3in Width - 350 lbs Weight Capacity - For Monitor - 16U Rack Height x 19"" Rack Width x
    - 23.31"" Rack Depth - Floor Standing - Black Cascade - Wood, Steel, Tempered Glass - 350 lb Maximum Weig"
    - Rfr Cabinet Cooler,50 CFM Cooling,9.63 in. Dp,Upper Panel on Rear Mount
    - Samsung 98" 4K UHD LCD Commercial Display
    - Chief Fusion X-Large Tilt Adjustable TV Mount - For Displays 55-100" - Black - Height Adjustable - 1 Display(s) Supported - 55" to 100" Screen Support - 250 lb Load Capacity
    - Surge Protector
    - Surge Protector, 120V/20A, 12 Outlets, 15ft Power Cord, 1U Rackmount
    - CAT6 550MHz, HDBT, UTP, 8C CMR Blue Jacket, AWG23,, Pull Box, 1000'
    - 18/2 Shielded Riser
    - 2-Pack 1-Port HDMI Wall Plate in White (4K UHD, ARC, and Ethernet Pass-Thru Support)
    - 4K HDMI Cable 30FT (4K 30Hz, HDR10, HDCP2.3, High Speed 18Gbps, in-Wall CL3 Rated
    - Connectors, Mounting Hardware, Conduit etc.
    - Permitting Fees
- Electrical Testing

- 260519 Low-Voltage Electrical Power Conductors and Cables – Quantity 24 Sets
- 260526 Grounding and Bonding for Electrical Systems
- 262416 Panelboards – Quantity 11
  - 2021 NETA ATS 7.6 Circuit Breakers (100A and larger) – Quantity 11
  - 2021 NETA ATS 7.19 Surge Arrestors – Quantity 7
- 262816 Enclosed Switches and Circuit Breakers – Quantity 0 Switches & 2 Circuit Breakers
- Thermographic Survey – Panelboards (new work only)
  - Perform initial scan upon completion, and follow up scan at 11 months
- Test records will be prepared and submitted following services.

- Fireproofing
  - Installation of firestop systems adhering to AFI's submitted manufacture and UL specifications to meet required fire ratings and AHJ requirements
  - AFI representative present for inspections with a 48-hour notice
  - Includes Sleeves
- Single point electrical connection to any equipment provided and installed by others.
- Clean up for electrical only.
  - Debris generated by Carter Electric Co. Inc. shall be placed in an onsite dumpster.
- Work is based on five (5) days Monday – Friday, forty (40) hours per week, from 7:00am – 3:30pm If no schedule has been provided then this proposal is based on standard manpower graphs for similar projects.

Price Does Not Include:

- Bond (add 1.4%).
- Camera Poles
- LV transformers for plumbing hardware
- LV plumbing connections
- Any A/V equipment (provide, install & configure)
- BIM Coordination
- Security gate equipment, installation and configuration
- Any Utility provider primary conduit, cabling, transformer, or other equipment and or materials.
- Any Utility, television, or telephone provider charges, conduit and equipment.
- Electrical power to tower crane or buck hoist for construction.
- HVAC conduit, control wiring, interlocking equipment and devices.
- **Any type of starters or variable frequency drive or equipment.**
- Fire pump and jockey pump controllers, control devices or control wiring.
- Domestic water system controls, control devices or wiring.
  - Furnish or install unit bath exhaust fans.
- Roof pitch pockets, if needed.
- BDA system if required.
- Configuration of any owner supplied equipment
- Dumpster (to be provided by general contractor).
  - We will collect the trash and construction debris generated by Carter Electric Co. Inc. and deposit in an onsite dumpster provided by the general contractor.
- Irrigation control power, control wiring or connections.
- Dewatering of trench excavation.
- Concrete or equipment pads, i.e., transformer, equipment rack, housekeeping pads and generator
  - Including parking bollards, if required.
- Layout / surveying of the site lighting shall be performed by the general contractor.
- Any existing concealed or unforeseen circumstances that impact the electrical installation.
- We specifically exclude the use of any third-party billing computer software which may cause us to alter the price below.
- We specifically exclude any specific client contract issues that may cause us to adjust the bid price below such as.
- Duct detectors are to be mounted by the mechanical contractor.
- Indemnification costs, however in no event are we able to identify our clients or owners from their own negligence.
- Any delays caused due to material delays that are out of our control. We are experiencing impacts daily from our Vendors and Manufactures due supply chain disruption related delays.

- Lien releases shall conform to Florida Statue 713; any diversions from the verbiage contained within the approved releases may cause us to adjust the price below.
    - Prepayment to any of our subcontractors and vendors. our partner agreements with our subcontractors and vendors rely on the owner's payment for them to receive their payment; therefore, we do NOT provide any prepayments. Any requirements that differ from this agreement may be cause for us to adjust the price below.
- Professional electric design, which is the responsibility of the electrical engineer. All changes necessary to bring the installation into code compliance are excluded.
- This proposal is limited to extent of the work reflected on the electrical drawings noted above, relative to the quantity of the electrical devices, light fixtures, equipment wiring, and the systems shown on the plans and shall be contingent upon acceptance of an AIA or other mutually agreeable subcontract agreement.

Base Bid:	**$1,809,128.00**
Adder for BDA system if required	**$77,000.00**

Due to changes in market conditions and material pricing and availability, our proposal shall be good if accepted within thirty (30) days of the date of this proposal. We reserve the right to adjust this proposal based on the volatility of material and the market conditions at the time of award.

We appreciate the opportunity to provide you with this proposal. Please feel free to contact me if you have any questions or comments.

Sincerely,

Todd Matarazzo

Estimator

Celebrating 65 years serving Central Florida!

James Manyette

From: Todd Matarazzo <Tmatarazzo@carterelectric.com>
Sent: Friday, November 22, 2024 9:52 AM
To: James Manyette
Cc: Keri Strawder; James De La Rosa; Josh Blubaugh
Subject: RE: CARTER ELECTRIC - Port Orange Public Utilities -Field Ops Final Scoping
Attachments: Port Orange Field Ops - Carter Electric Proposal REV3.pdf; Carter Job List 10.23.24.xlsx

James, please see the attached updated quote as requested.

Let me know if you have any questions.

Thanks

Todd Matarazzo
Estimator
Carter Electric Company
M (321)-412-0224
O (386)-255-1418
EC0002058

From: James Manyette <jmanyette@whartonsmith.com>
Sent: Tuesday, November 19, 2024 2:41 PM
To: Todd Matarazzo <Tmatarazzo@carterelectric.com>
Cc: Keri Strawder <kstrawder@whartonsmith.com>; James De La Rosa <jdelarosa@whartonsmith.com>; Josh Blubaugh <jblubaugh@whartonsmith.com>
Subject: CARTER ELECTRIC - Port Orange Public Utilities -Field Ops Final Scoping

Todd – Thanks for meeting with us yesterday for the scoping process on this project. Based on those discussions, please update your proposal as follows. You can update the proposal/bid form, then follow-up with other data/past performance.

1. Update the Bid Form to ref. RFI #3

Re-write your exclusions to show you have included:

2. Temp Power, FPL site conduit and coordination
3. Power to gate operators
4. Low voltage to card readers (included by your LV sub)
5. Irrigation system power hook-up
6. Permits
7. Updated price to include full Carter Electric Budget for A/V per the spec. spec. 274100 AV Systems. The only things I see as Owner Furnished are 1 computer and 2 flat panel displays. However there are a few items that will be part of this AV System (i.e. speakers, AV Cabinet, microprocessor based touch screen controller/AV Switcher, wall mounted Room scheduling display, etc.) and they name manufacturer certifications for installer as either Crestron or Extron.

We know Carter to be a reputable firm but need to be prepared to show this our Risk Dept.

8. Let us know what backlog (other projects you currently have) starting in 2025 (Name, value, start, project duration).
9. Send us a list of your **completed** Wharton Smith Jobs (even if they are a few years old). It helps us to show our risk department that there is Carter Electric experience.

Respectfully,

James R. Manyette | Senior Preconstruction Services Manager
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771 | Cell: (407) 810-9590

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Subcontractor Bid Form-Electrical

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Giles Electric Company
Scope of Work:	Electrical

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

Electrical subcontractors are to provide a **complete turnkey proposal** including, but not be limited to: Low voltage/technology systems for complete and operable Access Control, CCTV, Security, DAS/BDA, Lightning Protection, Fire Alarm, Emergency Generator, etc., for complete and operable systems.

PART 1: PRICING

(1.1) Total Electrical Base Bid

Amount in Figures:	$ 1,978,000.00
Amount in Words:	$ One million nine hundred seventy eight thousand.

Provide accounting breakout prices as follows (to be included in the above base bid):

Electrical (incl. fire alarm)	$ 1,415,114.00
Technology Voice/Data (premises distr., cabling, tray, devices, terminations)	$ 137,000.00
Access Control System	$ 114,426.00
CCTV System	$ 39,085.00
DAS/BDA Systems Budget & Survey.	$ 72,000.00
A/V Systems	$ 57,175.00
Emergency Generator	$ 143,200.00
	$ 1,978,000.00

Continued Next Page

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $5,000)

Material/Equipment Types:	Fixtures, Switchgear, Generator
Amount:	$322,200.00

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %: 1.2%	

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)
Generator	20 weeks		

Continued Next Page

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1	Dated:	11-8-24	RFI No.		Dated:	
RFI No.	2	Dated:	11-11-24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10-22-24	WSI No.	4	Dated:	10-28-24
WSI No.	2	Dated:	10-24-24	WSI No.	5	Dated:	10-31-24
WSI No.	3	Dated:	10-25-24	WSI No.	6	Dated:	11-4-24
				WSI NO.	7	Dated	11-6-24
				WSI No.	8	Dated	11-8-24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

Continued Next Page

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

PART 3: BIDDER INFORMATION

Giles Electric Company

Company Name

952 Big Tree Road, South Daytona, FL 32119

Address (Street, City, State, Zip)

386-767-5895 Jason.morgan@gileselectriccompany.com

Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Giles Electric

By: Jason Morgan

Printed Name: Jason Morgan

Title: Project Manager/Estimator

Dated: 11-12-24

License No.: EC00001538

Electric Company, Inc.
Commercial, Residential, Industrial Wiring

952 Big Tree Road
South Daytona, FL 32119
Phone 386-767-5895
Fax 386-767-6260
EC00001538
www.GilesElectricCompany.com

PROPOSAL

Date:11-12-24
Project: Port Orange Public Utilities Field Op's Bldg.
To: Wharton Smith
Attn: James Manyette

From: Jason Morgan
Title: Project Manager/Estimator
Email: Jason.morgan@gileselectriccompany.com
Phone: 386-767-5895

We propose to furnish all labor and materials necessary to provide the electrical installation for the above referenced project. Unless specifically stated otherwise in this scope of work, the installation is limited to our interpretation of the electrical design and work specifically covered by the electrical drawings and specifications.

PRICING

Drawings Used: Sheet E001 ThruE701 and T001 thru T601
Drawings By: Schenkel & Shultz
Specifications: Division 26,27,28
Amendment Received: NA

BASE BID: $1,978,000.00

The following is **included**:

- Sales tax.
- Rental Equipment.
- Temp. Power and lighting included.
- Lighting as specified.
- Lighting controls as specified.
- Switchgear, Panels and disconnects as specified.
- Devices as specified.
- Grounding as specified.
- Site manholes, handholes per drawings included.
- Lightning protection included. Includes master label. Lightning protection on light poles and covered parking area not included.
- Generator and transfer switches as specified.
- All plywood backboards for comm. rooms included.
- Fire alarm system as specified.
- Premise Distribution System. Includes racks, cabling, jacks, cable tray in comm. room
- Access control as specified.
- AV system as specified. The system will have two 98" monitors (4K not 8K as stated on the plan) as well as two touch screens for control and 6 total speakers in the dividable space. The last 65" monitor will be installed in the break room. All the offices that show monitors shall have a back box supplied and installed by Giles the monitors will be supplied and installed by others.

952 Big Tree Road
South Daytona, FL 32119
Phone 386-767-5895
Fax 386-767-6260
EC00001538
www.GilesElectricCompany.com

- CCTV as specified. Includes (1) 6TB 12-channel video server with VMS software, Camera licenses and POE switch. Includes a 27" security monitor.
- Includes BDA budget & survey.
- Includes box and conduit stub up for all systems.

The following is specifically **excluded**:

.

- FPL transformer and fees by others.
- P&P bond and bid bond not included.
- Housekeeping pad & generator pad by others.
- All site lighting surveyed by others.
- Cutting and patching of concrete & asphalt.
- Painting and patching of walls and ceilings.
- HVAC controls pipes, wire and devices by others.
- Electric locks, electric strikes, electrified panic trims, electrified hinges, magnetic locks, automatic operators with push buttons by others.
- AP's and network electronics by others.
- Spare lighting fixtures and controls not included.
- Gate and gate controllers furnished and installed by others.
- All access panels are furnished and installed by others.

STATEMENT

This installation proposal takes precedence over and supersedes any prior proposals, correspondence, and oral agreements or representations relating to the work set forth in the scope of work. This installation proposal commences on the start date as specified by the contract and/or the attached scope of work and represents the agreement between Giles and Customer.

This proposal is contingent on an acceptable project schedule being made a part of the contract. If the schedule is not available, then the proposal is based on a 40-hour workweek in conformance with NECA industry average manpower consumption graphs for this type of project. This proposal is based on the issuance of an AGC, AIA, or some other mutually acceptable contract and acceptable credit.

It is a pleasure to submit this scope of work. We look forward to the opportunity of working with you.

Sincerely,

Jason Morgan
Estimator

APPROVAL

Electric Company, Inc.
Commercial, Residential, Industrial Wiring

952 Big Tree Road
South Daytona, FL 32119
Phone 386-767-5895
Fax 386-767-6260
EC00001538
www.GilesElectricCompany.com

Name: _____

Signature: _____

Title: _____

Date: _____

Christine Carasas

From: Jason Morgan <jason.morgan@gileselectriccompany.com>
Sent: Tuesday, November 12, 2024 11:29 AM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Public Utilities Field Op's Bldg.
Attachments: PO Public Utilities Field Op's Bldg. Scope Letter Proposal .pdf; Bid Form_Electrical_v24.1.pdf

James,

Please see attached proposal for the Port Orange Public Utilities Field Op's Bldg. Review and let me know if you have any questions?

Thank You For The Opportunity,

Jason Morgan
Giles Electric Company, Inc
Project Manager/Estimator
jason.morgan@gileselectriccompany.com
Phone: 386-767-5895
Fax: 386-767-6260

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MAXWELL LIGHTNING
PROTECTION OF FLORIDA COMPANY
P.O. BOX 22683 • LAKE BUENA VISTA, FLORIDA 32830
(407) 827-6328 FAX (407) 827-6091 (800) 819-2012

November 11, 2024

Project: **Port Orange Public Utilities Field Operations Building**

Subject: **Lightning Protection and Grounding Quote**
Valid 60 days

We are pleased to submit our quote for the lightning protection and 2/0 grounding system on the above referenced project. Breakdown:

1.	Administration and Warehouse Building	90 ft. PVC & 9 PVC Sleeves	$33,100.00
2.	Covered Parking A	6 PVC Sleeves	$14,550.00
3.	Covered Parking B	7 PVC Sleeves	$15,980.00
4.	Mechanical Yard	60 ft. PVC	$8,400.00
			$72,030.00 Total

Design notes:

a) 2/0 Perimeter Counterpoise as specified
b) Exposed aluminum roof system
c) Each structure to be certified
d) Based on utilizing a trencher or excavation/trenching being performed by others

We will need your firm to provide and install **1"** PVC sleeves and raceway with a pull string, from each Thru-Roof assembly to each ground location.

NOTES:

a. No addenda were reviewed.
b. Third-party inspections and certifications are included, LPI-IP Certifications to NFPA 780, UL96A & LPI 175 lightning protection codes.
c. We cannot guarantee any specified ohm readings. Additional material or labor is not included should the completed system exceed specified ohm readings.
d. Safety tie-off locations or any unspecified accommodations, if required, must be provided by others.
e. Roof access must be provided by others, if applicable. Excludes scaffolding, crane, or lift equipment.
f. Proposal based on all roof mounted LP equipment being adhered/fastened directly to roof, parapet, and equipment surfaces. Excludes pads, seam clamps, custom clips, or parapet/coping brackets if required. Any variance or special provisions may be in addition to this quotation.
g. Design by LPI Master Designer 1015.
h. UL listed manufacturer number E165726. UL listed installer number E190711.
i. Maxwell installers are LPI certified and complete a VA approved, three-year training program.

Rebar is required to be bonded at each down lead location. Maxwell will furnish mechanical clamps and cable for a ground tail to be installed by your firm. Maxwell will terminate these pigtails to our thru roof assemblies and ground rod locations.

Exclusion: (General Contractor or Roofing Contractor must be notified) The Lightning Protection System will be adhered directly to the roof surface, by our firm, with the proper adhesive only. Thru-roof assemblies must be sealed and flashed in by the roofing contractor. Roofing Contractor must supply and install all wear pads, stripping, battens, heat welded strips or pavers, or any Special Coping Brackets whichever may or may not occur due to their choice of roofing manufacturer. No Materials or labor for these items have been included in our scope.

Excludes pitch pans, roof pads, vegetation and concrete / asphalt cutting, removal, patching, and dewatering.

Our quotes include all material and labor.

The system will be installed in accordance with UL 96A, NFPA 780, LPI 175 Lightning Protection Standards.

We carry Workers compensation insurance, $1 mil vehicle insurance, and $5 mil excess liability. Waivers of subrogation and additional insured descriptions can be supplied. Any additional endorsements or coverage that may be required that will cost an additional premium will be subject to an additional charge. Payment and performance bonds are not included in this quote but can be provided at an additional charge.

Thank you for this opportunity to quote this project. Please feel free to contact our office if you have any further questions concerning this or any future projects.

Sincerely,
MAXWELL LIGHTNING PROTECTION OF FLORIDA COMPANY

Guy Maxwell – President
GM/jk

Christine Carasas

From: Jamie Kroft <info@maxwelllightning.com>
Sent: Monday, November 11, 2024 3:30 PM
To: Jamie Kroft
Subject: RE: Port Orange Public Utilities Field Operation Bldg Lightning Protection Proposal
Attachments: Port Orange Public Utilities Field Operations .docx

Good Afternoon,

We have reviewed this project for lightning protection and attached our proposal for your review.

Please get back to us with any questions you have.

Thank you,

Jamie Kroft

MAXWELL LIGHTNING PROTECTION OF FLORIDA COMPANY

Confidentiality Notice:

The information transmitted (including attachments) is covered by the Electronic Communications Privacy Act, 18 U.S.C. 2510-2521, is intended only for the person(s) or entity/entities to which it is addressed and may contain confidential and/or privileged material. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient(s) is prohibited. If you received this in error, please notify us immediately by returning the original message to us and delete the material from any computer.

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Subcontractor Bid Form-Electrical

Wharton-Smith, Inc. CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder: Network Cabling Services, Inc. (NCS)

Scope of Work: Div. #27 & Div. #28

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

Electrical subcontractors are to provide a **complete turnkey proposal** including, but not be limited to: Low voltage/technology systems for complete and operable Access Control, CCTV, Security, DAS/BDA, Lightning Protection, Fire Alarm, Emergency Generator, etc., for complete and operable systems.

PART 1: PRICING

(1.1) Total Electrical Base Bid

Amount in Figures: $ 359,199.00

Amount in Words: $ Three Hundred Fifty Nine Thousand One Hundred Ninety Nine and 00 Cents

Provide accounting breakout prices as follows (to be included in the above base bid):

Electrical (incl. fire alarm)	$ 38,900.00
Technology Voice/Data (premises distr., cabling, tray, devices, terminations)	$ 101,500.00
Access Control System	$ 133,900.00
CCTV System	$ 45,800.00
DAS/BDA Systems	$ 39,099.00
A/V Systems	$
Emergency Generator	$
	$

Continued Next Page

(1.2) Alternates (Voluntary)

N/A	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $5,000)

Material/Equipment Types:		Cable, Metals & Equipment
Amount:	$	5,000.00

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1	N/A	$
2		$
3		$

(1.5) MWBE Participation

MWBE	$	N/A
LDB	$	N/A
VBE	$	N/A

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %: .972

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)
N/A			

Continued Next Page

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	#1	Dated: 11/01/24	RFI No.		Dated:
RFI No.		Dated:	RFI No.		Dated:
RFI No.		Dated:	RFI No.		Dated:

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	#1	Dated:	10/22/24	WSI No.	#5	Dated:	10/31/24
WSI No.	#2, #3	Dated:	10/24/24	WSI No.	#6	Dated:	11/04/24
WSI No.	#4	Dated:	10/28/24	WSI No.	#7	Dated:	11/06/24
				WSI	#08	Dated:	11/08/24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.	N/A	Dated:	ASI No.	Dated:

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.	N/A	Dated:	Addenda No.	Dated:
Addenda No.		Dated:	Addenda No.	Dated:

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

Continued Next Page

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

PART 3: BIDDER INFORMATION

Network Cabling Services, Inc. (NCS)

Company Name

710 Industry Rd; Longwood, FL 32750

Address (Street, City, State, Zip)

407-331-3444 cdefilippis@ncscabling.comNetwork Cabli

Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other N/A

SIGNATURE OF BIDDER

Bidder Name: Network Cabling Services, Inc. (NCS)

By: Chris De Filippis

Printed Name: Christopher DeFilippis

Title: Project Manager

Dated: 11/12/2024

License No.: #ES0000327

NCS
NETWORK CABLING SERVICES, INC.
710 Industry Road | Longwood, FL 32750
Phone: 407-331-3444 Fax: 407-331-0132
Email: das@ncscabling.com

PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS BUILDING 4505 CLYDE MORRIS BOULEVARD PORT ORANGE, FLORIDA 32129

EMERGENCY RESPONDER RADIO COVERAGE (ERRC) TEST

November 12, 2024

SCOPE OF WORK:

Perform an Emergency Responder Radio Coverage (ERRC) test to measure 700-800 MHz RF transmission levels to meet the requirements of the Authority Having Jurisdiction (AHJ).

This test and survey requires an FCC GROL holder and/or a PC Tel factory certified technician physically performing on-site tasks to identify and document where frequencies and transmission levels for emergency first-responder radio networks pass or fail.

EMERGENCY RESPONDER RADIO COVERAGE TEST (ERRC) PROCEDURE:

Network Cabling Services, Inc. will review the documents and verify the requirements with the AHJ including information on frequencies, radio site locations, and any other jurisdiction-specific requirements such as FCC GROL and test equipment technician certification.

NCS will tailor the ERRC test to the specific frequencies used by the local first responders. Some municipalities have first responders on separate systems meaning multiple frequency bands need to be identified. NCS will provide the pre-design research needed to flush out these requirements. Per NFPA 1225, 2022 edition the AHJ and the FCC frequency license holder are tasked with providing technical information specific to their requirements for testing purposes.

Per NFPA guidelines, NCS will prepare a compliant testing grid based on client provided floor plans. Testing will be completed using a grid pattern with a minimum of 20 test grids for each floor tested (or more depending on building size and local code requirements) to a maximum of 80 ft. (24.4 M) to encompass the entire floor area of each building.

Following the established floor grid pattern for each floor, the PC Tel Factory certified technician and / or the FCC GROL holder will conduct a physical walk test using the PC Tel tester to sample signal strength measurements and other AHJ specific criteria. Readings will be collected and noted during the walk test in all accessible grids within the defined grid area boundary.

The testing device will be the 08902-E IBFLEX PLATFORM AGILENT E4438C.

Two signal failures per floor are typically permitted (90% passing grids required), though this can vary by building type and local enforcement of fire codes. Critical areas require a 99% pass rate.

TEST REPORT:

Emergency Responder Radio Coverage results are prepared on a per building and per floor basis, in a summary format indicating building location, numerical grid RSSI value, SINR, FBER, and any additional criteria required by the AHJ.

NCS provides a visual grid map of all test results with passing and failing grids noted for each floor of each building tested based on parameters established by the AHJ.

Additional site-specific information is provided as required and may include a technician synopsis. Typically, weather conditions at the time of the test and any disclaimers are listed in this section of the report.

AUTHORITY HAVING JURISDICTION (AHJ):

The final evaluation regarding building enhancement requiring a public safety two-way radio system (BDA) is determined by the AHJ.

All NCS ERRC testing includes submission of the documentation to the AHJ, if desired. Supporting documentation includes calibration details of the testing device, a copy of the FCC GROL, and individual certifications for each technician performing the test and survey. A copy of the report is also submitted to the client.

ASSUMPTIONS:

- Test grid accuracy is based upon Owner or General contractor provided up-to-date dimensional floor plans for each floor of each building to be tested.
- Owner, Manager, or General Contractor to provide access to each area to perform testing to include private offices and restricted areas throughout the building.
- An escort will be provided, at no charge to NCS, to provide direction and unlock doors as required during the entire testing and surveying process.
- Escort to remain with the test technician(s) throughout the entire testing process.
- All test and survey procedures are to be performed during regular business hours weekdays.

Total ERRC & DAQ Cost: ***$1,094.00****

All work to be completed in a workmanlike manner according to standard practices. Any alteration or deviation from the above specifications involving extra costs will be executed only upon written orders and will become an extra charge over and above the estimate. No contingencies have been made for strikes, accidents, or delays beyond our control. Owner is to carry fire, tornado, theft, and other necessary insurance. NCS employees are fully covered by Workmen's Compensation Insurance.

_____

Authorized Signature ***Date***

Thank you for the opportunity,
Steve Koller
Public Safety DAS Manager
FCC GROL: PG00064800

Certificate of Calibration

MODEL: 08902-E IBFLEX BASE PLATFORM (10 MHZ TO 6 GHZ CAPABLE) WITH CDMA AND EVDO HOLDOVER

SERIAL NUMBER: 82006040
CALIBRATION DATE: August 2, 2023
RECALIBRATION DUE: August 2, 2025

This calibration certificate documents that the product identified above meets all published specifications and has been calibrated using instruments whose accuracies are traceable to the National Institute of Standards and Technology.

Instruments:

Make	Model	Serial Number	Calibration Due
Agilent	E4438C	MY45093996	1/31/2025

The policies and procedures at this facility comply with ISO 9001:2015.

B. Mehring

Authorized Signature

PCTEL

22600 Gateway Center Drive, Suite 100 Clarksburg MD 20871 USA
www.pctel.com

UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

General Radiotelephone Operator License

Official Copy

KOLLER, STEVEN L
502 TWIN LAKES DR
TITUSVILLE, FL 32780

FCC Registration Number (FRN): 0029027604

Special Conditions / Endorsements

Ship Radar Endorsement.

Grant Date	Effective Date	Print Date	Expiration Date
12-04-2019	12-04-2019	12-05-2019	
File Number	**Serial Number**		**Date of Birth**
0008903378	PG00064800		06-07-1949

THIS LICENSE IS NOT TRANSFERABLE

Steven L Koller

(Licensee's Signature)

FCC 605-FRC - May 2007

PCTEL

Certificate of Training

THIS CERTIFICATE IS PROUDLY PRESENTED TO

Steven Koller

For successfully completing
PCTEL® SeeHawk Touch: Public Safety Testing Methods
training course

CERTIFICATE OF TRAINING
PCTEL, Inc.

4 February 2020

DATE

Dale Bass

Dale Bass, Senior RF Engineer

Karl Warrick
Karl Warrick
Karl Warrick

PCTEL

Certificate of Training

THIS CERTIFICATE IS PROUDLY PRESENTED TO

Gryphin Geer

NETWORK CABLING SERVICES

For Successfully completing PCTEL® SeeHawk Touch: Public Safety Testing Methods training Course

Certification Valid Till: 8 January 2026

8 January 2024

DATE

CERTIFICATE OF TRAINING
PCTEL, Inc.

Dale Bass

Technical Trainer

NCS
NETWORK CABLING SERVICES, INC.
710 Industry Road | Longwood, FL 32750
Phone: 407-331-3444 Fax: 407-331-0132
Email: skoller@ncscabling.com

PORT ORANGE PUBLIC UTILITIES
FIELD OPERATIONS BUILDING
4505 CLYDE MORRIS BOULEVARD
PORT ORANGE, FLORIDA 32129

BUDGETARY
EMERGENCY RESPONDER RADIO ENHANCEMENT SYSTEM
(ERRES)

November 12, 2024

BUDGETARY SCOPE OF WORK:

Provide and install a complete Public Safety Two Way Radio Enhancement Signal Booster System to provide enhanced two-way radio reception utilizing an amplified booster system, Yagi outdoor directional antenna, and an array of interior antennas to meet the requirements of the Authority Having Jurisdiction (AHJ) regarding Two Way Radio Enhancement Systems. Final system design is to be based on an ERRC report as evaluated by the AHJ.

BOOSTER LOCATION:

Provide and install one (1) (700-800 MHz) digitized public safety booster in a location to be determined. Provide and install LMR400 coaxial riser rated cable in conduit from the building exterior to the booster location to meet installation guidelines. Install one (1) J-bar antenna mast and one (1) Yagi exterior antenna and weatherproof enclosure. Antenna to be configured to receive maximum signal. Install one (1) in-line lightning protector in a NEMA rated enclosure to meet the engineered specification.

Provide and install one (1) 100 AH battery backup system and one (1) annunciator panel to meet engineered specifications and AHJ code requirements.

ANTENNAS:

Provide and install 1/2" Aluminum Plenum Rated Low-loss Air Dielectric Armored Coaxial Cable (must be preapproved by the AHJ as an alternative to conduit) from the booster location to each designated interior antenna location. Terminate coaxial cable on splitters and couplers in NEMA rated enclosures. Antennas engineered as required to achieve maximum antenna coverage. Verify antenna isolation and perform an RF spectrum analysis to confirm compliant operation. Register the booster as required with the FCC.

GENERAL SPECIFICATIONS:

- Donor antenna cable to be LMR400 low loss coaxial riser rated cable run in conduit to meet specification.
- Coaxial Cable will terminate on the Public Safety Booster located in the designated room.
- Interior antenna cable to be 1/2" Aluminum Plenum Rated Low-loss Air Dielectric Armored Coax (must be preapproved by the AHJ) installed to meet installation guidelines.
- All coaxial cable will terminate in a NEMA rated enclosure at each splitter, coupler, antenna, and protector.
- Coaxial Cable to be tested.
- NCS will warranty all labor and materials for a period of 1 year from the date of acceptance of the system.

- Only the work identified in this proposal is included, any other work or changes can be addressed in a revised proposal when changes are received.
- Pricing is based upon standard working hours and adequate access to install cable.
- AHJ submittal package provided.

EXEMPTIONS / ASSUMPTIONS:

- Donor antenna conduit to be provided and installed by others.
- All floor and wall penetrations to be provided and fire caulked by others.
- Roof penetration, if required, to be by others.
- Dry contact alarm relays in the designated room, integration, and connectivity to the fire alarm communications panel to be provided by others.
- One (1) dedicated 20-amp circuit with lockout required for the booster and battery backup to be provided by others at the booster location.
- Electrician to provide ground bars and grounding of equipment at the booster headend and donor antenna locations.
- 2-hour fire rated BDA location and risers to be hardened by others if required.
- Additional filters that may be required due to interference issues caused by an onsite transmitter are not included.
- Non-union labor.
- Patching and / or painting of drywall, ceilings, walls, etc.
- No Liquidated or consequential damages.

Total BUDGETARY ERRES Cost: *$38,005.00

**Should Network Cabling Services, Inc. be required to obtain the services of an attorney to collect any sums which may be due under this contract, and which are not paid, the Network Cabling Services, Inc. shall be entitled to all reasonable attorney's fees on behalf of their counsel in bringing or enforcing any of their rights under this agreement, said fees to include Court costs and interest, and shall include cost and attorney's fees for appellate work.*

All pricing is good for 30-day period, if change order is not accepted in writing within this period all wire, PVC products and all steel/metal products will have to be repriced at invoice plus mark-up for profit and overhead. This is a result of the continuously rising cost of these materials. Due to the volatile market, to save all parties involved (Owner, General Contractor, Electrical Contractor and NCS/Network Cabling Services, Inc.) an added cost associated with the continuous rising cost of all copper wire, Network Cabling Services, Inc. reserves the right (if approved by Owner/General Contractor) to purchase the wire and store on site in a storage container provided by NCS. NCS would then ask to be paid within the first 30 days of the contract for this wire purchase. If not accepted by (Owner/General Contractor) NCS would then have the right to re-price all wire at invoice cost plus mark up of profit and overhead at time of wire purchase. We at NCS feel that this is the best solution for all parties involved (General Contractor, Electrical Contractor and NCS) but mainly the Owner. Network Cabling Services, Inc. shall be entitled to a finance charge of 1 ½% per month on the unpaid balance of any amounts which are not paid within 30 days after the due date herein.

All material is guaranteed to be as specified. All work to be completed in a workmanlike manner according to standard practices. Any alteration or deviation from the above specifications involving extra costs will be executed only upon written orders and will become an extra charge over and above the estimate. No contingencies have been made for strikes, accidents, or delays beyond our control. The owner is to carry fire, tornado, theft and other necessary insurance. Our workers are fully covered by Workmen's Compensation Insurance.

_____

Authorized Signature

_____

Date

***Note: This proposal may be withdrawn by us if not accepted in 30 days.**

Thank you for the opportunity,

Steve Koller
Public Safety Das Manager
FCC GROL: PG00064800

NCS
NETWORK CABLING SERVICES, INC.
710 Industry Road - Suite 1000 - Longwood, FL 32750
Phone: 407-331-3444 Fax: 407-331-0132
Email: cdefilippis@ncscabling.com

Estimate #50-24347

City of Port Orange
Public Utilities
Field Operations
Building

11/12/2024

SCOPE OF WORK

PDS: Brief Description

INCLUSIONS:

- Install J-Hooks attached to Building Structure, for proper cabling support.
  - Coming off Cable Tray (Installed by E,.C)

- I.T Room #141 (MDF):
  - Administration Section:
    - Install Cat 6 CMP Cables from MDF to locations.
      - (16) D1 Cat 6 Blue Cables @ TV Locations
        - HDMI to be installed from TV to Wall Jacks
      - (45) D2 Cat 6 Cables @ Office Locations
      - (08) D6 Cat 6 Blue Cables @ Floor Box Locations
        - OSP to be installed in slab to nearest accessible ceiling
        - UTP from accessible ceiling to MDF
      - (05) D2 Cat 6 Green Cables @ Wireless Access Point (WAPs)
      - (02) D1 Cat 6 Yellow Cables @ CCTV Locations

  - Warehouse Section:
    - Install Cat 6 CMP Cables from MDF to locations.
      - (02) D1 Cat 6 Blue Cables @ Wall Phone Locations
      - (08) D2 Cat 6 Blue Cables @ Warehouse Locations
      - (02) D2 Cat 6 Green Cables @ Wireless Access Point (WAPs)
      - (06) D1 Cat 6 Yellow Cables @ CCTV Locations

- Cables will be terminated at Locations using Cat 6 Jacks and installed in:
  - 2-6 Port Flush Mounted Faceplates (Office)
  - 2 Port Surface Box (WAPs)
  - 1 Port Surface Box (CCTV)
  - 2 Port Flush Mounted Faceplates (CATV)
    - HDMI Insert to be installed for Cable down to lower faceplate

- MDF:
  - Provide & Install:
    - (02) 4 Post CPI Floor Rack #50120-B03
    - (06) 6” Vertical Panduit Wire Managers #PR2VDS06
    - (01) 12” Ladder Rack CPI #10250-712
    - (01) Isolation Pad CPI #10605-019
    - (01) 6” Elevation Kit CPI #10508-706
    - (02) 48 Port Cat 6 Commscope Patch Panels #760180059
    - (02) Horizontal CPI Power Strips #12850-705
    - (11) 4x8x3/4 AC Graded Plywood w/ 2 Coats of Fire-Retardant Paint

- Fiber-Optic Backbone:
  - Install (1) 12 Strand Outdoor Rated Single Mode Fiber Optic Cable from MDF to each Gate NEMA Box
  - Fiber will get terminated using SM "ST" Splice Cassettes
  - Provide and install (01) Fiber LIU w/ ST Fiber Bulkhead on MDF I.T Rack.
  - Provide and install (01) Fiber LIU w/ ST Fiber Bulkhead in each Gate NEMA Box
- Grounding:
  - #6 THHN Wire to be used to Ground n Bond 2 Post Rack and 12" Ladder Rack in MDF, with 2 Hole Compression Lugs
    - Bus Bar and Grounding Source to be provided by E.C
- Labeling:
  - Cat 6 Cable to have wrap around labels at each termination point
    - TR/Room/Patch Panel/Port
  - Face plates to signify TR/Room/Patch Panel/Port
  - Patch Panel to signify Patch Panel/ Port
  - Fiber cable to have wrap around labels at each termination point
    - Strand Count/Type/Room From/Room To
  - Fiber LIU
    - Strand Count/Type/Room From/Room To
- Testing:
  - Cat 6 to be Certified with a Level 5 Fluke DSX
  - Fiber to be Certified with a Level 5 Fluke DSX with fiber modules.

- Warranty:
  - NCS will warranty all labor and materials for a period of 1 year from the date of acceptance of the system.
  - NCS to provide a 25 Year Manufacture Warranty

EXCLUSIONS:

- Installation of WAPs is NOT included in this proposal.
  - As per responsibility matrix
- Excludes all active Switch, Camera, and any other equipment & not specifically covered in this quote.
  - As per responsibility matrix
- Patch Cords are included with this proposal, to be installed by Owners Representative
- Excludes any TV Brackets and/or TV
  - Owner Provided and Installed, as per responsibility matrix
- Permit and Fees are included with this proposal
- Fire Caulking is to be performed by E.C or G.C
- Scissor Lift is included with this proposal
- Proposal is based drawings dated 9/30/2024
- FINAL Scope Review to be performed prior to contract signing
- Cables Tray in Hallways, Conduit, Sleeves and Back Boxes to be installed by E.C

Total PDS Project Sum: *$101,500.00*

ACCESS CONTROL: Brief Description

Access Control system per drawings as listed above. The quantities are based strictly on project drawings. Additional devices that may be required are not included within this proposal. The project is also bid for electrical contractor to provide all wall penetrations with sleeves and any necessary conduit raceways or boxes with minimum ¾ inch conduit stub ups. All cabling above ceiling will be run free wire.

INCLUSIONS:

- Provide & install plenum-rated composite access control cabling to (26) door locations and (3) gate locations.
- Provide & install (2) Intelligent System Controllers.
- Provide & install (2) LSP Power Supplies.
- Provide & install (16) Reader Input Modules.
- Provide & install (34) HID Card Readers along with Door Contacts, and wired connections to locking hardware.
- Provide & install Access Control Workstation & Software.
- Provide (50) Access Cards.
- Commission and test the system.
- Provide all close out documents and as-built drawings.

EXCLUSIONS:

- Any 120Vac for control panels.
- All Door Hardware to be provided by others.
- Any raceway or boxes required for cabling/equipment.
- All fire caulking of penetrations shall be done by others.

Total ACCESS CONTROL Project "Budgetary" Sum: *$133,900.00*

FIRE ALARM : Brief Description

Fire Alarm system per drawings and specifications as listed above. The quantities are based strictly on project drawings. Additional devices may be required for a code compliant system and are not included within this proposal. The project is also bid for electrical contractor to provide all wall penetrations with sleeves and any necessary conduit raceways or boxes with minimum ¾ inch conduit stub ups. All cabling above ceiling will be run free wire.

INCLUSIONS***:***

- All fire alarm equipment depicted on contract drawings.
- Shop drawings for submittal to engineer and county for permitting.
- Commission and test the system.
- Provide all close out documents and as-built drawings.
- Surge protection for any cabling leaving building.

EXCLUSIONS***:***

- Any 120 Vac for control panels.
- Duct Detectors are to be mounted by Mechanical Contractor.
- Lockbox is to be provided by others.
- Any raceway or boxes required for fire alarm cabling/equipment.
- All fire caulking of penetrations shall be done by others.
- Monitoring of the fire alarm system is not included in the base proposal.

Total FIRE ALARM Project "Budgetary" Sum: *$38,900.00*

CCTV SYSTEM : Brief Description

CCTV system per drawings as listed above. The quantities are based strictly on project drawings. Additional devices that may be required are not included within this proposal. The project is also bid for electrical contractor to provide all wall penetrations with sleeves and any necessary conduit raceways or boxes with minimum ¾ inch conduit stub ups. All cabling above ceiling will be run free wire.

INCLUSIONS*:*

- Provide and install Cat6 cabling from MDF to (10) camera locations, midspan PoE extenders as necessary.
- Provide & install (6) 180 Dome Cameras w/ mounting accessories.
- Provide & install (4) 360 Dome Cameras w/ mounting accessories.
- Provide and install (1) 6TB 12-Channel Video Server with VMS Software, Camera Licenses and PoE Switch.
- Provide (1) 27" Security Monitor.
- Commission and test the system.
- Provide all close out documents and as-built drawings.

EXCLUSIONS*:*

- Racks, rack power & fiber backbone by others.
- No provisions have been made to provide & install strong poles.
- Any raceway or boxes required for cabling/equipment.
- All fire caulking penetrations shall be done by others.

Total CCTV SYSTEM Project "Budgetary" Sum: *$45,800.00*

**Should Network Cabling Services, Inc. be required to obtain the services of an attorney to collect any sums which may be due under this contract and which are not paid, the Network Cabling Services, Inc. shall be entitled to all reasonable attorney's fees on behalf of their counsel in bringing or enforcing any of their rights under this agreement, said fees to include Court costs and interest, and shall include cost and attorney's fees for appellate work.*

All pricing good for 30 day period, if change order is not accepted in writing within this period of time all wire ,PVC products and all steel/metal products will have to be reprised at invoice plus mark-up for profit and overhead. This is a result of continuous rising cost of these materials.

Due to the volatile market, in an effort to save all parties involved (Owner, General Contractor, Electrical Contractor and NCS/Network Cabling Services, Inc.) and added cost associated with the continuous rising cost of all copper wire. Network Cabling Services, Inc. reserves the right (if approved by Owner/General Contractor) to purchase the wire and store on site in a storage container provided by NCS. NCS would then ask to be paid with-in the first 30 days of contract for this wire purchase. If not accepted by (Owner/General Contractor) NCS would then have the right to re-price all wire at invoice cost pus mark up of profit and overhead at time of wire purchase. We at NCS feel that this is the best solution for all parties involved (General Contractor, Electrical Contractor and NCS) but mainly the Owner.

Network Cabling Services, Inc. shall be entitled to a finance charge of 1 ½% per month on the unpaid balance of any amounts which are not paid within 30 days after the due date herein.

All material is guaranteed to be as specified. All work to be completed in a workmanlike manner according to standard practices. Any alteration or deviation from above specifications involving extra costs will be executed only upon written orders, and will become an extra charge over and above the estimate. No contingencies have been made for strikes, accidents or delays beyond our control. Owner is to carry fire, tornado, theft and other necessary insurance. Our workers are fully covered by Workmen's Compensation Insurance.

_____

Printed Name

_____

Authorized Signature

_____

Date

***Note: This proposal may be withdrawn by us if not accepted in 30 days.**

Thank you for the opportunity,

Chris DeFilippis

Project Manager

Christine Carasas

From: Chris DeFilippis <cdefilippis@ncscabling.com>
Sent: Tuesday, November 12, 2024 8:54 AM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Public Works Facility Proposals
Attachments: PORT ORANGE ERRC PROPOSAL 11-24.pdf; TESTING CERTS rev4.1.pdf; BUDGETARY ERRES Quote 10-24.pdf; Bid Form.pdf; Port Orange Public Utilities Facility Estimate # 50-24347.pdf

Wharton Smith.

Please see the attached proposals and bid form for the City of Port Orange Public Utilities Field Ops Building and get with me if you have any questions and/or concerns.

THANKS,

CHRISTOPHER DE FILIPPIS
PROJECT MANAGER
710 Industry Road
Longwood, Fl 32750
(O) 407-331-3444
(F) 407-331-0132
(C) 407-318-6192

WWW.NCSCABLING.COM

NCS
NETWORK CABLING SERVICES, INC.
Low Voltage Since 1989

LOYALTY! TRUST! INTEGRITY! COMMITMENT! EXPECTATION!

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NCS
NETWORK CABLING SERVICES, INC.
710 Industry Road | Longwood, FL 32750
Phone: 407-331-3444 Fax: 407-331-0132
Email: das@ncscabling.com

PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS BUILDING 4505 CLYDE MORRIS BOULEVARD PORT ORANGE, FLORIDA 32129

EMERGENCY RESPONDER RADIO COVERAGE (ERRC) TEST

November 12, 2024

SCOPE OF WORK:

Perform an Emergency Responder Radio Coverage (ERRC) test to measure 700-800 MHz RF transmission levels to meet the requirements of the Authority Having Jurisdiction (AHJ).

This test and survey requires an FCC GROL holder and/or a PC Tel factory certified technician physically performing on-site tasks to identify and document where frequencies and transmission levels for emergency first-responder radio networks pass or fail.

EMERGENCY RESPONDER RADIO COVERAGE TEST (ERRC) PROCEDURE:

Network Cabling Services, Inc. will review the documents and verify the requirements with the AHJ including information on frequencies, radio site locations, and any other jurisdiction-specific requirements such as FCC GROL and test equipment technician certification.

NCS will tailor the ERRC test to the specific frequencies used by the local first responders. Some municipalities have first responders on separate systems meaning multiple frequency bands need to be identified. NCS will provide the pre-design research needed to flush out these requirements. Per NFPA 1225, 2022 edition the AHJ and the FCC frequency license holder are tasked with providing technical information specific to their requirements for testing purposes.

Per NFPA guidelines, NCS will prepare a compliant testing grid based on client provided floor plans. Testing will be completed using a grid pattern with a minimum of 20 test grids for each floor tested (or more depending on building size and local code requirements) to a maximum of 80 ft. (24.4 M) to encompass the entire floor area of each building.

Following the established floor grid pattern for each floor, the PC Tel Factory certified technician and / or the FCC GROL holder will conduct a physical walk test using the PC Tel tester to sample signal strength measurements and other AHJ specific criteria. Readings will be collected and noted during the walk test in all accessible grids within the defined grid area boundary.

The testing device will be the 08902-E IBFLEX PLATFORM AGILENT E4438C.

Two signal failures per floor are typically permitted (90% passing grids required), though this can vary by building type and local enforcement of fire codes. Critical areas require a 99% pass rate.

TEST REPORT:

Emergency Responder Radio Coverage results are prepared on a per building and per floor basis, in a summary format indicating building location, numerical grid RSSI value, SINR, FBER, and any additional criteria required by the AHJ.

NCS provides a visual grid map of all test results with passing and failing grids noted for each floor of each building tested based on parameters established by the AHJ.

Additional site-specific information is provided as required and may include a technician synopsis. Typically, weather conditions at the time of the test and any disclaimers are listed in this section of the report.

AUTHORITY HAVING JURISDICTION (AHJ):

The final evaluation regarding building enhancement requiring a public safety two-way radio system (BDA) is determined by the AHJ.

All NCS ERRC testing includes submission of the documentation to the AHJ, if desired. Supporting documentation includes calibration details of the testing device, a copy of the FCC GROL, and individual certifications for each technician performing the test and survey. A copy of the report is also submitted to the client.

ASSUMPTIONS:

- Test grid accuracy is based upon Owner or General contractor provided up-to-date dimensional floor plans for each floor of each building to be tested.
- Owner, Manager, or General Contractor to provide access to each area to perform testing to include private offices and restricted areas throughout the building.
- An escort will be provided, at no charge to NCS, to provide direction and unlock doors as required during the entire testing and surveying process.
- Escort to remain with the test technician(s) throughout the entire testing process.
- All test and survey procedures are to be performed during regular business hours weekdays.

Total ERRC & DAQ Cost: ***$1,094.00****

All work to be completed in a workmanlike manner according to standard practices. Any alteration or deviation from the above specifications involving extra costs will be executed only upon written orders and will become an extra charge over and above the estimate. No contingencies have been made for strikes, accidents, or delays beyond our control. Owner is to carry fire, tornado, theft, and other necessary insurance. NCS employees are fully covered by Workmen's Compensation Insurance.

_____

Authorized Signature ***Date***

Thank you for the opportunity,
Steve Koller
Public Safety DAS Manager
FCC GROL: PG00064800

NCS
NETWORK CABLING SERVICES, INC.
710 Industry Road | Longwood, FL 32750
Phone: 407-331-3444 Fax: 407-331-0132
Email: skoller@ncscabling.com

PORT ORANGE PUBLIC UTILITIES
FIELD OPERATIONS BUILDING
4505 CLYDE MORRIS BOULEVARD
PORT ORANGE, FLORIDA 32129

BUDGETARY
EMERGENCY RESPONDER RADIO ENHANCEMENT SYSTEM
(ERRES)

November 12, 2024

BUDGETARY SCOPE OF WORK:

Provide and install a complete Public Safety Two Way Radio Enhancement Signal Booster System to provide enhanced two-way radio reception utilizing an amplified booster system, Yagi outdoor directional antenna, and an array of interior antennas to meet the requirements of the Authority Having Jurisdiction (AHJ) regarding Two Way Radio Enhancement Systems. Final system design is to be based on an ERRC report as evaluated by the AHJ.

BOOSTER LOCATION:

Provide and install one (1) (700-800 MHz) digitized public safety booster in a location to be determined. Provide and install LMR400 coaxial riser rated cable in conduit from the building exterior to the booster location to meet installation guidelines. Install one (1) J-bar antenna mast and one (1) Yagi exterior antenna and weatherproof enclosure. Antenna to be configured to receive maximum signal. Install one (1) in-line lightning protector in a NEMA rated enclosure to meet the engineered specification.

Provide and install one (1) 100 AH battery backup system and one (1) annunciator panel to meet engineered specifications and AHJ code requirements.

ANTENNAS:

Provide and install 1/2" Aluminum Plenum Rated Low-loss Air Dielectric Armored Coaxial Cable (must be preapproved by the AHJ as an alternative to conduit) from the booster location to each designated interior antenna location. Terminate coaxial cable on splitters and couplers in NEMA rated enclosures. Antennas engineered as required to achieve maximum antenna coverage. Verify antenna isolation and perform an RF spectrum analysis to confirm compliant operation. Register the booster as required with the FCC.

GENERAL SPECIFICATIONS:

- Donor antenna cable to be LMR400 low loss coaxial riser rated cable run in conduit to meet specification.
- Coaxial Cable will terminate on the Public Safety Booster located in the designated room.
- Interior antenna cable to be 1/2" Aluminum Plenum Rated Low-loss Air Dielectric Armored Coax (must be preapproved by the AHJ) installed to meet installation guidelines.
- All coaxial cable will terminate in a NEMA rated enclosure at each splitter, coupler, antenna, and protector.
- Coaxial Cable to be tested.
- NCS will warranty all labor and materials for a period of 1 year from the date of acceptance of the system.

- Only the work identified in this proposal is included, any other work or changes can be addressed in a revised proposal when changes are received.
- Pricing is based upon standard working hours and adequate access to install cable.
- AHJ submittal package provided.

EXEMPTIONS / ASSUMPTIONS:

- Donor antenna conduit to be provided and installed by others.
- All floor and wall penetrations to be provided and fire caulked by others.
- Roof penetration, if required, to be by others.
- Dry contact alarm relays in the designated room, integration, and connectivity to the fire alarm communications panel to be provided by others.
- One (1) dedicated 20-amp circuit with lockout required for the booster and battery backup to be provided by others at the booster location.
- Electrician to provide ground bars and grounding of equipment at the booster headend and donor antenna locations.
- 2-hour fire rated BDA location and risers to be hardened by others if required.
- Additional filters that may be required due to interference issues caused by an onsite transmitter are not included.
- Non-union labor.
- Patching and / or painting of drywall, ceilings, walls, etc.
- No Liquidated or consequential damages.

Total BUDGETARY ERRES Cost: *$38,005.00

**Should Network Cabling Services, Inc. be required to obtain the services of an attorney to collect any sums which may be due under this contract, and which are not paid, the Network Cabling Services, Inc. shall be entitled to all reasonable attorney's fees on behalf of their counsel in bringing or enforcing any of their rights under this agreement, said fees to include Court costs and interest, and shall include cost and attorney's fees for appellate work.*

All pricing is good for 30-day period, if change order is not accepted in writing within this period all wire, PVC products and all steel/metal products will have to be repriced at invoice plus mark-up for profit and overhead. This is a result of the continuously rising cost of these materials. Due to the volatile market, to save all parties involved (Owner, General Contractor, Electrical Contractor and NCS/Network Cabling Services, Inc.) an added cost associated with the continuous rising cost of all copper wire, Network Cabling Services, Inc. reserves the right (if approved by Owner/General Contractor) to purchase the wire and store on site in a storage container provided by NCS. NCS would then ask to be paid within the first 30 days of the contract for this wire purchase. If not accepted by (Owner/General Contractor) NCS would then have the right to re-price all wire at invoice cost plus mark up of profit and overhead at time of wire purchase. We at NCS feel that this is the best solution for all parties involved (General Contractor, Electrical Contractor and NCS) but mainly the Owner. Network Cabling Services, Inc. shall be entitled to a finance charge of 1 ½% per month on the unpaid balance of any amounts which are not paid within 30 days after the due date herein.

All material is guaranteed to be as specified. All work to be completed in a workmanlike manner according to standard practices. Any alteration or deviation from the above specifications involving extra costs will be executed only upon written orders and will become an extra charge over and above the estimate. No contingencies have been made for strikes, accidents, or delays beyond our control. The owner is to carry fire, tornado, theft and other necessary insurance. Our workers are fully covered by Workmen's Compensation Insurance.

_____

Authorized Signature

_____

Date

***Note: This proposal may be withdrawn by us if not accepted in 30 days.**

Thank you for the opportunity,

Steve Koller
Public Safety Das Manager
FCC GROL: PG00064800

Certificate of Calibration

MODEL: 08902-E IBFLEX BASE PLATFORM (10 MHZ TO 6 GHZ CAPABLE) WITH CDMA AND EVDO HOLDOVER

SERIAL NUMBER: 82006040
CALIBRATION DATE: August 2, 2023
RECALIBRATION DUE: August 2, 2025

This calibration certificate documents that the product identified above meets all published specifications and has been calibrated using instruments whose accuracies are traceable to the National Institute of Standards and Technology.

Instruments:

Make	Model	Serial Number	Calibration Due
Agilent	E4438C	MY45093996	1/31/2025

The policies and procedures at this facility comply with ISO 9001:2015.

B. Mehring

Authorized Signature

PCTEL

22600 Gateway Center Drive, Suite 100 Clarksburg MD 20871 USA
www.pctel.com

UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

General Radiotelephone Operator License

Official Copy

KOLLER, STEVEN L
502 TWIN LAKES DR
TITUSVILLE, FL 32780

FCC Registration Number (FRN): 0029027604

Special Conditions / Endorsements

Ship Radar Endorsement.

Grant Date	Effective Date	Print Date	Expiration Date
12-04-2019	12-04-2019	12-05-2019	
File Number	**Serial Number**		**Date of Birth**
0008903378	PG00064800		06-07-1949

THIS LICENSE IS NOT TRANSFERABLE

Steven L Koller

(Licensee's Signature)

FCC 605-FRC - May 2007

PCTEL

Certificate of Training

THIS CERTIFICATE IS PROUDLY PRESENTED TO

Steven Koller

For successfully completing
PCTEL® SeeHawk Touch: Public Safety Testing Methods
training course

CERTIFICATE OF TRAINING
PCTEL, Inc.

4 February 2020

DATE

Dale Bass

Dale Bass, Senior RF Engineer

Karl Warrick
Karl Warrick
Karl Warrick

PCTEL

Certificate of Training

THIS CERTIFICATE IS PROUDLY PRESENTED TO

Gryphin Geer

NETWORK CABLING SERVICES

For Successfully completing PCTEL® SeeHawk Touch: Public Safety Testing Methods training Course

Certification Valid Till: 8 January 2026

8 January 2024

DATE

CERTIFICATE OF TRAINING
PCTEL, Inc.

Dale Bass

Technical Trainer

Christine Carasas

From: Steven Koller <skoller@ncscabling.com>
Sent: Thursday, November 7, 2024 9:08 AM
To: Wharton Smith Commercial Estimating
Subject: Emergency Responder Radio coverage test Port Orang Public Works Facility
Attachments: PORT ORANGE ERRC PROPOSAL 11-24.pdf; TESTING CERTS rev4.1.pdf; BUDGETARY ERRES Quote 10-24.pdf

Importance: High

Good morning~

Thank you for the opportunity to reply to your ITB for The PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS BUILDING.

Our proposal to provide an Emergency Responder Radio Coverage test is attached for your review.

AHJs now require NFPA / IFC compliant Emergency Responder Radio Coverage tests and / or Delivered Audio Quality (DAQ) surveys to obtain a CERTIFICATE OF OCCUPANCY.

NCS RF tests are performed by an FCC Licensed GROL & factory certified PC Tel test technician. We assist with Testing compliance including researching local jurisdiction coverage testing protocols and providing easy to understand AHJ compliant test results.

Your purchase order or our signed scope of work will allow us to schedule an Emergency Responder Radio Coverage test and / or Delivered Audio Quality (DAQ) survey to meet your construction schedule and code compliance requirements.

I have also attached a Budgetary Emergency Responder Radio Enhancement System (ERRES) quotation. This budgetary quote is based upon the assumption of total building failure. If required, the final BDA system design would be dependent on the results of the ERRC test and DAQ survey as evaluated by the AHJ.

If you have questions or need clarification on any item please contact me. I would appreciate your feedback.

Best,
Steve

STEVE KOLLER
PUBLIC SAFETY DAS MANAGER
FCC: # 0029027604

skoller@ncscabling.com

710 Industry Road

Longwood, FL 32750
(C) 407-885-2027
(O) 407-331-3444
(F) 407-331-0132

WWW.NCSCABLING.COM

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Low Voltage Since 1989

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1.800.515.5613
www.jscsystems.net
info@jscsystems.net

November 7, 2024

Wharton-Smith
750 Monroe Road
Sanford, FL 32771

Attn: James Manyette
Email: jmanyette@whartonsmith.com

Re: Port Orange Public Utilities Field Ops Bldg. – Systems Proposal

JSC Systems, Inc. is pleased to furnish pricing for the following scope of work on the above referenced project. Pricing is based only on drawings sheets dated 9/30/2024, any changes/additions will be an added cost. We acknowledge 0 addendums at this time. Drawings are not stamped by an Engineer of Record as required by codes. Third party electrical engineer stamp is not included in proposal.

Fire Alarm System – No Specification Section – JSC Systems proposes to provide and install an addressable fire alarm system based on the specification listed above and as shown on the project drawings.

- Providing EST Fire Alarm System
- Horn Strobe Evacuation
- Class B Circuits in conduit
- Conduit by others
- No 2 hour rated fire walls - 2 hour rated cabling or raceways not required

Voice/Data/CATV Structured Wiring Distribution System – Specification Section 27 00 00 - JSC Systems proposes to provide and install a new structured wiring system as shown on the project drawings.

- All active network equipment (WAPs, network switches, routers, computers, etc.) by provided/installed by others
- All pathways including conduit (with pull string), Microduct, Cable tray (hallways) provided/installed by others (excluding J-hooks)
- All backboards, paint, sleeves, firestop provided/installed by others
- All Grounding Conductors, TGBM and TGBs provided/installed by Electrical Contractor
- Conduit Grounding provided/installed by Electrical Contractor
- Temporary voice/data for construction offices, trailers etc. are excluded
- All Access Hatches provided/installed by others
- All cable in/below slab will require a wet rating. These cables will require a transition to indoor type cable within 50' of leaving the PVC conduit

This proposal is based on JSC Systems, Inc

1. Furnishing material, wire, and labor for installation of the above listed system(s) in the quantities as shown on the drawings. We shall provide wire, system devices and complete final control panel terminations, with the exception of conduit, standard electrical boxes, terminal cabinets, plywood backboards, Main 120VAC power wiring, which are to be supplied and installed by your firm
2. Furnishing City / County / State permit fees, if applicable.
3. Furnishing submittals, shop drawings, as-built drawings, owner, and maintenance manuals as required.
4. Providing termination of central equipment, programming, and one man for final testing, inspection, certification, and owner instruction for the above referenced system(s).
5. Providing our standard insurance coverage for this project. If additional insurance is required including "additional insured's," we reserve the right to amend our proposal to include the additional insurance and pricing will be adjusted accordingly. The "additional insured" fee is established at $575.00 per "additional insured".

Your firm to:

1. Furnish and install all conduit, standard boxes, all terminal cabinets, 120VAC power and 120VAC power wiring. All conduit shall be furnished with nylon pull string. Special boxes such as Fire Alarm System control panel cabinets, special back boxes, etc. to be furnished by JSC Systems, Inc. and installed by your firm.
2. Work with JSC Systems, Inc. to establish a project schedule with appropriate updates for our use in order to schedule manpower, long lead time equipment items, etc.
3. Work with JSC Systems, Inc. to establish inspection dates, completion dates, change in work, and other contractor coordination, etc. in a timely manner.
4. Furnish fire stop material for all wall and floor penetrations.
5. Furnish Auto Cad 2000 or newer backgrounds for our use in developing submittal and permit drawings. If electronic background drawings are not available, an additional fee of $75.00 per hour will be charged to develop electronic background drawings from which we will develop our shop drawings.
6. Furnish all patching and painting, etc. as necessary.

Pricing is as follows:

Fire Alarm System – Price: $32.542.00

Voice/Data/CATV System – Price: $92,247.00

Terms and Exclusions:

- System price is based of acceptance within 30 (Thirty) days of the proposal date.
- Proposal is based on project specifications and project electrical system sheets, any alterations to quantities and/or functions by the Owner, Architect, Engineer, Local and/or State Fire Marshal's office shall incur a change in the proposed system price.
- This proposal is based upon all wire being in conduit. If free wire is used, or Plenum rated cable is required, we reserve the right to revise our proposal for Plenum rated cable and cable management.
- Surge suppression is included for our systems (if specified).
- A bond is currently not included in our proposal pricing.
- JSC Systems, Inc. shall provide a 1 (one) year warranty covering material furnished by our company, excluding Acts of God, fire, theft, vandalism or tampering by unauthorized personnel. All warranty work shall be completed during normal working hours, Monday through Friday. If warranty work is requested after business hours or on holidays, it will be billed at our after hours and holiday service rates.

- Monthly billing is rendered based on work in place on the 25th of the month. Payment of completed work during the month shall be due on the 10th of the following month. JSC Systems, Inc. shall have the right to stop work without penalty for non- payment within terms upon 10 (ten) days of written notification. JSC Systems, Inc. shall have title to and the right to possession of the equipment as outlined above until receipt of total payment.
- JSC Systems, Inc. reserves the right to deny any contract which may result from this proposal should it not be in full compliance with standard AIA contracts and documents.
- **Man lift equipment is not provided in this proposal price.**

We appreciate the opportunity to work with your firm on this project.
Please contact us if there any questions.

Sincerely,



Cliff T. Long II
Pre-Construction Manager
Proposal # 23386076759

_____
Accepted By: Date

_____
Print Name

James Manyette

From: Clifford Long <c.long@jscsystems.net>
Sent: Thursday, November 7, 2024 8:02 AM
To: James Manyette
Cc: Shannon Gustavson; Ken Walters
Subject: JSC System Proposal - Port Orange Public Utilities Field Ops Bldg.
Attachments: JSC System Proposal - Port Orange Public Utilities Field Ops Bldg. CTL 11-7-24.pdf

Hello, James

The proposal for the project mentioned above is ready for your review. If you have any questions please let me know.

Thanks,
Clifford T. Long II
Pre-Construction Manager
JSC Systems
c.long@jscsystems.net
c:(904)832-6226
o:(904)737-3511

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C & H DEVELOPMENT

Incomplete - No Bid Form, No oil/water sep., signage, Parking Apron, Soding @ slopes, or Alt #1 & 2

CLIENT: Wharton Smith
PROJECT: Port Orange - Utilities Ops Building
LOCATION: Port Orange, FL

Bid Date: 11-12-2024 Original

DESCRIPTION	QTY	UNIT	REMARKS
Mobilization and Erosion Control			REMARKS
Permits Excluded	0	ls	Excluded by others
Testing	1	ls	
Mobilization	1	ls	
Utility Locating	1	sum	
Flag Property Wetland Area	550	ls	
Construction Entrance	1	ls	
Silt Fencing	2,300	ft	
Turbidity Curtain	250	ft	
Inlet Protection	19	ea	
Tree Protection	500	lf	
Surveying	1	ls	
SWPPP Plan and Maintenance	1	ls	
Submittals	1	ls	
Bond	0	LS	ADD AFTER BASE CONTRACT
SUBTOTAL - Mobilization and Erosion Control			$111,990
Site Demolition			
All Utilities/Light Pulls/ Transforms/Meters to be removed or relocated by others		ok	Excluded
Underpinning, abandon existing utilities, burried existing debris is excluded		ok	Excluded
		ok	Excluded
All Utility/Light Pulls/ Transforms/Meters to be removed by others		ok	Excluded
Remove Concrete	0	sf	None Shown
Remove Curb	0	sf	None Shown
Remove Existing Asphalt	11,500	sf	
Remove Fencing	950	lf	
Remove Existing Inlets	2	ea	
Dumpsters	1	ls	
Tree Removal 0-12	268	ea	
Tree Removal 13-24	154	ea	
Tree Removal 25 and over	7	ea	
Misc Demolition	1	ls	
SUBTOTAL - Site Demolition			$222,930
Earthwork and Site Clearing			

Layout	1	ls	
Clearing and Grubbing	570,100	sf	
General Site Grading	570,100	sf	
Dirt	1	ls	
Dewatering	1	ls	
As Builts	1	ls	
Proof Rolling	1	ls	
Surface Water Area Mitigation	81,500	sf	
Wetland Mitigation	8,600	sf	
SUBTOTAL - Earthwork and Site Clearing			$1,036,596
Drainage and Utilities			
Storm water			
Drainage Structures			
Type D Inlet	8	ea	
MES	5	ea	
Storm Manhole	1	ea	
6" Cleanouts	16	ea	
Roof drains	1	ls	
Trench Drain	110	lf	
Piping			
8" PVC	550	lf	
10" PVC	650	lf	
12" PVC	810	lf	
18" HDPE	160	lf	
24" HDPE	310	lf	
30" HDPE	400	lf	
36" RCP	60	lf	
Brick/Fabric/Fittings	1	ls	
Storm Subtotal			$414,504

DESCRIPTION	QTY	UNIT	REMARKS
Sewer			
Piping	1	ls	
Connect to existing	1	ls	
Sewer Man Holes	4	ea	
Oil Seperator Excluded PROVIDE ADD: Not shown on Plbg.	0	ea	Excluded by others
Sewer Subtotal			$76,200
Water and Fire			
Water Piping and Misc	1	ls	
Wet Tap	1	ls	
Fire Piping and Misc	1	ls	
Water Subtotal			$205,200
Exterior Improvements			
Site Furnishings, fixtures, or accessories Excluded ok			Excluded by others
Guardrails/Fencing/Retaining Walls Excluded ok			Excluded by others
Bollards, utility sleeves, street lighting, lighting bases EXCLUDED ok			Excluded by others
Landscaping and Irrigation Excluded ok			Excluded by others
Asphalt Paving			
1.5" SUPERPAVE Asphalt Concrete Type SP-9.5	596	tons	
6" of crushed concrete LBR T-180	2,384	tons	

12" Stabilized Subbase T-180	2,384	tons		
Striping	119,725	sf	All Signage by others	
Wheel Stops	17	ea		
	Asphalt Paving and Striping Sub-Total			$474,620
Parking Lot Concrete Apron			Excluded	
4" Concrete Pedestrian Concrete Pavement - Rounded Front Edge		sf	Excluded	
ADA Ramps		ea	Excluded	
Stamped Concrete, Pavers, Specialty Surfaces EXCLUDED			Excluded	
F Curb	2,200	lf		
D Curb	1,200	lf		
Sidewalk Thicken Edge		lf	Excluded	
	Concrete Subtotal			$89,040
SUBTOTAL - Exterior Improvements	563,660			
TOTAL JOB COST				**$2,631,079.50**

ADDITIONS AND ALTERNATES

DESCRIPTION	REMARKS	TOTALS
BOND	3.8%	$105,243
	Grand Total	$2,736,323

Christine Carasas

From: C&H Development <ch.estimating@gmail.com>
Sent: Tuesday, November 12, 2024 12:39 PM
To: Wharton Smith Commercial Estimating
Cc: Jeremiah Mitchell; jmanyeete@whartonsmith.com
Subject: Port Orange Ops Building - C&H Development - Site Proposal
Attachments: Port Orange - Utilities Ops - WSI Proposal 11-12-2024.pdf

James,
C&H Development is pleased to provide the attached Proposal for the Port Orange Ops Building. Please review and let us know if you have any questions or comments. Any feedback would be greatly appreciated. We thank you and WSI for the opportunity and look forward to hearing from you soon.

--
Thank you,

Paul Kidder
C&H Development
Preconstruction
336-392-9599

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Subcontractor Bid Form-General

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Drewry Site Development
Scope of Work:	Sitework

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	$ 2,155,861.17
Amount in Words:	

(1.2) Alternates (Voluntary)

Load Excess Fill & Haul	$270,000.00
Load Excess Fill , Haul By Others	$ 90,000.00
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	
Amount:	$

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	3%

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	See Below.	Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

RFI 1-001 through 1-012 Date 11/1/2024

RFI 1-013 through 1-014 Date 11/6/2024

RFI 1-015 and 2-016 Date 11/7/2024

RFI 2-017 through 2-019 Date 11/11/2024

RFI 2-022 through 2-024 Date 11/11/2024

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10/22/24	WSI No.	5	Dated:	10/31//24
WSI No.	2	Dated:	10/24/24	WSI No.	6	Dated:	11/4/24
WSI No.	3	Dated:	10/24/24	WSI No.	7	Dated:	11/6/24
	4		10/28/24		8		11/8/24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.	1	Dated:	8/7/2020	Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Drewry Site Development

Company Name

400 Venture Drive, Ste. F, South Daytona, Fl 32119

Address (Street, City, State, Zip)

(386) 313-3220 Scott@DrewrySite.com

Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of _____.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Drewry Site Development

By: _____

Printed Name: Scott Drewry

Title: Managing Member

Dated: 11/12/24

License No.: GC1532583

Subcontractor Bid Form-General

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Drewry Site Development
Scope of Work:	Concrete Flatwork

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

Concrete bids shall be complete including, but not limited to: Foundations, tie columns, column encasements, slabs on grade, "flatwork" (concrete pavement, sidewalks, equipment pads, etc.), rebar and all work associated with Division 03 specifications and drawings.

PART 1: PRICING

(1.1) Total Base Bid

(Included In Base Proposal)

Concrete "flatwork" (sidewalks, conc. pavement, equipment pads, etc.)	$ 46,000.00
All other concrete foundations, slabs, tie columns, CIP walls, etc.	$
Total Amount:	**$**
Amount in Words:	

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $50,000)

Material/Equipment Types:	
Amount:	$

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	3%

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	See Below	Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

RFI 1-001 through 1-012 Date 11/1/2024
RFI 1-013 through 1-014 Date 11/6/2024
RFI 1-015 and 2-016 Date 11/7/2024
RFI 2-017 through 2-019 Date 11/11/2024
RFI 2-020 through 2-021 Date 11/8/02024
RFI 2-022 through 2-024 Date 11/11/2024

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10/22/24	WSI No.	4	Dated:	10/28/24
WSI No.	2	Dated:	10/24/24	WSI No.	5	Dated:	10/31/24
WSI No.	3	Dated:	10/24/24	WSI No.	6	Dated:	11/4/24
					7		11/6/24

(2.3) ASI (Architect's Supplemental Instructions)

8 11/8/24

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.	1	Dated:	8/7/2020	Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

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Continued Next Page

PART 3: BIDDER INFORMATION

Drewry Site Development

Company Name

400 Venture Drive, Suite F, Suite F, South Daytona, FL 32119

Address (Street, City, State, Zip)

(386) 313-3220 — **Phone Number**

Scott@drewrysite.com — **Email Address**

Type of Organization (Check One):

(X) Corporation
( ) Partnership
( ) Sole Proprietorship
( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of _____.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Drewry Site Developmemt

By: 

Printed Name: Scott Drewry

Title: Managing Member

Dated: 11/12/24

License No.: GC1532583

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Drewry Site Development
Scope of Work:	Sitework

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

General Conditions / Other	$ 75,447.08
Erosion Control, Site Prep & Grading	$ 838,940.30
Stabilized Subgrade/base, Asphalt Paving and Curbing	$ 615,117.79
Concrete Paving / Flatwork	$ 46,000.00
Storm Drainage	$ 295,759.47
Sanitary Sewer	$ 132,301.20
Water	$ 152,295.35
Total Amount:	$ 2,155,861.17
Amount in Words:	

(1.2) Alternates (Voluntary)

Load Excess Fill & Haul	$ 270,000.00
Load Excess Fill Haul By Others	$ 90,000.00
	$

Continued Next Page

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	
Amount:	$

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

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In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	3%

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Item	Duration (wks)	Item	Duration (wks)

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RFI No.	1-015 2-016	Dated:	11/7/24 11/7/24	RFI No.		Dated:	
RFI No.	2-017 - 2-019	Dated:	11/11/24	RFI No.		Dated:	

Continued Next Page

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WSI No.	3 4	Dated:	10/24/24 10/28/24	WSI No.	7 8	Dated:	11/6/24 11/8/24

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Continued Next Page

PART 3: BIDDER INFORMATION

Drewry Site Development
Company Name

400 Venture Drive Ste F, South Daytona, Fl 32119
Address (Street, City, State, Zip)

(386) 313-3220
Phone Number **Email Address**

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(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

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Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Drewry Site Development
By: _____
Printed Name: Scott Drewry
Title: Managing Member
Dated: 11/12/24
License No.: GC1532583

Drewry Site Development LLC
400 Venture Drive, Suite F
South Daytona, FL 32119
(386) 313-3220

PROPOSAL

11/13/2024

Project: City of Port Orange Public Utilities Field Operations Facility

TO: Wharton-Smith, Inc

Bob McClelland
(407) 321-8410
bmcclelland@whartonsmith.com

Scope of Work

SITEWORK

	Quantity	Unit Cost	Total Cost
Mobilization	1 ea	$9,800.00	$9,800.00
Install Silt Fence	4,800 ft	$3.00	$14,400.00
Install Orange Tree Barricade	2,300 ft	$4.00	$9,200.00
Turbidity Barrier	700 ft	$8.00	$5,600.00
Install Construction Entrance	1,400 sq ft	$7.00	$9,800.00
Clear & Grub -	12 ea	$18,900.00	$226,800.00
Demuck pond bottom	1 ea	$29,500.00	$29,500.00
Excavate	62,500 cu yd	$3.50	$218,750.00
Backfill existing pond	18,900 cu yd	$4.50	$85,050.00
Dewatering	1 ea	$31,500.00	$31,500.00
Grading to within 1/10th Ft (SY)	59,254 sq yd	$1.45	$85,918.30
Final Grading to within 1/10th Ft (SY)	59,254 sq yd	$0.65	$38,522.00
construction and site acess roads (8" crushed concrete)	2,950 sq yd	$17.00	$50,150.00
subcontractor parking (6" crushed concrete)	1,600 sq yd	$15.00	$24,000.00
WSI trailer and office parking (6" crushed concrete)	650 sq yd	$15.00	$9,750.00
	--	--	$848,740.30

PAVING

	Quantity	Unit Cost	Total Cost
Mobilization	1 ea	$1,200.00	$1,200.00
Install 1.5" SP 9.5 Asphalt	12,989 sq yd	$14.90	$193,536.10
Install 6" Crushed Concrete Base	13,286.15 sq yd	$18.99	$252,304.05
Install 12" Stabilized SubBase	13,684.74 sq yd	$8.25	$112,899.09
	--	--	$559,939.23

CONCRETE (FLATWORK)

	Quantity	Unit Cost	Total Cost
Install 6" Concrete sidewalk	**7,360 sq ft**	**$6.25**	**$46,000.00**
	--	--	**$46,000.00**

CONCRETE (CURB)

	Quantity	Unit Cost	Total Cost
Install F-Curb	**1,710.3 ft**	**$17.65**	**$30,186.80**
Install D-Curb	**1,146.4 ft**	**$15.90**	**$18,227.76**
Install Valley Gutter	**86 ft**	**$28.00**	**$2,408.00**
Install Environmental Curb	**198 ft**	**$22.00**	**$4,356.00**
	--	--	**$55,178.56**

UNDERGROUND (STORM)

	Quantity	Unit Cost	Total Cost
Remove Existing 36" Pipe	**1 ea**	**$1,052.63**	**$1,052.63**
Remove Existing Inlets	**2 ea**	**$526.32**	**$1,052.63**
36" HP Storm	**40 ft**	**$144.53**	**$5,781.05**
30" HDPE Storm	**380 ft**	**$93.39**	**$35,488.00**
24" HDPE Storm	**300 ft**	**$71.26**	**$21,378.95**
18" HDPE Storm	**160 ft**	**$46.45**	**$7,432.42**
8" HDPE Storm	**20 ft**	**$19.37**	**$387.37**
Fittings	**1 ea**	**$27,167.37**	**$27,167.37**
Dewatering	**1 ea**	**$24,210.53**	**$24,210.53**
12" PVC	**364 ft**	**$39.55**	**$14,395.24**
10" PVC	**994 ft**	**$30.28**	**$30,102.51**
8" PVC	**14 ft**	**$27.07**	**$379.03**
Cleanouts	**16 ea**	**$810.93**	**$12,974.82**
Trench Drain (ACO)	**101 ft**	**$222.02**	**$22,424.13**
Type "D" Inlets	**8 ea**	**$6,689.74**	**$53,517.89**
Storm Manhole	**1 ea**	**$5,818.95**	**$5,818.95**
36" MES	**1 ea**	**$2,052.63**	**$2,052.63**
30" MES	**1 ea**	**$1,578.95**	**$1,578.95**
24" MES	**3 ea**	**$947.37**	**$2,842.11**
Roof Drain Turn-Ups	**28 ea**	**$918.65**	**$25,722.27**
	--	--	**$295,759.47**

UNDERGOUND (SANITARY)

	Quantity	Unit Cost	Total Cost
Grease Trap (5,000 Gallon)	**1 ea**	**$35,157.89**	**$35,157.89**
48" Sanitary Manholes	**3 ea**	**$7,592.99**	**$22,778.97**
48" Sanitary Manhole w/ Outside Drop	**1 ea**	**$10,685.26**	**$10,685.26**
Dewatering	**1 ea**	**$5,789.47**	**$5,789.47**
8" DR26 PVC	**392 ft**	**$30.67**	**$12,024.08**

	Quantity	Unit Cost	Total Cost
6" DR26 PVC	84 ft	$100.75	$8,462.78
8" DR18 PVC	140 ft	$40.15	$5,620.63
6" DR18 PVC	180 ft	$24.63	$4,433.68
Fittings	1 ea	$5,128.42	$5,128.42
Trench Box for Drop Manhole	1 ea	$3,157.89	$3,157.89
Video Inspection	1 ea	$3,157.89	$3,157.89
Cleanouts (3ea C900/ 3ea DR26)	6 ea	$957.37	$5,744.21
Grease Trap Cleanouts (2-way)	2 ea	$916.84	$1,833.68
Loading Dock Trench Drain	1 ea	$8,326.32	$8,326.32
	--	--	$132,301.20

UNDERGROUND (WATER)

	Quantity	Unit Cost	Total Cost
12"x8" Wet Tap with Valve	1 ea	$7,434.74	$7,434.74
Temporary Jumper (Owner to Pay All Fees & Usage)	1 ea	$2,631.58	$2,631.58
8" DR18 PVC	640 ft	$38.05	$24,349.64
4" DR18 PVC	20 ft	$17.79	$355.79
Fittings	1 ea	$6,885.26	$6,885.26
8" Gate Valves	3 ea	$2,450.88	$7,352.65
4" Gate Valves	2 ea	$1,421.05	$2,842.11
2" Blue Poly Service (Meters + Box by City)	1 ea	$11,805.26	$11,805.26
2" Backflow (Meters + Box by City) (Certified)	1 ea	$4,086.32	$4,086.32
2" Flush Line w/ Backflow	1 ea	$4,398.95	$4,398.95
2" Blow off	1 ea	$1,800.00	$1,800.00
Fire Hydrant Assembly (Flow Tested)	1 ea	$7,148.42	$7,148.42
Hydrostatic and Bacterial Testing	1 ea	$4,800.00	$4,800.00
	--	--	$85,890.72

UNDERGROUND (FIRE)

	Quantity	Unit Cost	Total Cost
4" Detector Check w/ FDC	1 ea	$8,187.37	$8,187.37
8" DR18 PVC Restrained	520 ft	$38.04	$19,781.89
4" DR18 PVC Restrained	280 ft	$19.92	$5,576.42
Fittings	1 ea	$12,195.79	$12,195.79
Fire Hydrant Assembly	1 ea	$6,980.00	$6,980.00
4" In Building Risers	2 ea	$2,457.89	$4,915.79
8" Gate Valve	1 ea	$2,451.58	$2,451.58
Hydrostatic and Bacterial Testing + Flushing	1 ea	$5,526.32	$5,526.32
Permit (Owner to Pay All Fees)	1 ea	$789.47	$789.47
	--	--	$66,404.63

MISCELLANEOUS

	Quantity	Unit Cost	Total Cost

	Quantity	Unit Cost	Total Cost
Survey & As-Built for DSD Work	**1 ea**	**$31,411.76**	**$31,411.76**
Testing for DSD Work	**1 ea**	**$14,705.88**	**$14,705.88**
Traffic Control for DSD Work	**1 ea**	**$8,000.00**	**$8,000.00**
Traffic Striping, Signs, Car Stops	**1 ea**	**$11,529.41**	**$11,529.41**
	--	--	**$65,647.06**

TOTAL PROPOSAL AMOUNT:

$2,155,861.17

Job Specific Notes

Roof Drain connections by others

Owner to pay all fees for permitting

Owner to pay all fees and usage for Temporary Jumper

Excluded (-)

1. concrete washdown area concrete

Please see following 2 pages for general notes, standard inclusions & exclusions, and provisions. A signature is required.

Drewry Site Development LLC
400 Venture Drive, Suite F
South Daytona, FL 32119
(386) 313-3220

PROPOSAL APPENDIX

General Notes & Exclusions:

- Provided costs are based on (1) one mobilization, unless otherwise noted in Proposal.
- No tree barricades, landscaping, sod, seed, or mulch provided unless otherwise noted in Proposal.
- Removal and replacement of any rock or unsuitable material is not included, unless otherwise noted in Proposal.
- Not responsible for removal of any hazardous materials unless otherwise noted in Proposal.
- Price does not include septic tank abandonment of any or tank pumping unless otherwise noted in Proposal.
- SWPPP By Others unless otherwise noted in Proposal.
- All permits, impact fees, bonds, and inspection fees are to be handled by others unless otherwise noted in Proposal.
- Control staked by others.
- Not responsible for drainage in areas with less the ¼" per foot of fall.
- Not responsible for damage caused by others to our work or items we install; repairs will be at extra cost.
- Not responsible for damage to any unmarked utilities.
- Grade to plus or minus -.1' (one-tenth of one foot).
- Decrease in quantities often results in an increase in per-unit pricing.

Demolition Notes:

- Drewry Site Development retains all salvage rights, if Demolition occurs.
- Price does not include Rodent Abatement unless otherwise noted in Proposal.
- Price does not include removal or haul-off of any hazardous materials or fuel oils, unless otherwise noted in Proposal.

Asphalt Notes:

- If the original base was designed and previously installed by others, Drewry Site Development cannot guarantee this asphalt surfacing against possible future cracking, settlement, drainage problems, minor birdbaths or root heave by adjacent plant material. We do, however, guarantee our own work against all defects in materials and workmanship for a period of one year.
- New (fresh) asphalt pavement is subject to scuffing, marking and tire tracks. Drewry Site Development is not responsible for these issues.
- Drewry Site Development assumes when contacted by contractor that base/subbase are within specification tolerance, design elevation & cross slope. Drewry Site Development will be compensated per unit rate for any overruns due to elevation/cross slope corrections through no fault of Drewry Site Development.
- 1" Asphalt does not repair existing pooling issues.
- Any additional Asphalt tonnage will be billed at $200 per Ton.

Concrete Notes:

- All concrete is 3,000 psi unless otherwise stated.
- Normal access for concrete trucks is assumed. No pumping is included unless otherwise listed above.
- 1" Concrete does not repair existing pooling issues.
- Costs for concrete work is based on unit pricing.

Provisions:

- Proposal becomes a legal binding contract upon acceptance. Authorization to begin work described in this Proposal shall be deemed acceptance of the Proposal. In the event a subsequent or supplemental contract or agreement is executed hereafter with additional terms, the terms of this Proposal shall control in the event of a conflict unless otherwise agreed to in writing. In the event Owner/Prime Contractor terminates this Proposal or directs work to be started, Owner/Prime Contractor shall be liable to pay Drewry Site Development for any actual work authorized and performed up to the time of such termination billable at market rates which shall be due Net 30.
- Drewry Site Development's Proposal including all notes, terms and conditions mentioned herein must be signed where stated. Should the Owner or Contractor require a form other than Drewry Site Development's Contract Agreement, Drewry Site Development's full Proposal must be referenced as an attachment in the contract and must be signed by an authorized representative of both companies.
- Unless otherwise noted, Proposal is based on the Civil Plans. If Civil Plans conflict with any others, Civil Plans take precedence.
- Owner/Prime Contractor agrees to pay all attorney's fees & costs associated with collection of amounts due or other dispute or enforcement actions arising from this Proposal.
- Disputes arising from this Proposal shall be subject to venue and forum in the courts in and for Volusia County, Florida.
- Proposal based upon all quoted items being awarded as a package.
- Liquidated Damages are excluded unless otherwise noted in Proposal.
- Flow Down clauses are excluded unless otherwise noted in Proposal.
- Certified Payroll is not included unless otherwise noted in Proposal.
- If this project requires special or prevailing wages, unit price may be affected, and this Proposal shall be subject to revision.
- If quantities provided by Client vary by more than 10% from plan, Drewry Site Development reserves the right to adjust its unit prices.
- Drewry Site Development shall be provided with suitable access to the work area. If Drewry Site Development's work is dependent upon or must be undertaken in conjunction with the work of others, such work shall be performed and completed so as to permit Drewry Site Development to perform its work in an uninterrupted single shift operation.
- The project schedule must permit sufficient time for Drewry Site Development to complete our work. Drewry Site Development recognizes that time is of the essence and will begin performance and diligently perform the work in such a manner so as not to delay the project.

Drewry Site Development LLC
400 Venture Drive, Suite F
South Daytona, FL 32119
(386) 313-3220

- Drewry Site Development payment is not subject to a "condition precedent" of payment(s) from, to, or by Owner, Prime Contractor, or Financial Institution. In Privity Contracts, Payment in full will be made upon completion. In the event that the amount herein shown is not paid when due, interest at the highest legal rate per annum shall accumulate on total due. All costs of collection shall be paid by the customer including reasonable attorney fees. Florida Statutes 218 & 713 will be followed and applied in strict accordance, in their entirety. Notice To Owner/ Notice of Commencement information due with executed Proposal or prior to Drewry Site Development mobilization to the project.
- If the Proposal is for Unit/Qty vs Contract Sum (AIA), final billing and payment will be based on final measurements.
- All retainages withheld must be paid within (30) thirty days from the last day of work done by Drewry Site Development.
- In the event that the amount herein shown is not paid when due, interest at the prime rate plus 10% per annum shall accumulate on the total due.

Unless otherwise indicated in writing, this quotation expires (30) thirty days from date of Proposal and market increases may apply thereafter. This Proposal may be extended for additional periods of time, at the sole discretion of Drewry Site Development.

Should the project fail to be completed by the scheduled end date, Drewry Site Development reserves the right to renegotiate an adjustment to the prices quoted.

No later than seven (7) Days after receipt of an application for payment, Customer shall give written notice to Drewry Site Development disapproving or nullifying it or a portion of it, specifying the reasons for the disapproval or nullification. When the above reasons for disapproving or nullifying an application for payment are removed, payment shall be made for the amounts previously withheld.

Acceptance of Proposal:

The prices, specifications, and conditions above are satisfactory and are hereby accepted. You are authorized to do work as specified. Payment will be made as outlined.

Signature _____ Date _____

Print Name _____ Title _____

Proposal Prepared By:

Scott Drewry | **Drewry Site Development LLC** | (386) 313-3220 | Estimating@DrewrySite.com

Christine Carasas

From: Hope Drewry <hope@drewrysite.com>
Sent: Thursday, November 14, 2024 10:26 AM
To: bmcclelland@whartonsmith.com; Wharton Smith Commercial Estimating
Cc: com-inbound-city-of-port-orange-public-utilities-fie-hlysttqfyi@us02.procoretech.com; Scott Drewry; Collin Drewry; Kyle O'Donnell
Subject: DSD Proposal City of Port Orange Public Utilities Field Operations Facility
Attachments: DSD Proposal City of Port Orange Public Utilities Field Operations 11.14.24.pdf; City of Port Orange Public Utilities Field Operations DSD 11.14.24.pdf

Dear Wharton Smith Team,

Attached, please find our proposal for the City of Port Orange Public Utilities Field Operations Facility. We believe our approach aligns well with the project's needs, and we would be glad to discuss any questions you may have.

We look forward to the opportunity to collaborate with you again on this project.

Best regards,



Hope Drewry
Managing Member
Drewry Site Development, LLC

Phone: 386-313-3220
Mobile: 386-852-6502
Email: Hope@DrewrySite.com

400 Venture Drive, Ste F
South Daytona, FL 32119

www.Drewrysite.com

CGC1532583
CUC1226162

*****All invoices need to be sent to ap@drewrysite.com *****

***** Effective immediately all release requests need to be sent to releases@drewrysite.com for processing.**
Please note releases are processed in the order of which they are received and will be returned within 24-48 hours. ***

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GPS Civil Construction, Inc.
455 Walker Street
Holly Hill, FL 32117
(386) 872-5811
gpscivil.com

To:	Wharton-Smith, Inc.	**Contact:**	
Address:	750 Monroe Road	**Phone:**	
	Sanford, FL 32771	**Fax:**	
Project Name:	Port Orange Public Utilities Field Ops Bldg	**Bid Number:**	
Project Location:	4505 Clyde Morris Blvd, Port Orange, FL	**Bid Date:**	11/12/2024

Item #	Item Description	Estimated Quantity	Unit	Unit Price	Total Price
010	**Mobilization**	1.00	LS	$210,000.00	$210,000.00
020	**Survey And Layout**	1.00	LS	$29,000.00	$29,000.00
030	**As-Built Survey**	1.00	LS	$15,000.00	$15,000.00
040	**Maintenance Of Traffic**	1.00	LS	$5,000.00	$5,000.00
050	**Construction Entrance**	1.00	EACH	$10,000.00	$10,000.00
060	**Silt Fence**	4,610.00	LF	$5.00	$23,050.00
070	**Turbidity Barrier**	218.00	LF	$18.00	$3,924.00
080	**Tree Protection**	1,368.00	LF	$10.00	$13,680.00
090	**Inlet Protection**	8.00	EACH	$200.00	$1,600.00
100	**Clearing And Grubbing**	1.00	LS	$210,000.00	$210,000.00
110	**Excavation / Earthwork / Grading**	1.00	LS	$1,130,000.00	$1,130,000.00
120	**Stabilized Subgrade, 12"**	13,134.00	SY	$5.00	$65,670.00
130	**6" Base - Limerock**	13,134.00	SY	$19.00	$249,546.00
140	**Asphalt Pavement - 1.5" SP9.5 (One Lift)**	13,134.00	SY	$15.00	$197,010.00
150	**Concrete Curb And Gutter, Type 'F'**	1,271.00	LF	$25.00	$31,775.00
160	**Concrete Curb, Environmental**	196.00	LF	$25.00	$4,900.00
170	**Concrete Curb, Type D**	1,327.00	LF	$18.00	$23,886.00
180	**Concrete Curb And Gutter, Valley Gutter**	85.00	LF	$36.00	$3,060.00
190	**Concrete Sidewalk, 4"**	753.00	SY	$60.00	$45,180.00
200	**Storm Drainage System** · Type D Inlet 6/8' - 3 EA · Type D Inlet 8/10' - 5 EA · Manhole 6/8' - 1 EA · 36" RCP - 26 LF · 30" HDPE - 375 LF · 24" HDPE - 272 LF · 18" HDPE - 151 LF · 12" PVC - 364 LF · 10" PVC - 944 LF · Cleanout - 16 EA · 4" Trench Drain - 103 LF · Inlet Aprons - 7 EA · 36" MES W/ Grates - 1 EA · 30" MES W/ Grates - 1 EA · 24" MES - 3 EA	1.00	LS	$330,000.00	$330,000.00
210	**Sanitary Sewer System** · OIL WATER SEPARATOR BY OTHERS · Manhole 0/6' - 3 EA · Manhole 10/12' - 1 EA · 8" C900 DR18 - 128 LF · 8" SDR26 - 384 LF · 6" C900 DR18 - 169 LF · 6" SDR26 - 75 LF · Cleanout - 6 EA · Misc. Fittings - 1 LS	1.00	LS	$105,000.00	$105,000.00
220	**Potable Water System**	1.00	LS	$140,000.00	$140,000.00

Item #	Item Description	Estimated Quantity	Unit	Unit Price	Total Price
	· 8" C900 DR18 - 1136 LF · 6" C900 DR18 - 8 LF · 4" C900 DR18 - 14 LF · 2" Poly - 658 LF · 8" Gate Valve - 4 EA · 4" Gate Valve - 2 EA · 2" Gate Valve - 3 EA · 2" RPZ - 2 EA · Hydrant Assy. - 2 EA · Misc. Fittings - 1 LS				
230	**Fire Water System** · 4" C900 DR14 - 258 LF · 4" DDC W/ FDC - 1 EA · 4" In-building Riser - 2 EA · Misc. Fittings - 1 LS	1.00	LS	$39,000.00	$39,000.00
240	**Striping And Signage**	1.00	LS	$20,000.00	$20,000.00
250	**ADA Mats**	23.00	SF	$50.00	$1,150.00
260	**8" Stabilized Access Road, 20'x300'**	1.00	LS	$22,000.00	$22,000.00
270	**P&P Bond**	1.00	LS	$57,000.00	$57,000.00

Total Bid Price: $2,986,431.00

Notes:

- Proposal according to Zev Cohen CIVIL plans dated 09/24/2024.
- Upon execution of this proposal, this document shall become part of any binding contract.
- All work other than the items explicitly listed as part of this proposal above are excluded.
- All permits, permit fees, impact fees, inspection fees, and municipal fees by others.
- Any water tapping fees or meter fees that may be charged by the city are to be paid by others.
- Roof Drains ran to within 5 ft of building and stopped. Final 5 ft and connection to be made by others.
- All landscaping, irrigation, sodding, hydroseeding, and seed & mulch to be by others.
- Drainage piping will be tested by lamping only, if any other inspection is required, it will be at an additional cost.
- Bollards, bicycle racks, benches, trash cans, lighting and all other miscellaneous site furnishings to be by others.
- All fencing work, removal and installation, both temporary and permanent, to be by others.
- This is a lump sum proposal, unit prices are for informational purposes only.
- Electrical service and/or tamper switches are excluded, and shall be by others.
- This proposal is valid for Thirty (30) days, after which time it may be withdrawn due to market escalations.
- Electrical demo by others.
- Bollards by others.
- Dumpster pad, apron, & enclosure by others.
- Oil / water separator by others.
- Street sweeper ramp and Vehicle washdown completely by others. We will bring utilities to the footprint. All further work by others.
- Granular storage and concrete apron by others.
- GPS Civil shall take ownership of all excess soil materials. Should the owner decide to keep the excess material, we can provide an additional cost at a later time.
- It is our interpretation that none of the ponds on site are "bermed ponds" and therefore our proposal does not include any impervious materials as shown in detail ST-9. If it is deteremined that this impervious barrier is required, we will need it further detailed in the plans, and it will be at an additional cost.
- Geotechnical testing by others.
- Unsuitable removal bid according to results in geotech report provided at bid time. Should the site require unsuitable removal beyond what is depicted in the geotech, it will be at an additional cost.

ACCEPTED:

The above prices, specifications and conditions are satisfactory and are hereby accepted.

Buyer: _____

Signature: _____

Date of Acceptance: _____

CONFIRMED:

GPS Civil Construction, Inc.

Authorized Signature: _____

Estimator: Joseph Grant
386-872-5811 joseph@gpscivil.com

Christine Carasas

From: joseph@gpscivil.com
Sent: Tuesday, November 12, 2024 4:31 PM
To: Wharton Smith Commercial Estimating
Cc: 'Greg Schlaffer'
Subject: GPS Civil Construction Proposal - Port Orange Public Utilities Field Ops Building
Attachments: GPS Civil Construction Proposal - Port Orange Public Utilities Field Ops Bldg.pdf

James,

Please see attached proposal for the Port Orange Public Utilities Field Operations Building project. Let us know if you have any questions. Thank you for the opportunity to bid.

Sincerely,

Joseph M Grant
Estimator / Project Manager
GPS CIVIL CONSTRUCTION
Office: (386) 872-5811
Fax: (386) 872-5822
Cell: (386) 690-6639
joseph@gpscivil.com

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Subcontractor Bid Form-Sitework

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Harty Tractor Services, Inc.
Scope of Work:	Sitework

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

General Conditions / Other	$
Erosion Control, Site Prep & Grading	$
Stabilized Subgrade/base, Asphalt Paving and Curbing	$
Concrete Paving / Flatwork	$
Storm Drainage	$
Sanitary Sewer	$
Water	$
Total Amount:	**$** 3,770,335

Amount in Words:	Three million, seven hundred seventy thousand, three hundred thirty-five dollars and 0/100 cents

(1.2) Alternates (Voluntary)

export suitable material to offiste location within 7 miles of project	$ 103,683
load suitable material into trucks for haul off (trucks provided by others)	$ 30,923
	$

Continued Next Page

(1.3) Owner Direct Purchase (value of all purchases exceeding $5,000)

Material/Equipment Types:	
Amount:	$

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	1.5

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	2	Dated:	11/11/24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10/2/24	WSI No.	4	Dated:	10/28/24
WSI No.	2	Dated:	10/11/24	WSI No.	5	Dated:	10/31/24
WSI No.	3	Dated:	10/17/24	WSI No.	6-8	Dated:	11/8/24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Harty Tractor Services, Inc.
Company Name

1331 Tractor Way Orange City, FL 32763
Address (Street, City, State, Zip)

386-490-1405 griffin@hartytractor.com
Phone Number **Email Address**

Type of Organization (Check One):

(✓) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Harty Tractor Services, Inc.
By: _____
Printed Name: Griffin Armstrong
Title: Estimator
Dated: 11/12/24
License No.: CGC-058820 CUC-1224805

HARTY
TRACTOR SERVICES, INC.

QB-0006534

Physical Address
1331 Tractor Way
Orange City, Florida 32763

Phone: (386) 775-1005
Fax: (386) 775-3799

Mailing Address
P.O. Box 741674
Orange City, Florida 32774-1674

Port Orange Public Utilities Field Ops Building
(Proposal)

Date: November 12, 2024

Phone: (407) 321-8410
Fax:
E-Mail: jmanyette@whartonsmith.com

Submitted To: Wharton-Smith, Inc.
750 Monroe Road
Sanford, FL 32771

Engineer: Zev Cohen

Attn: James Manyette

Plan Date: 9/30/24

Description	Quantity	UM	Unit Cost	Total
I. GENERAL CONDITIONS				
a) mobilization	1	LS	10,100.00	$10,100.00
b) layout	1	LS	34,800.00	$34,800.00
c) certified as-builts	1	LS	20,700.00	$20,700.00
d) MOT / Traffic Control	1	LS	2,400.00	$2,400.00
e) GPR locates	1	LS	2,700.00	$2,700.00
			subtotal. . .	$70,700.00
II. EROSION CONTROL				
a) NOI / SWPP	1	LS	2,000.00	$2,000.00
b) NPDES inspections	12	Month	800.00	$9,600.00
c) silt fence perimeter	4,730	LF	3.00	$14,190.00
d) tree protection	770	LF	12.70	$9,779.00
e) floating turbidity barrier	250	LF	30.70	$7,675.00
f) inlet protection	9	EA	277.00	$2,493.00
g) soil tracking device non DOT (includes 40 tons of rock each; additional rock to be charged at $100.00 / ton)	2	EA	6,000.00	$12,000.00
			subtotal. . .	$57,737.00

III. CLEARING & DEMOLITION				
a) clear & haul	10.10	AC	12,600.00	$127,260.00
b) demo asphalt (assumed to be 2" thick; existing base to be reused on site)	8,958	SF	1.65	$14,780.00
c) demo light pole	3	EA	266.00	$798.00
d) demo existing storm structures 0'-8'	2	EA	900.00	$1,800.00
e) demo 36" storm pipe 6'-8'	33	LF	40.00	$1,320.00
f) demo chain link fence	593	LF	10.00	$5,930.00
g) demo vinyl fence	227	LF	12.00	$2,724.00
			subtotal. . .	$154,612.00
IV. EARTHWORK ON SITE				
a) strip site	9,735	CY	10.80	$105,138.00
b) cut site	41,450	CY	2.75	$113,987.00
c) excavate unsuitable soils	33,000	CY	5.75	$189,750.00
d) fill site	32,355	CY	2.15	$69,563.00
e) export excess clean material	9,095	CY	15.00	$136,425.00
f) export unsuitable soils	33,000	CY	22.00	$726,000.00
g) grading	532,500	SF	0.15	$79,875.00
			subtotal. . .	$1,420,738.00
V. DEWATERING				
a) dewatering	1	LS	144,400.00	$144,400.00
			subtotal. . .	$144,400.00
VI. SANITARY				
a) connect to existing line	1	EA	4,900.00	$4,900.00
b) 8" C900 0-6	31	LF	59.00	$1,829.00
c) 8" C900 6-8	32	LF	62.00	$1,984.00
d) 8" C900 8-10	32	LF	66.00	$2,112.00
e) 8" C900 10-12	32	LF	71.00	$2,272.00
f) 8" SDR26 0-6	384	LF	40.00	$15,360.00
g) 6" C900 0-6	167	LF	40.00	$6,680.00
h) 6" SDR26 0-6	70	LF	32.00	$2,240.00
i) manhole 48" 0-6	3	EA	9,000.00	$27,000.00
j) manhole 48" 10-12	1	EA	12,700.00	$12,700.00
k) oil water separator	1	EA	32,000.00	$32,000.00
l) fittings	1	LS	13,500.00	$13,500.00
m) testing	1	LS	3,800.00	$3,800.00
			subtotal. . .	$126,377.00

VII. STORM

a) 8" PVC	9	LF	42.00	$378.00
b) 10" PVC	936	LF	43.00	$40,248.00
c) 12" PVC	364	LF	53.00	$19,292.00
d) 18" HDPE 6-8	70	LF	56.00	$3,920.00
e) 18" HDPE 8-10	80	LF	57.00	$4,560.00
f) 24" HDPE 0-6	85	LF	83.00	$7,055.00
g) 24" HDPE 6-8	85	LF	85.00	$7,225.00
h) 24" HDPE 8-10	112	LF	87.00	$9,744.00
i) 30" HDPE 0-6	49	LF	110.00	$5,390.00
j) 30" HDPE 6-8	329	LF	112.00	$36,848.00
k) 36" RCP 0-6	18	LF	250.00	$4,500.00
l) 36" RCP 6-8	19	LF	242.00	$4,598.00
m) MES 24"	3	EA	3,700.00	$11,100.00
n) MES 30"	1	EA	5,800.00	$5,800.00
o) MES 36"	1	EA	7,300.00	$7,300.00
p) D Inlet 6-8	3	EA	8,600.00	$25,800.00
q) D Inlet 8-10	5	EA	9,200.00	$46,000.00
r) Storm M/H 6-8	1	EA	7,500.00	$7,500.00
s) 4" ACO trench drain	102	LF	270.00	$27,540.00
t) loading dock trench drain	25	LF	355.00	$8,875.00
u) connect to existing line	1	EA	4,200.00	$4,200.00
v) fittings & installation	1	LS	71,300.00	$71,300.00
w) testing	1	LS	3,400.00	$3,400.00
			subtotal. . .	$362,573.00

VIII. WATER

a) connect to existing	1	EA	3,000.00	$3,000.00
b) 8" C900 DR18	543	LF	40.00	$21,720.00
c) 6" C900 DR18	11	LF	39.00	$429.00
d) 4" C900 DR18	13	LF	23.00	$299.00
e) 2" poly	661	LF	11.00	$7,271.00
f) 2" master meter (meter by others)	1	EA	5,200.00	$5,200.00
g) 2" RPZ (meter by others)	1	EA	3,000.00	$3,000.00
h) fire hydrant assembly	1	EA	7,300.00	$7,300.00
i) fittings & installation	1	LS	27,800.00	$27,800.00
j) testing	1	LS	3,800.00	$3,800.00
			subtotal. . .	$79,819.00

IX. FIRE

a) 8" C900 DR18	511	LF	39.00	$19,929.00
b) 4" C900 DR18	257	LF	18.00	$4,626.00
c) 4" DDCV w/ FDC	1	EA	10,300.00	$10,300.00
d) fire hydrant assembly	1	EA	7,100.00	$7,100.00
e) fittings & installation	1	LS	20,500.00	$20,500.00
f) testing	1	LS	1,100.00	$1,100.00
			subtotal. . .	$63,555.00

X. PAVING ON SITE				
a) 12" stabilized subbase	13,027	SY	9.40	$122,453.00
b) 6" limerock base	13,027	SY	29.00	$377,783.00
c) 1 1/2" SP-9.5 recycled asphalt (placed in 2, 3/4" lifts)	13,027	SY	25.20	$328,280.00
d) prime & sand	13,027	SY	1.00	$13,027.00
			subtotal. . .	$841,543.00
XI. STABILIZED SOD				
a) 12" stabilized subbase	1,216	SY	9.40	$11,430.00
b) sod, bahia	10,940	SF	0.67	$7,329.00
			subtotal. . .	$18,759.00
XII. BASE/SUBBASE FOR CONCRETE AREAS				
a) 12" stabilized subbase	1,609	SY	9.40	$15,124.00
b) 18" stabilized subbase	532	SY	14.00	$7,448.00
			subtotal. . .	$22,572.00
XIII. CONCRETE ON SITE				
a) D curb	1,336	LF	22.00	$29,392.00
b) F curb	1,274	LF	33.50	$42,679.00
c) valley curb	84	LF	45.00	$3,780.00
d) environmental curb	199	LF	35.00	$6,965.00
e) 4" concrete sidewalk - outside of bldg footprint	764	SF	13.50	$10,314.00
f) sidewalk ramp - outside of bldg footprint	2	EA	1,865.00	$3,730.00
g) inlet apron	6	EA	935.00	$5,610.00
			subtotal. . .	$102,470.00
XIV. STRIPING ON SITE				
a) striping & signage	1	LS	16,300.00	$16,300.00
			subtotal. . .	$16,300.00
XV. SOD / SEED & MULCH				
a) sod, bahia	127,000	SF	0.67	$85,090.00
			subtotal. . .	$85,090.00

XVI. TEMPORARY ACCESS ITEMS

a) temporary water lines (includes up to 1,210 LF of 2" poly and 3 hose bibs)	1	LS	15,400.00	$15,400.00
b) 6" crushed concrete temporary parking lot (remove at end of project, restoration by others)	2,000	SY	33.00	$66,000.00
c) 8" crushed concrete crane access road (remove at end of project, restoration by others)	2,830	SY	43.00	$121,690.00
			subtotal. . .	$203,090.00
		BID TOTAL. . .		**$3,770,335.00**

ADDITIONAL ITEMS

1) export suitable material to offsite location within 7 miles of project	9,095	CY	11.40	$103,683.00
2) load suitable material into trucks for haul off (trucks provided by others)	9,095	CY	3.40	$30,923.00

**** * * -NOTES- * * ****

I. SITEWORK

1) bid based on accuracy of provided topo & soil report
2) overexcavation/recompaction of building pads not included
3) building pad calculated 6" below finished floor
4) removal/disposal of hazardous or contaminated material not included
5) excavation and removal of unsuitables quantity shown for budgetary purposes only; actual quantitities removed and replaced will be billed at the rates above
6) unsuitable quantitiy determined from borings AP-1, AP-2, AP-3, and AP-5 (Bechtol Report dated June 23, 2022 sheet 24)
7) demo & removal of existing structure not included
8) soil treatment by others (termite, fertilizer, etc)
9) strippings to be used as fill in landscape areas
10) backfilling of footers by others
11) stabilized sod area bid as 12" of LBR40 (no detail shown)

II. UTILITIES/STORM SEWER

1) relocation of conflicting utilities by others, if required (poles, conduits, etc.)
2) water meters by others
3) irrigation and landscaping, including removal/replacement of existing by others
4) roof drains not included
5) sanitary laterals, roof drains and water services terminated within 5' of building line, connections by others
6) video recording of sanitary is included
7) all pressure mains assumed to be no more than 5' deep at proposed connection locations
8) tamper switch for DDCV by others
9) we have provided an alternate for the 4" ACO trench drain

III. PAVING

1) if leveling course required, add $310.00 per ton (to be determined by county inspector)
2) all concrete flatwork within building footprint by others
3) dumpster pad & enclosure by others
4) fencing and walls by others
5) handicap ramps are included only in conjunction with itemized sidewalk as shown in proposal

IV. ADMINISTRATION

1) NOI, SWPPP, & NPDES inspections included for 12 months
2) permits or fees excluded
3) if performance bond is required, add 1.5% of contract
4) construction staking inclusive of contract items only
5) geotechnical testing by others
6) there will be an additional 5% charge for all credit card payments
7) this proposal is valid for 30 days from bid date
8) prices are subject to change on material, fuel, aggregate etc. due to the volatility of the market

All material is guaranteed to be as specified. All work to be completed in a workmanlike manner according to standard practices and in accordance with applicable building codes except as specifically modified above. Any alterations or deviation from the above specifications will be executed only upon written orders and may become an extra charge over and above the estimate. All agreements contingent upon strikes, accidents, or delays beyond our control. Owner to carry fire, tornado and other necessary insurance. Our workers are fully covered by Worker's Compensation Insurance.

Harty Tractor Services, Inc.

Authorized Signature:



Thaine Harty - Chief Estimator

Date: November 12, 2024

Wharton-Smith, Inc.

Accepted By:

Signature

Printed Name and Title

Date:

SECTION 6 – SCOPE OF WORK

The Bidder shall utilize the information within this section of the Bid Manual to assist in the development of the Bid Proposal. The outlined scopes herein are not intended to detail the complete scope of the Bid Package. The Bidder is responsible for reviewing the Contract Documents to understand the full scope and requirements.

The Subcontractor Is to furnish all labor, equipment, material, subcontracts, and supervision required to complete the Scope of Work generally described as the **SITEWORK PACKAGE**, detailed herein, for the Public Utilities Field Operations Facility. All work shall be complete and in accordance with the Contract Documents. In the event of conflicts between the Scope of Work and other parts of the Contract Documents, this section shall take precedence.

1.1 WORK OVERVIEW

Provide complete, all required **Site Work, Utilities, Pavement and Misc. Demo**, for the Project known as **City of Port Orange Public Utilities Field Operations Facility**.

The Work included in this Subcontract is project specific and outlines the general Scope of Work for this Subcontract, all in complete accordance with the Plans and Specifications as defined in Exhibit "C" attached hereto.

Other Specification Sections may form a part of this Subcontract, whether listed or not.

The Scope of this Subcontract includes, but is not necessarily limited to, the furnishing and installation of the following Work by this Subcontractor.

1. Visitors - No one shall be admitted to the jobsite by the Subcontractor, except as necessary to perform the Work hereunder, without, in each instance, first obtaining the approval of the Contractor.

2. Replace Guardrails - This Subcontractor shall install, maintain and replace all required guardrails in accordance with OSHA Standards for the purpose of safety at all openings and suspended work at the locations not protected and where Subcontractor is performing work. Subcontractor is also responsible for all construction fencing, temporary walkways, overhead protection, signage, and/or barricades to perform work outside the boundaries of Contractor furnished construction fencing.

3. Ongoing Operations/Residential Environment/Parking - Without limitation of the foregoing, Subcontractor understands that the Work may be constructed near on-going business or facility operations and may be in and around private residences and neighborhoods. Subcontractor shall use its best efforts, in conformity with the applicable standard of care, to perform the services hereunder in a manner which will not interfere with the on-going business operations and residences. All construction employees are to enter and park in the construction parking area designated by Contractor. Subcontractors are responsible for all off-site parking of employees which may be required and busing to jobsite via route identified by Contractor. Busing of employees, jobsite vehicles or deliveries shall not be routed through surrounding neighborhoods.

4. Jobsite Storage - Subcontractor is aware of the existing site conditions and the limited space availability. On-site storage and staging of materials and equipment will be allowed, only as specifically approved by Contractor's Project Superintendent or Project Manager. All deliveries of Subcontractor will be coordinated through Contractor. If scheduled deliveries are not ready at appointed time, Contractor may refuse acceptance and deliveries will be rescheduled. All cost and/or delays associated with the refusal of deliveries will be the responsibility of the Subcontractor. Subcontractor has included in this Subcontract price, all off-site storage as may be required, including, but not limited to transportation of materials from staging area to site.

5. Phased Turnover - This Subcontractor acknowledges that the Project may have phased turnover in accordance with the Project Schedule ~~and that several mobilizations may be required and are included as part of this Subcontract~~. Additionally, Subcontractor acknowledges that the Project may have multi-buildings and that concurrent work on each building will be required in order to complete some phases ahead of the Project Schedule and all costs for doing same are included. **– one mobilization is included for each activity (earthwork, utilities, and base / paving)**

6. Owner's Facilities - All Project employees are subject to the Owner's rules and regulations while employed within their property limits. Use of the Owner's other parking lots and facilities by this Project's workmen are not permitted.

7. Limitation of Noise/Hours of Work - Subcontractor shall comply with all city, county, state and local jurisdictional authorities' Noise and Hours of Work Regulations.

8. This Subcontractor shall be responsible for all construction layout and staking required for Subcontractor's Scope of Work. Property and reference points will be provided by the Contractor.

9. This Subcontractor shall preserve all benchmark stakes and other survey marks, regardless of location or purpose. In the event these items are removed or destroyed by the Subcontractor's employees or others working on its behalf, the Subcontractor shall bear the full replacement cost.

10. This Subcontractor shall be responsible for all flagmen and traffic control personnel as necessary to get trucks for this Scope of Work in and out of the Project site in a safe and effective manner.

11. This Subcontractor shall provide all labor, equipment and materials for all excavation, trenching, backfill, compaction, dewatering, pumping, shoring, personnel protection, traffic control, filter materials, bedding materials, grading, and all other earthwork which may be required in strict accordance with the contract documents. This Subcontractor shall always provide a competent person trenching is taking place.

12. This Subcontractor shall be responsible for all re-inspection fees required for this Scope of Work and the work of all others working on its behalf.

13. This Subcontractor shall be responsible for preparing and submitting a dewatering application for ALL dewatering scheduled to take place on the project site. If it is determined that an earthen berm holding cell is required to hold water on site, it is the sole responsibility of this Subcontractor to install and remove this holding cell. All costs associated with permitting, pump, maintenance, and fuel are included.

14. This Subcontract specifically includes all site and utilities work, except for Charter Spectrum and Florida Power and Light.

15. Perform excavation of all retention ponds, swales, slopes and ditches in strict accordance with the Contract Documents inclusive of sodding of all banks and berm tops with Bahia grass. Watering of sod during the 60 day grow in period is included in this Subcontract. Mowing of all sodded areas is to be by others.

16. This Subcontractor understands that time is of the essence and shall expeditiously prepare shop drawings for all concrete storm structures and piping. All costs associated with expediting shop drawings and fabrication are included in this Scope of Work.

17. This Subcontractor understands that time is of the essence and shall expeditiously prepare shop drawings for all sanitary storm structures and piping. All costs associated with expediting shop drawings and fabrication are included in this Scope of Work.

18. This Subcontractor shall be wholly responsible for all signed and sealed Record Documents pertaining to your Scope of Work including, but not limited to, earthwork, storm, sanitary, water, and fire systems. Record Documents are to be signed and sealed by a State of Florida Professional Land Surveyor.

19. This Subcontractor shall provide all required engineering, testing, test reports, start-up, and quality control requirements within this Scope of Work in strict accordance with the Contract Documents.

20. This Subcontractor shall provide a complete Storm Water Pollution Protection Plan (SWPPP) in strict accordance with the Contract Documents, project location requirements, construction activities, and all Authorities Having Jurisdiction including, but not limited to, the installation of and removal of silt fence, erosion control, hay bales, inlet protection, tree protection, dust control, construction entrances and soil tracking prevention devices. This Subcontract specifically includes the installation of two (2) construction entrances as directed by Contractor's Superintendent. The proposed SWPPP is to be formally submitted by this Subcontractor and approved by Contractor in writing. After the initial installation, weekly inspections of the SWPPP and associated maintenance are to be by this Subcontractor. **– maintenance included while we are on site**

21. This subcontractor shall prepare an approved Storm Water Pollution Prevention Plan and submit to FDEP the NPDES permit documents including the "Notice of Intent" and "Notice of Termination." Provide all requirements

of the SWPPP including initial installation, weekly inspections, after-rain event inspections and continuous maintenance throughout the life of the project. **– 12 months of inspections included; maintenance included while we are on site**

22. This Subcontractor includes all required street sweeping as directed by the Contractor's Superintendent while all site balancing (import and export fill) activities are taking place. ~~Once site balancing activities are completed, street sweeping is to be by this Subcontractor.~~

23. This Subcontractor understands and agrees that the Project site will have ongoing operations, and that dust control is critical to the success of the project. This Subcontract includes all costs associated with having a functioning water truck on site for the duration of the project. Should water not be available at the project site it is this Subcontractor's sole responsibility to provide water via use of a hydrant meter, with all metering costs being included in this Subcontract. **– dust control included while we are on site**

24. All demolition included and/or implied in the Contract Documents is the responsibility of this Subcontractor including, but not limited to,

    a. Water, Sanitary, Storm, Electrical Utilities.
    b. existing piping systems,
    c. light poles and power poles (after being de-energized)
    d. sidewalks,
    e. concrete,
    f. pavement,
    g. curbing,
    h. signage,
    i. trees,
    j. shrubs,
    k. inlets,
    l. chain link fencing,
    ~~m. Existing Building Structure(s),~~
    n. vinyl fencing,

25. Demolition of existing storm structure(s) and utility lines are included in this scope of work. **– as shown on drawings**

26. Subcontractor is responsible for all saw cutting, core drilling, asphalt cutting, resurfacing, and patching as required by this scope of work in accordance with the Contract Documents.

27. This Subcontractor shall provide and install two construction entrances and the construction access road for site in strict accordance with the Contract Documents. Subcontractor shall be responsible for maintenance of the construction entrances for the duration as well as the removal as part of this scope of work. **– maintenance included while we are on site**

28. This Subcontract includes asphalt paving in strict accordance with the contract documents. This subcontractor understands that the first asphalt lift install may take place earlier in the project, but this shall be installed as directed by the Wharton-Smith Superintendent. Touch up of the first lift prior to the pavement of the second/final lift at the end of the project is included in this scope of work.

29. This Subcontractor shall provide, install, and remove one (1) temporary construction parking lot at the Contractor's trailer location. Parking lot to be 2,000 SY and include grading, filter fabric, and 6" of graded and compacted crushed concrete.

30. This Subcontractor shall provide and install all required Maintenance of Traffic (MOT) work required for the completion of this Scope. All costs associated with MOT plan development and execution are included.

31. This Subcontractor shall provide and install complete all civil piping requirements in strict accordance with the contract documents including, but not limited to storm sewer system, sanitary sewer system, domestic water system, and fire water system to 1' above finished floor, including all structures, spreader swales, geosynthetic mat, rip rap, outfalls, slot channels, grates, grate chains, mitered end sections, manholes, concrete collars, pipe, valves, fittings, cleanouts, drains, trench drains, warning and tracer wire or tape, fire hydrants, fire department connections, post indicator valves, back flow preventers, tamper switches (wiring to be completed by others), bedding material and testing.

32. This Subcontractor understands and agrees that the installation of the 2-1/2" temporary water line through the site is included in this scope of work, including but not limited to the installation of a poly line from the main service point of connection and three (3) stub ups as indicated by the Wharton-Smith Superintendent. **– up to 1,210 LF included**

33. This Subcontractor understands and agrees that all temporary excavations must have sides sloped at 1-1/2 to 1 ratio or utilize a trench box. If conditions do not allow for this sloping a trench box must be utilized and all equipment and production loss costs are included in this Subcontract.

34. This Subcontractor shall provide all testing, hydrostatic testing, bacteriological testing, and disinfection of underground utility systems in strict accordance with the Contract Documents, Building Code requirements, and all authorities having jurisdiction. All retesting that may be required is included in this scope and is the responsibility of this subcontractor.

35. This Subcontractor shall provide all required camera and video documentation of installed sanitary sewer lines in strict accordance with the Contract Documents. This Subcontractor also includes low-pressure air testing or vacuum testing of the sanitary sewer lines.

36. This Subcontractor shall provide all required camera and video documentation of installed storm sewer lines in strict accordance with the Contract Documents. This Subcontractor also includes laser profiling and water exfiltration testing of the storm sewer lines.

37. This Subcontractor shall be responsible for all tie-ins of sanitary sewer and storm sewer piping within 5' of the building and/or canopy including, but not limited to, sanitary piping, building downspouts, canopy downspouts, fittings, excavation, and backfill. ~~This scope includes all ferneo and square-to-round adapters required to make final connections to the downspouts. Additional mobilizations might be required to tie-in these once the downspouts have been installed (by others).~~ **– downspout adapters by others. One mobilization included; if final tie-ins are to be done at a later date, additional costs will be incurred**

38. This Subcontractor shall provide and install the oil water separator indicated on sheet C9 at the wash down area in strict accordance with the contractor documents including but limited to all accessories and associated materials for this scope of work.

39. This Subcontractor understands and agrees that this Scope of Work includes working around existing wetland and pond areas. All costs associated with protection of existing wetlands ~~and all water quality testing that may be required~~ is included in this Scope of Work. **– protection of existing wetlands included as shown on plans; water quality testing not included**

40. This Subcontractor shall provide and install all earthwork in strict accordance with the contract documents including, but not limited to, soil screening, exporting of unsuitable soils (as required), importing of fill as required, pond and drainage area excavation, trucking, spreading, grading, compaction, and proof rolling all while complying with final elevations and grade requirements. **– unsuitable quantities shown for budgetary purposes only; actual quantities removed & replaced will be billed at rates shown on proposal**

41. This Subcontractor understands and agrees that use of a vibratory roller might not be acceptable to the owner and will provide alternate compaction methods if any issues are determined during the work activities as directed by Wharton Smith.

42. In accordance with the Instructions to Bidders, this Subcontractor shall provide, install, maintain and remove a stabilized access road through the jobsite for the duration indicated by the Wharton-Smith, Inc. Superintendent. This Subcontract specifically includes 8" compacted base stabilized access road as depicted in Site Logistics Plan Sheet No. If additional stabilized crane access road is required, it will be provided, installed, maintained and removed at the unit price of $TBD/SY. **– maintenance included while we are on site**

43. This Subcontractor shall provide fine grading as needed in strict accordance with the contract documents and/or as directed by Wharton Smith superintendent This Subcontractor understands that all fine grading will require separate mobilizations with box blading to adjust from rough to fine grade. **– one mobilization included for rough grading, and one mobilization included for fine grading**

44. This Subcontractor shall rough grade landscape and sod area. It is the responsibility of this Subcontractor to coordinate the elevation with Contractor's Superintendent and the Landscape/Irrigation Subcontractor. Sod is to be installed by others except for the pond/retention and impound locations noted above in line item #15.

45. This Subcontractor shall coordinate with the Concrete Subcontractor for elevations of subgrade under all concrete foot traffic areas and all concrete paving areas.

46. This Subcontractor shall provide, install, layout and compact all building pads, pads for site amenities and drive lanes. It is understood and agree that all pads throughout the site are to be graded to within +/- 0.10 foot as directed by Contractor's Superintendent.

47. This Subcontractor shall provide and install all concrete curbs in strict accordance with the Contract Documents including, but not limited to, ribbon curb, drop curb, type D curb, type E curb and gutter, type F curb and gutter.

48. This Subcontract specifically includes all required base material for concrete pavement.

49. This Subcontractor shall provide and install all asphalt paving work in strict accordance with the contract documents including, but not limited to, parking spaces, drives, right of way tie-ins, entrances, approaches, service area, washdown area, covered parking area and approach to the NE. This Scope of Work includes all standard duty pavement and heavy-duty pavement in accordance with contract documents and it is understood and agreed that each lift will require a separate mobilization for each Phase.

50. This subcontractor shall provide and install concrete sidewalks in strict accordance with the Contract Documents. These shall be installed in sequence with the Contractor's project schedule. **– sidewalks outside of building footprint included; all other concrete flatwork by others**

51. This Subcontract includes all pavement markings including stop bars, standard parking spaces, accessible parking spaces, crosswalks, directional arrows, special pavement markings, colored and non-colored wheel stops and traffic signage all in strict accordance with the Contract Documents.

52. This Subcontractor and all those working on its behalf, including the Asphalt Supplier, are required to attend and actively participate in the Contractor required pre activity quality control meetings.

53. This Subcontractor is required to attend and actively participate in all meetings related to the project planning system, including end of shift and weekly update meetings.

54. This subcontractor shall provide all requirements of the general and system notes indicated on the civil plans including site clearing, grading, erosion control, tree protection, drainage, NPDES permit, dewatering, traffic control, as-built drawings, and City of Port Orange / Utility Company requirements.

55. The Subcontractor shall provide a list of all intended material and equipment to be purchased under the Owner Direct Material/Equipment Purchase Program no later than 10 days after the issuance of a Notice of Intent or execution of this Agreement, whichever comes first.

Christine Carasas

From: Griffin Armstrong <griffin@hartytractor.com>
Sent: Tuesday, November 12, 2024 5:06 PM
To: James Manyette; Wharton Smith Commercial Estimating
Cc: Thaine Harty; Bruce Cook
Subject: Port Orange Public Utilities Field Ops Bldg proposal
Attachments: Sitework Scope HTS.docx; Bid Form_Sitework_v24.1.pdf; Port Orange Public Utilities Field Ops Building.pdf

Good Afternoon James,

Please see attached proposal for the Port Orange Public Field Ops Bldg on our standard bid form and the provided bid form. We have also included a marked up copy of the scope of work for your reference. Thank you for the opportunity.

Feel free to reach out with any questions and have a great rest of your day!

Thank you,

Griffin Armstrong
Estimator
HARTY
TRACTOR SERVICES, INC.
Main Office: (386) 775-1005
Direct Line: (386) 490-1405
E-Mail: estimating@hartytractor.com

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Subcontractor Bid Form-Sitework

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Hazen Construction
Scope of Work:	Sitework

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

General Conditions / Other	$
Erosion Control, Site Prep & Grading	$ 671,277
Stabilized Subgrade/base, Asphalt Paving and Curbing	$ 852,116
Concrete Paving / Flatwork	$ 26,709
Storm Drainage	$ 255,382
Sanitary Sewer	$ 82,915
Water	$ 185,021
Total Amount:	$ 2,073,420
Amount in Words:	

(1.2) Alternates (Voluntary)

	$
	$
	$

Continued Next Page

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	Precast structures, pipe & fittings
Amount:	$ Approximately $280,000

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	1.2 %

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information) 24 total per log

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

Eight total

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.		Dated:		WSI No.		Dated:	
WSI No.		Dated:		WSI No.		Dated:	
WSI No.		Dated:		WSI No.		Dated:	

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety 90 calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

Wharton-Smith, Inc.
CONSTRUCTION GROUP

PART 3: BIDDER INFORMATION

Company Name

Address (Street, City, State, Zip)

Phone Number Email Address

Type of Organization (Check One):

(x) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of _____.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Hazen Construction
By:
Printed Name: Chad S Hazen
Title: President
Dated: 11/12/24
License No.: CGC 061991 : CUC 1223713 : 987710-0001-2007

HAZEN CONSTRUCTION, LLC

November 12, 2024

RE: Port Orange Public Utilities Field Operations Facility

Hazen Construction is pleased to submit this proposal for the above mentioned project. Our proposal is based on the drawings as noted on the attached drawing log.

DESCRIPTION	UNIT	QUANTITY	
SANITARY SEWER SYSTEM			
60" diameter manhole 0'-6'	ea	2	
48" diameter manhole 0'-6'	ea	1	
48" diameter drop manhole 10'-12'	ea	1	
8" SDR-26 0'-6'	lf	392	
8" C900 DR18 10'-12'	lf	140	
6" single service off C-900	ea	1	
6" single service off SDR-26	ea	1	
6" clean out assembly	ea	6	
Miscellaneous materials	ls	1	
Sub-total			**$ 82,915.00**
POTABLE WATER SYSTEM			
Connect to existing stub	ea	1	
8" DR-18 water main	lf	640	
4" DR-18 water main	lf	20	
8" Gate Valve	ea	3	
4" Gate Valve	ea	2	
Fire hydrant assembly	ea	1	
2" single service	ea	1	
2" temp water main	lf	1,000	
2" reduced pressure backflow assembly	ea	2	
Blowoff assembly	ea	1	
Miscellaneous materials	ls	1	
Sub-total			**$ 105,110.00**
FIRE MAIN SYSTEM			
8" DR-14 fire main	lf	520	
4" DR-14 fire main	lf	280	
8" Gate Valve	ea	1	
Fire hydrant assembly	ea	1	
4" double detector check valve assembly w/ FDC	ea	1	
8" double detector check valve assembly	ea	1	
4" in building riser	ea	2	
Miscellaneous materials	ls	1	
Sub-total			**$ 79,911.00**
STORM DRAINAGE SYSTEM			
Connect to existing 36" RCP	ea	1	
36" RCP	lf	32	
8" ADS N-12 HDPE	lf	20	
18" ADS N-12 HDPE	lf	160	
24" ADS N-12 HDPE	lf	280	
30" ADS N-12 HDPE	lf	380	

(No 6" pipe s/b 260 lf)

(is this poly line we have 630 lf)

1599 Tionia Road
New Smyrna Beach, Florida 32168

Phone: 386 322-8700
Fax: 386 756-0000

HAZEN CONSTRUCTION, LLC

DESCRIPTION	UNIT	QUANTITY	
12" SDR-35	lf	364	
10" SDR-35	lf	742	we have 910 lf
8" SDR-35	lf	28	
6" Roof drain assembly	ea	28	
6" Clean out assembly	ea	16	
Type "D" inlets	ea	8	
Storm manhole	ea	1	
24" MES	ea	3	
30" MES	ea	1	
36" MES	ea	1	
Trench Drain w/ grate	ea	1	
Miscellaneous materials	ls	1	
Sub-total			**$ 255,382.00**
SITEWORK AND PAVING			
Silt fence	lf	4,745	
Turbidity Barrier	lf	216	
Inlet Protection	ea	9	
Tree protection	lf	2,207	
Stormwater prevention plan	ea	1	
Demo Existing Asphalt	sy	1,002	
Construction entrance soil tracking device	ea	1	
Clear and grub site	ac	9.00	
Strip site	ac	9.00	
Cut/fill on site	cy	64,241	
Cut/Excess Stockpile	cy	32,350	
Dewatering	ls	1	
Grading	ls	1	
8" Stabilized Access Rd.	sy	2,831	
6" Temporary Parking Lot	sy	2,148	
12" Sub Grade	sy	13,700	we have 14,228 sy
6" Limerock	sy	12,986	we have 14,228 sy
1" SP-9.5 (1st lift)	sy	12,986	
1" SP-9.5 (2nd Lift)	sy	12,986	we have 14,228 sy
Curb Type "F"	lf	1,273	1 1/2" lifts x 2
Environmental Curb	lf	199	
Curb Type "D"	lf	1,182	we have 1333 lf
3' Valley Curb and Gutter	lf	85	
Sidewalk 4"	sf	2,605	
Sidewalk 6"	sf	341	
5' Wide Truncated Dome H/C Ramps	ea	4	
Sod pond slopes (Banks and top of berm slopes) DA-1	sy	7,801	
Sod pond slopes (Banks and top of berm slopes) DA-2	sy	3,462	
Striping and Signage	ls	1	
Surveying layout	ls	1	
Asbuilt	ls	1	
Miscellaneous materials	ls	1	
Sub-total			**$ 1,550,102.00**
Base Bid Total			**$ 2,073,420.00**
ALT. #1 (transport up to 7mi.)	cy	32,350	
Total Alternate 1			**$ 258,800.00**
ALT. #2 (load on others trucks to haul)	cy	32,350	
Total Alternate 2			**$ 80,875.00**

HAZEN CONSTRUCTION, LLC

Exclusions / Qualifications:

1. This proposal may be withdrawn by us if not accepted within thirty (30) days
2. Our price is based on quantities and units as stated above
3. Rock excavation is not included
4. Select backfill / removal and/or disposal of any unsuitable material is not included
5. Permits or inspection fees are not included
6. Bonds are not included
7. Meters or connection fees are not included
8. Layout for our work is included
9. Bacteriological testing for our work is included
10. Density testing for our work is not included
11. Dewatering for our work is included
12. Video of sanitary lines is included; video of storm lines is not included
13. Roof drain leaders terminate within 5' of building, connection to downspout not included
14. Sanitary sewer service terminates within 5' of building or grease trap
15. Grease traps or oil water separators are not included. Our price includes a stub up to grease trap. Plumbing contractor to connect to stub, set grease trap and continue line into building.
16. Tamper switches are not included
17. Fire line is priced to 1' above finished floor elevation with an in-building riser. Fire sprinkler contractor to connect to riser and complete system.
18. Proposal includes an additional 8" DDCVA for fire main coming off water. Nothing is shown as a POS for this fire main.
19. Strippings to be utilized onsite in greens areas. If required to haul offsite, pricing will need to be adjusted.
20. Clearing based on grind and haul.
21. Street sweeper ramp and vehicle wash down concrete pavement are not included.
22. Grading price assumes on site material is suitable for lot fill.
23. All items of work quoted in this proposal will be completed during normal Monday through Friday daytime hours. Any nighttime, weekend or holiday work is not included
24. Removal of overhead utility lines and utility poles not included.
25. The building pads will be graded one time plus or minus one tenth of a foot prior to plumbing and electrical installation
26. Any temporary construction fencing or permanent fencing is not included
27. Any dumpster pad screen walls, gates, bollards or retaining walls are not included
28. Any dewatering of footers or foundations are not included
29. We have not included any site amenities - decorative signage and/or signage posts, lighting, benches, fountains, mailboxes, gates, etc.
30. We have quoted the onsite paving assuming the cross-section as 12" of subgrade; 6" limerock base & (2) 1" lifts of SP-9.5 Asphalt
31. We have not included any above ground or below ground utility relocation for any of the work.
32. We have included a industry standard amount of stripping the organics, after clearing, based on visiting the site and reviewing the existing site conditions. We have not included any muck or rock removal or replacement of unsuitable soil with structural fill suitable for embankment.
33. This proposal is based on the accuracy of the provided geotechnical report (Report No. G22121. Dated 06/23/2022).
34. Our pricing is subject to the availability of materials, at the time of construction, of any items of work in this proposal.

Sincerely,
Hazen Construction

Chad S. Hazen
Owner

November 12, 2024 Hazen Construction

Port Orange Public Utilities Field Operations Facility
Drawing Log
Drawings prepared by Zev Cohen & Associates, Inc.

Drawing	Description	Date
G000	Cover Page	09/30/24
G001	Gen. Information and Abbreviations	09/30/24
G010	Code Summary and Calculations	09/30/24
G021	UL Assemblies	09/30/24
G022	UL Assemblies	09/30/24
G031	Partition Types and Notes	09/30/24
G032	Typical Partition Details	09/30/24
G033	Typical Partition Details	09/30/24
G101	Life Safety Plan Admin	09/30/24
C1	Cover Sheet	09/30/24
C2	Construction Notes	09/30/24
C3	Construction Notes	09/30/24
C4	Construction Notes	09/30/24
C5	Demolition and Erosion Control Plan	09/30/24
C6	Geometry, Signage and Striping Plan	09/30/24
C7	Paving, Grading and Drainage Plan	09/30/24
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C9	Utility Plan	09/30/24
C10	Construction Details	09/30/24
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C12	Construction Details	09/30/24
C13	Construction Details	09/30/24
C14	Construction Details	09/30/24
C15	Construction Details	09/30/24
TP1	Tree Protection Plan & Details	09/30/24
TP2	Tree Protection Plan & Details	09/30/24
LA1	Landscape Plan & Details	09/30/24
LA2	Landscape Plan & Details	09/30/24
LA3	Interior Landscaping	09/30/24
LA4	Landscape Plan & Details	09/30/24
IR1	Irrigation Plan & Details	09/30/24
IR2	Irrigation Plan & Details	09/30/24

Christine Carasas

From: Chad Hazen <chadshazen@hazenconstruction.net>
Sent: Tuesday, November 12, 2024 1:46 PM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Public Utilities Field Operations Facility
Attachments: Port Orange Public Utilities Field Operations Facility - HC Proposal 2024-11-12.pdf

Good afternoon – attached is our bid form and proposal for the Port Orange project. After your review, let me know if you have any questions or require additional information. Thanks.

Chad S. Hazen

HAZEN CONSTRUCTION

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!

Subcontractor Bid Form-Sitework

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Hazen Construction
Scope of Work:	Sitework

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

General Conditions / Other	$
Erosion Control, Site Prep & Grading	$ 671,277
Stabilized Subgrade/base, Asphalt Paving and Curbing	$ 852,116
Concrete Paving / Flatwork	$ 26,709
Storm Drainage	$ 255,382
Sanitary Sewer	$ 82,915
Water	$ 185,021
Total Amount:	$ 2,073,420
Amount in Words:	

(1.2) Alternates (Voluntary)

	$
	$
	$

Continued Next Page

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	Precast structures, pipe & fittings
Amount:	$ Approximately $280,000

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	1.2 %

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information) 24 total per log

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

Eight total

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.		Dated:		WSI No.		Dated:	
WSI No.		Dated:		WSI No.		Dated:	
WSI No.		Dated:		WSI No.		Dated:	

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety 90 calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

Wharton-Smith, Inc.
CONSTRUCTION GROUP

PART 3: BIDDER INFORMATION

Company Name

Address (Street, City, State, Zip)

Phone Number Email Address

Type of Organization (Check One):

(x) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of _____.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Hazen Construction
By:
Printed Name: Chad S Hazen
Title: President
Dated: 11/12/24
License No.: CGC 061991 : CUC 1223713 : 987710-0001-2007

HAZEN CONSTRUCTION, LLC

November 12, 2024

RE: Port Orange Public Utilities Field Operations Facility

Hazen Construction is pleased to submit this proposal for the above mentioned project. Our proposal is based on the drawings as noted on the attached drawing log.

DESCRIPTION	UNIT	QUANTITY	
SANITARY SEWER SYSTEM			
60" diameter manhole 0'-6'	ea	2	
48" diameter manhole 0'-6'	ea	1	
48" diameter drop manhole 10'-12'	ea	1	
8" SDR-26 0'-6'	lf	392	
8" C900 DR18 10'-12'	lf	140	
6" single service off C-900	ea	1	
6" single service off SDR-26	ea	1	
6" clean out assembly	ea	6	
Miscellaneous materials	ls	1	
Sub-total			**$ 82,915.00**
POTABLE WATER SYSTEM			
Connect to existing stub	ea	1	
8" DR-18 water main	lf	640	
4" DR-18 water main	lf	20	
8" Gate Valve	ea	3	
4" Gate Valve	ea	2	
Fire hydrant assembly	ea	1	
2" single service	ea	1	
2" temp water main	lf	1,000	
2" reduced pressure backflow assembly	ea	2	
Blowoff assembly	ea	1	
Miscellaneous materials	ls	1	
Sub-total			**$ 105,110.00**
FIRE MAIN SYSTEM			
8" DR-14 fire main	lf	520	
4" DR-14 fire main	lf	280	
8" Gate Valve	ea	1	
Fire hydrant assembly	ea	1	
4" double detector check valve assembly w/ FDC	ea	1	
8" double detector check valve assembly	ea	1	
4" in building riser	ea	2	
Miscellaneous materials	ls	1	
Sub-total			**$ 79,911.00**
STORM DRAINAGE SYSTEM			
Connect to existing 36" RCP	ea	1	
36" RCP	lf	32	
8" ADS N-12 HDPE	lf	20	
18" ADS N-12 HDPE	lf	160	
24" ADS N-12 HDPE	lf	280	
30" ADS N-12 HDPE	lf	380	

1599 Tionia Road
New Smyrna Beach, Florida 32168

Phone: 386 322-8700
Fax: 386 756-0000

HAZEN CONSTRUCTION, LLC

DESCRIPTION	UNIT	QUANTITY	
12" SDR-35	lf	364	
10" SDR-35	lf	742	
8" SDR-35	lf	28	
6" Roof drain assembly	ea	28	
6" Clean out assembly	ea	16	
Type "D" inlets	ea	8	
Storm manhole	ea	1	
24" MES	ea	3	
30" MES	ea	1	
36" MES	ea	1	
Trench Drain w/ grate	ea	1	
Miscellaneous materials	ls	1	
Sub-total			**$ 255,382.00**
SITEWORK AND PAVING			
Silt fence	lf	4,745	
Turbidity Barrier	lf	216	
Inlet Protection	ea	9	
Tree protection	lf	2,207	
Stormwater prevention plan	ea	1	monitoring and reports included or "plan only"?
Demo Existing Asphalt	sy	1,002	
Construction entrance soil tracking device	ea	1	
Clear and grub site	ac	9.00	
Strip site	ac	9.00	
Cut/fill on site	cy	64,241	
Cut/Excess Stockpile	cy	32,350	
Dewatering	ls	1	
Grading	ls	1	
8" Stabilized Access Rd.	sy	2,831	
6" Temporary Parking Lot	sy	2,148	
12" Sub Grade	sy	13,700	
6" Limerock	sy	12,986	
1" SP-9.5 (1st lift)	sy	12,986	
1" SP-9.5 (2nd Lift)	sy	12,986	
Curb Type "F"	lf	1,273	
Environmental Curb	lf	199	
Curb Type "D"	lf	1,182	
3' Valley Curb and Gutter	lf	85	
Sidewalk 4"	sf	2,605	
Sidewalk 6"	sf	341	
5' Wide Truncated Dome H/C Ramps	ea	4	
Sod pond slopes (Banks and top of berm slopes) DA-1	sy	7,801	
Sod pond slopes (Banks and top of berm slopes) DA-2	sy	3,462	
Striping and Signage	ls	1	
Surveying layout	ls	1	
Asbuilt	ls	1	
Miscellaneous materials	ls	1	
Sub-total			**$ 1,550,102.00**
Base Bid Total			**$ 2,073,420.00**
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Total Alternate 1			**$ 258,800.00**
ALT. #2 (load on others trucks to haul)	cy	32,350	
Total Alternate 2			**$ 80,875.00**

1 1/2" lifts x 2

HAZEN CONSTRUCTION, LLC

Exclusions / Qualifications:

1. This proposal may be withdrawn by us if not accepted within thirty (30) days
2. Our price is based on quantities and units as stated above
3. Rock excavation is not included
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10. Density testing for our work is not included
11. Dewatering for our work is included
12. Video of sanitary lines is included; video of storm lines is not included
13. Roof drain leaders terminate within 5' of building, connection to downspout not included
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30. We have quoted the onsite paving assuming the cross-section as 12" of subgrade; 6" limerock base & (2) 1" lifts of SP-9.5 Asphalt
31. We have not included any above ground or below ground utility relocation for any of the work.
32. We have included a industry standard amount of stripping the organics, after clearing, based on visiting the site and reviewing the existing site conditions. We have not included any muck or rock removal or replacement of unsuitable soil with structural fill suitable for embankment.
33. This proposal is based on the accuracy of the provided geotechnical report (Report No. G22121. Dated 06/23/2022).
34. Our pricing is subject to the availability of materials, at the time of construction, of any items of work in this proposal.

Sincerely,
Hazen Construction

Chad S. Hazen
Owner

November 12, 2024 Hazen Construction

Port Orange Public Utilities Field Operations Facility
Drawing Log
Drawings prepared by Zev Cohen & Associates, Inc.

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C11	Construction Details	09/30/24
C12	Construction Details	09/30/24
C13	Construction Details	09/30/24
C14	Construction Details	09/30/24
C15	Construction Details	09/30/24
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LA2	Landscape Plan & Details	09/30/24
LA3	Interior Landscaping	09/30/24
LA4	Landscape Plan & Details	09/30/24
IR1	Irrigation Plan & Details	09/30/24
IR2	Irrigation Plan & Details	09/30/24

Christine Carasas

From: Chad Hazen <chadshazen@hazenconstruction.net>
Sent: Tuesday, November 12, 2024 1:46 PM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Public Utilities Field Operations Facility
Attachments: Port Orange Public Utilities Field Operations Facility - HC Proposal 2024-11-12.pdf

Good afternoon – attached is our bid form and proposal for the Port Orange project. After your review, let me know if you have any questions or require additional information. Thanks.

Chad S. Hazen

HAZEN CONSTRUCTION

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Hazen Construction
Scope of Work:	Sitework

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

General Conditions / Other	$
Erosion Control, Site Prep & Grading	$ 671,277
Stabilized Subgrade/base, Asphalt Paving and Curbing	$ 962,317
Concrete Paving / Flatwork	
Storm Drainage	$ 275,709
Sanitary Sewer	$ 112,415
Water	$ 185,021
Total Amount:	$ 2,206,739
Amount in Words:	

(1.2) Alternates (Voluntary)

	$
	$
	$

Continued Next Page

(1.3) Owner Direct Purchase (value of all purchases exceeding $50,000)

Material/Equipment Types:	Precast structures, pipe & fittings
Amount:	$ Approximately $280,000

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the <u>percentage</u> to be added to the proposal.

Bond Rate %:	1.2 %

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information) 24 total per log

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

Eight total

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.		Dated:		WSI No.		Dated:	
WSI No.		Dated:		WSI No.		Dated:	
WSI No.		Dated:		WSI No.		Dated:	

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

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The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Company Name

Address (Street, City, State, Zip)

Phone Number Email Address

Type of Organization (Check One):

(x) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of _____.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Hazen Construction
By:
Printed Name: Chad S Hazen
Title: President
Dated: 11/22/24
License No.: CGC 061991 : CUC 1223713 : 987710-0001-2007

HAZEN CONSTRUCTION, LLC

November 22, 2024

RE: Port Orange Public Utilities Field Operations Facility

Hazen Construction is pleased to submit this proposal for the above mentioned project. Our proposal is based on the drawings as noted on the attached drawing log.

DESCRIPTION	UNIT	QUANTITY	
SANITARY SEWER SYSTEM			
60" diameter manhole 0'-6'	ea	2	
48" diameter manhole 0'-6'	ea	1	
48" diameter drop manhole 10'-12'	ea	1	
5,000 gallon Oil / Water Separator	ea	1	
8" SDR-26 0'-6'	lf	392	
8" C900 DR18 10'-12'	lf	140	
6" single service off C-900	ea	1	
6" single service off SDR-26	ea	1	
6" clean out assembly	ea	6	
Miscellaneous materials	ls	1	
Sub-total			**$ 112,415.00**
POTABLE WATER SYSTEM			
Connect to existing stub	ea	1	
8" DR-18 water main	lf	640	
4" DR-18 water main	lf	20	
8" Gate Valve	ea	3	
4" Gate Valve	ea	2	
Fire hydrant assembly	ea	1	
2" single service	ea	1	
2" temp water main	lf	1,000	
2" reduced pressure backflow assembly	ea	2	
Blowoff assembly	ea	1	
Miscellaneous materials	ls	1	
Sub-total			**$ 105,110.00**
FIRE MAIN SYSTEM			
8" DR-14 fire main	lf	520	
4" DR-14 fire main	lf	280	
8" Gate Valve	ea	1	
Fire hydrant assembly	ea	1	
4" double detector check valve assembly w/ FDC	ea	1	
8" double detector check valve assembly	ea	1	
4" in building riser	ea	2	
Miscellaneous materials	ls	1	
Sub-total			**$ 79,911.00**
STORM DRAINAGE SYSTEM			
Connect to existing 36" RCP	ea	1	
36" RCP	lf	32	
8" ADS N-12 HDPE	lf	20	
18" ADS N-12 HDPE	lf	160	
24" ADS N-12 HDPE	lf	280	

1599 Tionia Road
New Smyrna Beach, Florida 32168

Phone: 386 322-8700
Fax: 386 756-0000

HAZEN CONSTRUCTION, LLC

DESCRIPTION	UNIT	QUANTITY	
30" ADS N-12 HDPE	lf	380	
12" SDR-35	lf	364	
10" SDR-35	lf	784	
8" SDR-35	lf	28	
6" Roof drain assembly	ea	28	
6" Clean out assembly	ea	16	
Type "D" inlets	ea	8	
Storm manhole	ea	1	
24" MES	ea	3	
30" MES	ea	1	
36" MES	ea	1	
4" ACO trench drain w/ heel proof grate	ea	1	
24" Wilkins trench drain w/ grate at washdown pit	ea	1	
Miscellaneous materials	ls	1	
Sub-total			**$ 275,709.00**
SITEWORK AND PAVING			
Silt fence	lf	4,745	
Turbidity Barrier	lf	216	
Inlet Protection	ea	9	
Tree protection	lf	2,207	
Stormwater prevention plan	ea	1	
Demo Existing Asphalt	sy	1,002	
Construction entrance soil tracking device	ea	1	
Clear and grub site	ac	9.00	
Strip site	ac	9.00	
Cut/fill on site	cy	64,241	
Cut/Excess Stockpile	cy	32,350	
Dewatering	ls	1	
Grading	ls	1	
8" Stabilized Access Rd.	sy	2,831	
6" Temporary Parking Lot	sy	2,148	
12" Sub Grade	sy	13,756	
6" Limerock	sy	13,041	
1 1/2" SP-9.5 (1st lift)	sy	13,041	
1 1/2" SP-9.5 (2nd Lift)	sy	13,041	
Curb Type "F"	lf	1,273	
Environmental Curb	lf	199	
Curb Type "D"	lf	1,333	
3' Valley Curb and Gutter	lf	85	
Sod pond slopes (Banks and top of berm slopes) DA-1	sy	7,801	
Sod pond slopes (Banks and top of berm slopes) DA-2	sy	3,462	
Striping and Signage	ls	1	
Surveying layout	ls	1	
Asbuilt	ls	1	
Miscellaneous materials	ls	1	
Sub-total			**$ 1,633,594.00**
Base Bid Total			**$ 2,206,739.00**
ALT. #1 (transport up to 7mi.)	cy	32,350	
Total Alternate 1			**$ 258,800.00**
ALT. #2 (load on others trucks to haul)	cy	32,350	
Total Alternate 2			**$ 80,875.00**

HAZEN CONSTRUCTION, LLC

Exclusions / Qualifications:

1. This proposal may be withdrawn by us if not accepted within thirty (30) days
2. Our price is based on quantities and units as stated above
3. Rock excavation is not included
4. Select backfill / removal and/or disposal of any unsuitable material is not included
5. Permits or inspection fees are not included
6. Bonds are not included
7. Meters or connection fees are not included
8. Layout for our work is included
9. Bacteriological testing for our work is included
10. Density testing for our work is not included
11. Dewatering for our work is included
12. Video of sanitary lines is included; video of storm lines is not included
13. Roof drain leaders terminate within 5' of building, connection to downspout not included
14. Sanitary sewer service terminates within 5' of building or grease trap
15. Tamper switches are not included
16. Fire line is priced to 1' above finished floor elevation with an in-building riser. Fire sprinkler contractor to connect to riser and complete system.
17. Proposal includes an additional 8" DDCVA for fire main coming off water. Nothing is shown as a POS for this fire main.
18. Strippings to be utilized onsite in greens areas. If required to haul offsite, pricing will need to be adjusted.
19. Clearing based on grind and haul.
20. Street sweeper ramp and vehicle wash down concrete pavement are not included. 24" trench drain w/ grate is included
21. Grading price assumes on site material is suitable for lot fill.
22. All items of work quoted in this proposal will be completed during normal Monday through Friday daytime hours. Any nighttime, weekend or holiday work is not included
23. Removal of overhead utility lines and utility poles not included.
24. The building pads will be graded one time plus or minus one tenth of a foot prior to plumbing and electrical installation
25. Any temporary construction fencing or permanent fencing is not included
26. Any dumpster pad screen walls, gates, bollards or retaining walls are not included
27. Any dewatering of footers or foundations are not included
28. We have not included any site amenities - decorative signage and/or signage posts, lighting, benches, fountains, mailboxes, gates, etc.
29. We have quoted the onsite paving assuming the cross-section as 12" of subgrade; 6" limerock base & (2) 1.5" lifts of SP-9.5 Asphalt as requested by Wharton-Smith
30. We have not included any above ground or below ground utility relocation for any of the work.
31. We have included a industry standard amount of stripping the organics, after clearing, based on visiting the site and reviewing the existing site conditions. We have not included any muck or rock removal or replacement of unsuitable soil with structural fill suitable for embankment.
32. This proposal is based on the accuracy of the provided geotechnical report (Report No. G22121. Dated 06/23/2022).
33. Our pricing is subject to the availability of materials, at the time of construction, of any items of work in this proposal.
34. MOT is included

Sincerely,
Hazen Construction

Chad S. Hazen
Owner

November 22, 2024 Hazen Construction

Port Orange Public Utilities Field Operations Facility
Drawing Log
Drawings prepared by Zev Cohen & Associates, Inc.

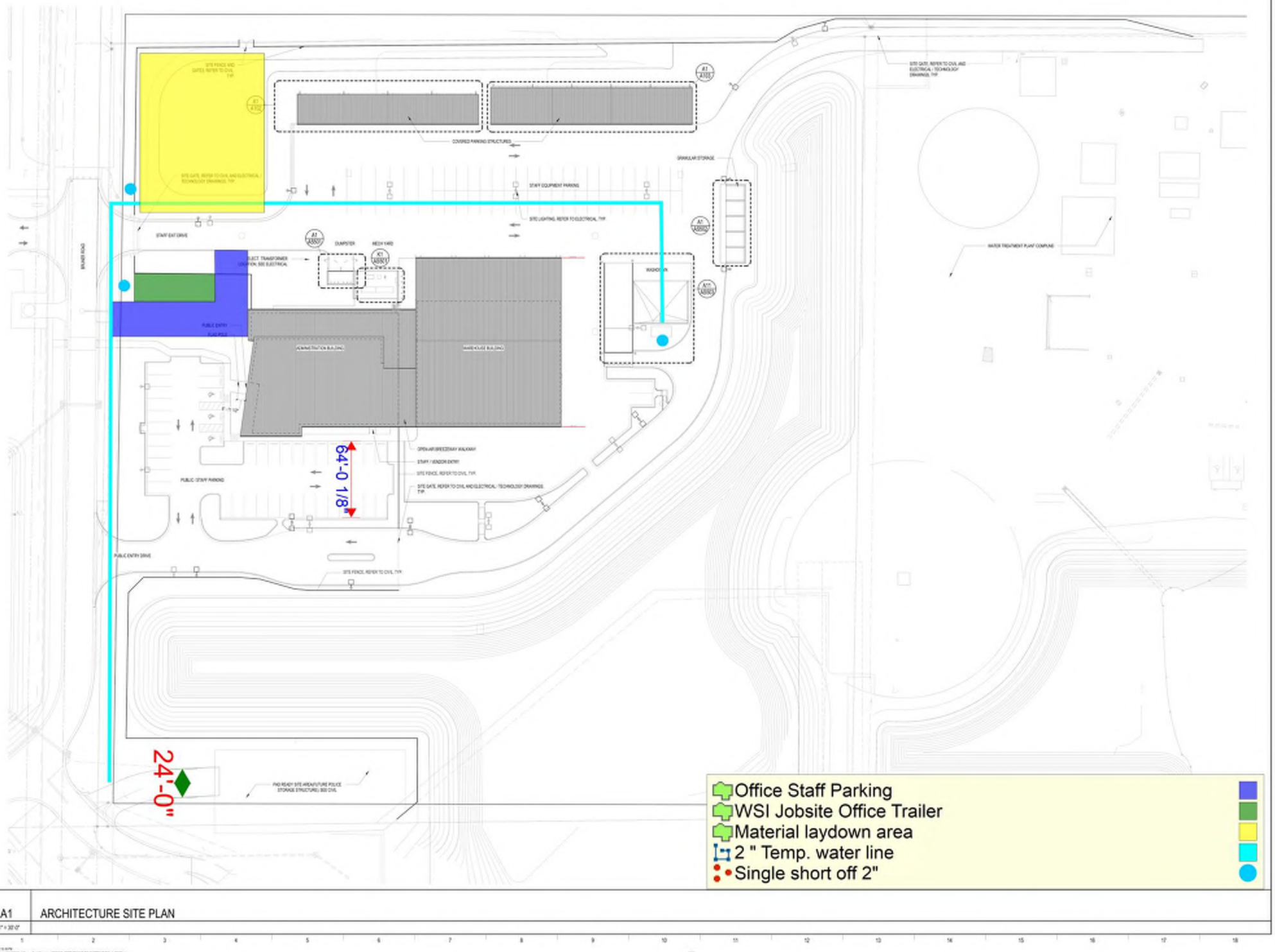
Drawing	Description	Date
G000	Cover Page	09/30/24
G001	Gen. Information and Abbreviations	09/30/24
G010	Code Summary and Calculations	09/30/24
G021	UL Assemblies	09/30/24
G022	UL Assemblies	09/30/24
G031	Partition Types and Notes	09/30/24
G032	Typical Partition Details	09/30/24
G033	Typical Partition Details	09/30/24
G101	Life Safety Plan Admin	09/30/24
C1	Cover Sheet	09/30/24
C2	Construction Notes	09/30/24
C3	Construction Notes	09/30/24
C4	Construction Notes	09/30/24
C5	Demolition and Erosion Control Plan	09/30/24
C6	Geometry, Signage and Striping Plan	09/30/24
C7	Paving, Grading and Drainage Plan	09/30/24
C8	Stormwater Structures Table	09/30/24
C9	Utility Plan	09/30/24
C10	Construction Details	09/30/24
C11	Construction Details	09/30/24
C12	Construction Details	09/30/24
C13	Construction Details	09/30/24
C14	Construction Details	09/30/24
C15	Construction Details	09/30/24
TP1	Tree Protection Plan & Details	09/30/24
TP2	Tree Protection Plan & Details	09/30/24
LA1	Landscape Plan & Details	09/30/24
LA2	Landscape Plan & Details	09/30/24
LA3	Interior Landscaping	09/30/24
LA4	Landscape Plan & Details	09/30/24
IR1	Irrigation Plan & Details	09/30/24
IR2	Irrigation Plan & Details	09/30/24

2" TEMP WATER EXHIBIT

SITE PLAN SHOWN FOR REFERENCE ONLY. REFER TO CIVIL DRAWINGS FOR ACTUAL SITE CONDITIONS

GENERAL NOTES - SITE PLAN

1. ARCHITECTURAL SITE PLAN SHOWN FOR REFERENCE ONLY. COORDINATE WITH CIVIL DRAWINGS FOR SITE INFORMATION
2. COORDINATE WITH CIVIL DRAWINGS FOR SITE SIGNAGE AND PAVEMENT MARKING INFORMATION
3. COORDINATE WITH LANDSCAPE / SITE IRRIGATION DRAWINGS
4. COORDINATE WITH ELECTRICAL DRAWINGS FOR SITE LIGHTING INFORMATION



A1 ARCHITECTURE SITE PLAN

1" = 30'-0"

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4926 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

SCHENKEL SHULTZ

SS Lic. No. AA-C000857
www.schenkelshultz.com

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634 N. Orange Avenue,
Winter Park, FL 32789
voice 407.672.3322

REVISIONS		
MARK	DESCRIPTION	DATE

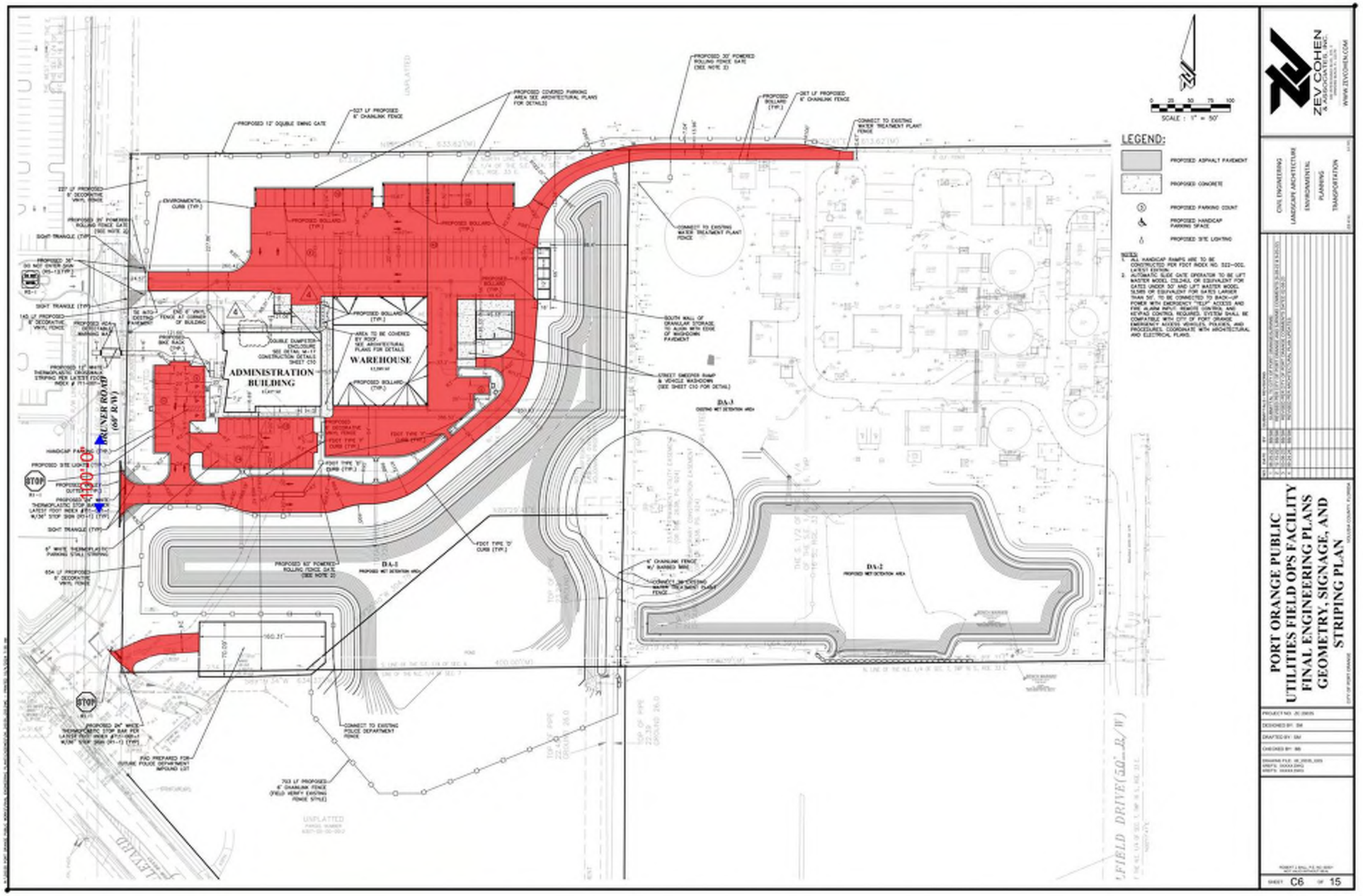
COMM. NO.: 2021015
ISSUE DATE: 09/30/2024
DRAWN BY: MR

ARCHITECTURE SITE PLAN

AS011
PERMIT/BID DOCUMENTS

ASPHALT

1 1/2" type SP-9.5 — 117213.3 SQ FT



ZEV COHEN & ASSOCIATES, INC.
WWW.ZEVCOHEN.COM

CIVIL ENGINEERING
LANDSCAPE ARCHITECTURE
ENVIRONMENTAL
PLANNING
TRANSPORTATION

PORT ORANGE PUBLIC UTILITIES FIELD OPS FACILITY
FINAL ENGINEERING PLANS
GEOMETRY, SIGNAGE, AND STRIPING PLAN
VOLUSIA COUNTY, FLORIDA
CITY OF PORT ORANGE

PROJECT NO: 20.0005
DESIGNED BY: SM
DRAFTED BY: SM
CHECKED BY: MB
DRAWING FILE: 20_0005_GEO
XREFS: SHEET1.DWG
XREFS: SHEET2.DWG

SHEET C6 OF 15

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION
6505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

SCHENKEL SHULTZ
SS Lic. No. AA-C000617
834 N. Orange Avenue,
Winter Park, FL 32789
voice 407-672-5522
www.schenkelshultz.com
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ZEV COHEN & ASSOCIATES, INC.
WWW.ZEVCOHEN.COM

REVISIONS
MARK | DESCRIPTION | DATE

SEAL

ROBERT J. BALL, P.E. NO. 66561

COMM. NO.: 2021015
ISSUE DATE: 09/30/2024
DRAWN BY: SM

GEOMETRY, SIGNAGE, AND STRIPING PLAN

C6

PERMIT/BID DOCUMENTS

James Manyette

From: Chad Hazen <chadshazen@hazenconstruction.net>
Sent: Friday, November 22, 2024 10:59 AM
To: James Manyette
Cc: Keri Strawder; Josh Blubaugh; Greg Keresi; Manuel Gonzalez
Subject: RE: Port Orange Public Utilities Field Ops Fac.
Attachments: 2in Temp water exhibit.pdf; Asphalt (new).pdf; Port Orange Public Utilities Field Operations Facility - HC Proposal 2024-11-22.pdf

Good morning – thanks for your patience as we worked through the questions and proposal comments. Attached is our updated bid form and proposal. See below answers in RED and updates to the proposal comments.

1. You stated (2) 1" lifts for the asphalt. Please provide 2 lifts @ 1.5" min each lift.
   Modified to (2) 1.5" lifts
2. Please confirm you have the sodding of pond slopes DA-1 & DA-2 with Bahia.
   Confirmed. 7,801 SY sod for DA-1 and 3,462 SY sod for DA-2 is Bahia
3. Your proposal does not show the Oil Water Separator. This is only shown on Civil drawings and not in Plumbing drawings or specs. Please furnish and install this item (see C13 cut sheet below).
   Included in bid and added piping & C/O's from trap to bldg. Separator is not by Oldcastle, we have priced an alternate 5000 gal separator.
4. Sheet C9 shows trench drains and ties ins at outdoor ramp (not tied into building). Trench drain cutsheets are shown on C13. Please confirm you have the drains and piping.
   Sheet C-7 shows the 4" ACO Klassik drain with heel proof grate between buildings that is shown on detail sheet C13. No information is given for 20" trench drain shown at wash down pit, we have price as 24" Wilkins trench drain w/ 6" outlet
5. Please confirm ($26,709) can be removed from your scope/contract value if we are to get this from our concrete sub (specifically for 4" and 6" concrete sidewalks).
   Confirmed – removed from proposal
6. Confirm you have included MOT
   Confirmed

   Additional clarifications based on scoping markups PDF provided:
   SEWER
7. No 6" pipe s/b 260 LF
   We have included 264 LF of 6" service lateral pipe in the 6" services off of C900 and SDR26

   WATER
8. Is this poly line, we have 630 LF
   Yes. Per answer to RFI 11 and revised logistics plan sheet AS011 provided in WSI No. 8 showing locations of jobsite trailer and laydown yard, we ran line North from tap location on Bruner to North side of staff exit drive , then over East and South to washdown area. Polytube was calculated and confirmed scale on plan sheet. Quantity was confirmed to be to 1049 LF (please see exhibit to confirm we have picked up correct scope). Per the sitework bid package item #32, temp service is called to be 2.5" poly line. Polytube is not made in this size, but 2 ½" is made in CL200 PVC bell/spigot pipe that is expensive. We priced as 2" polytube service to save on cost, if service needs to be 2 ½" B/E PVC we can absolutely price it that way.

   STORM
9. We have 910 LF

Re-counted PVC for roof drains and have 785LF of 10" PVC (modified on proposal from 742LF) and 364LF of 12" PVC. If we count the 136' run of 12" along North side of warehouse as 10", then we have 921LF, could this be the error? Option 2 is if we count all the roof drain leader pipe to all 28 roof drains, we come up with 912LF. Roof drain leader size is not called for on plans. Due to the quantity of drains shown, we priced these as industry standard 6" drains and the 6" PVC from the 10" main is included in the 6" rood drain price. If roof drains need to be 10" (23EA) and 12" (5EA), we can absolutely price them that way.

SITEWORK AND PAVING

10. 1 ½" lifts X2
    Proposal has been modified

11. We have 14,228 SY
    We have re-counted asphalt qty and confirmed the scale on plan sheet. Quantity was confirmed to be 13,041 SY (please see exhibit to confirm we have picked up correct scope). This also affected the 12" sub-grade qty to 13,756 SY. Proposal has been modified. The sub-grade qty is higher than the limerock and asphalt quantity (see detail R-15 on C-12) because subgrade extends under curb to 1' beyond BOC. We calculate this based on width of each type of curb used +1'

12. We have 1,333 LF
    You have the correct quantity. We missed two runs of "D" curb at back of asphalt off SE corner of Administration Bldg. Proposal has been modified

Separately, you had asked if HC has worked on Wharton-Smith projects. Yes, we have completed as the prime site contractor and as the underground utility subcontractor to different site prime contractors. After your review, let me know if you have any additional questions. Thanks.

Chad S. Hazen

HAZEN CONSTRUCTION

From: Chad Hazen
Sent: Thursday, November 21, 2024 6:20 AM
To: James Manyette <jmanyette@whartonsmith.com>
Cc: Keri Strawder <kstrawder@whartonsmith.com>; Josh Blubaugh <jblubaugh@whartonsmith.com>; Greg Keresi <gkeresi@whartonsmith.com>; Manuel Gonzalez <mdgonzalez@whartonsmith.com>
Subject: RE: Port Orange Public Utilities Field Ops Fac.

Good morning – thank you for following up. I also received your voicemail but was tied up in meetings yesterday afternoon. I spoke with our estimators, and they mentioned we are still waiting for responses from two vendors. We expect to receive them later today, which will allow us to finalize our response. Thanks again.

Chad S. Hazen

HAZEN CONSTRUCTION

From: James Manyette <jmanyette@whartonsmith.com>
Sent: Wednesday, November 20, 2024 4:03 PM
To: Chad Hazen <chadshazen@hazenconstruction.net>
Cc: Keri Strawder <kstrawder@whartonsmith.com>; Josh Blubaugh <jblubaugh@whartonsmith.com>; Greg Keresi <gkeresi@whartonsmith.com>; Manuel Gonzalez <mdgonzalez@whartonsmith.com>
Subject: RE: Port Orange Public Utilities Field Ops Fac.

Hi Chad,

I'm checking in for a status update on this one.

Respectfully,

James R. Manyette | Senior Preconstruction Services Manager
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771 | Cell: (407) 810-9590

From: Chad Hazen <chadshazen@hazenconstruction.net>
Sent: Tuesday, November 19, 2024 7:40 AM
To: James Manyette <jmanyette@whartonsmith.com>
Cc: Keri Strawder <kstrawder@whartonsmith.com>; Josh Blubaugh <jblubaugh@whartonsmith.com>; Greg Keresi <gkeresi@whartonsmith.com>; Manuel Gonzalez <mdgonzalez@whartonsmith.com>
Subject: RE: Port Orange Public Utilities Field Ops Fac.

Good morning – we will start working on this and report back. Thanks.

Chad S. Hazen

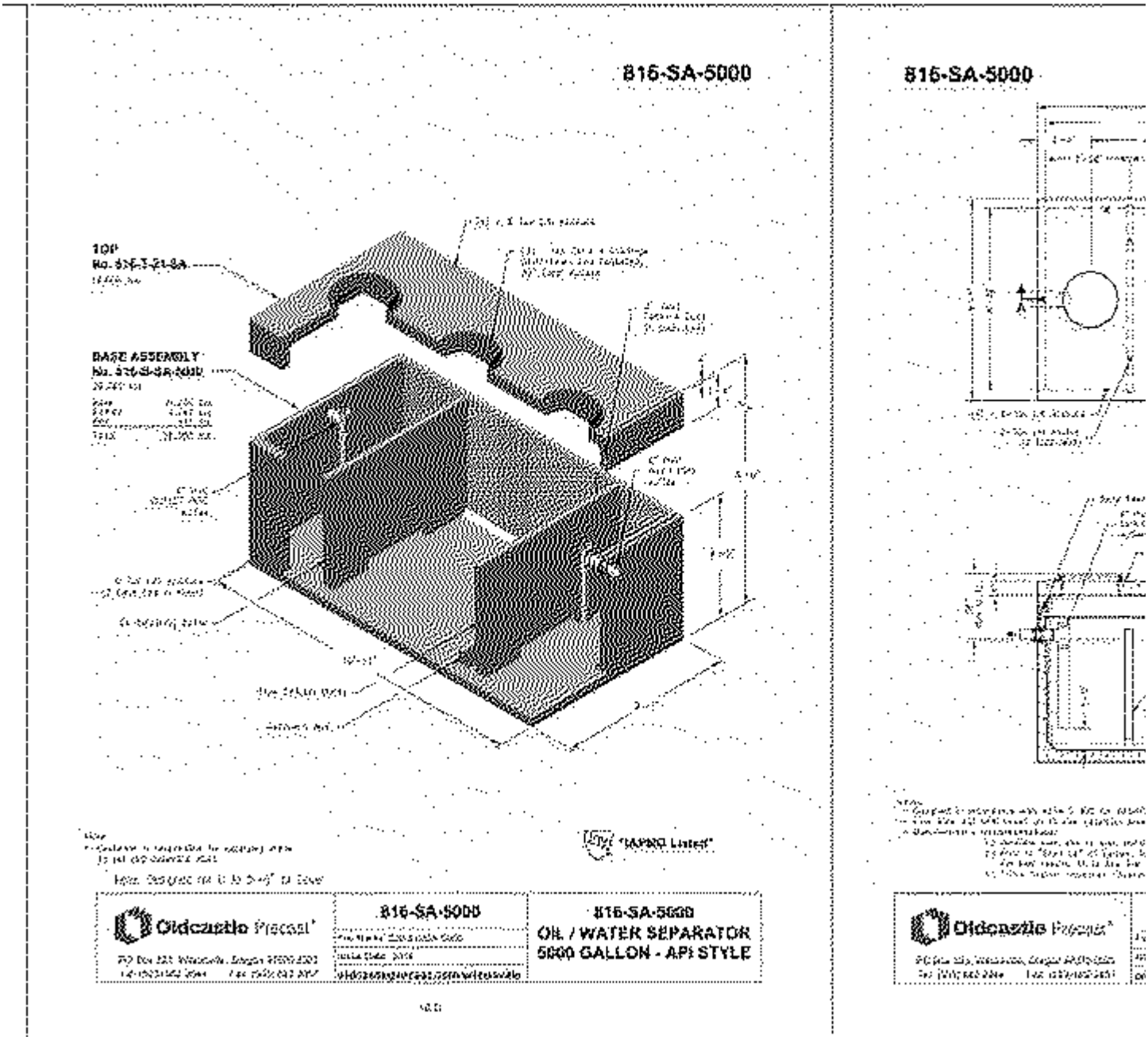
HAZEN CONSTRUCTION

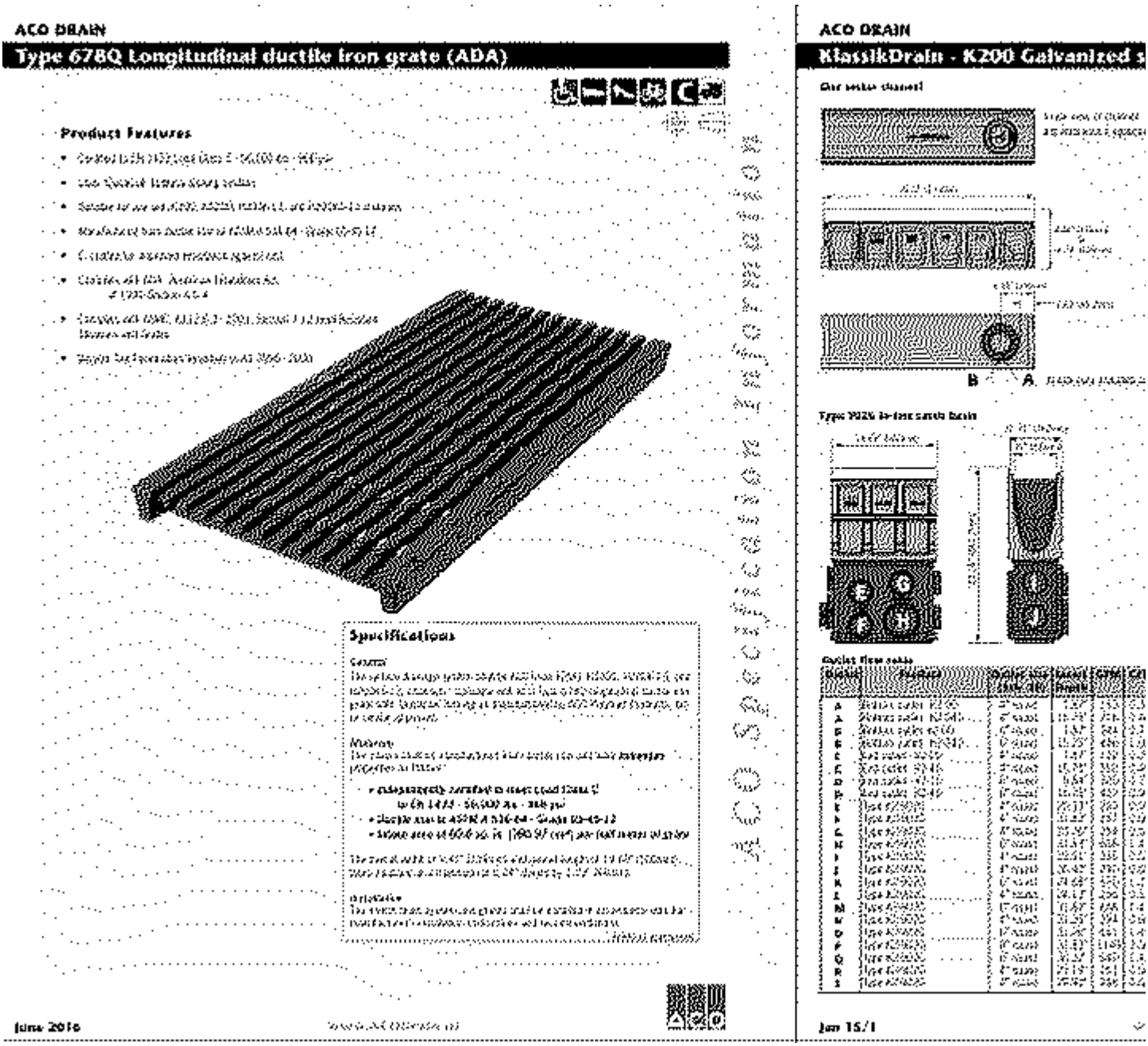
From: James Manyette <jmanyette@whartonsmith.com>
Sent: Monday, November 18, 2024 7:32 PM
To: Chad Hazen <chadshazen@hazenconstruction.net>
Cc: Keri Strawder <kstrawder@whartonsmith.com>; Josh Blubaugh <jblubaugh@whartonsmith.com>; Greg Keresi <gkeresi@whartonsmith.com>; Manuel Gonzalez <mdgonzalez@whartonsmith.com>
Subject: Port Orange Public Utilities Field Ops Fac.

Chad – Thanks again for your Site/Civil bid on the above project. I had a couple scoping items I wanted to ensure you picked up. Please review below and revised your proposal as needed to incorporate these items:

1. You stated (2) 1” lifts for the asphalt. Please provide 2 lifts @ 1.5” min each lift.
2. Please confirm you have the sodding of pond slopes DA-1 & DA-2 with Bahia.
3. Your proposal does not show the Oil Water Separator. This is only shown on Civil drawings and not in Plumbing drawings or specs. Please furnish and install this item (see C13 cut sheet below).
4. Sheet C9 shows trench drains and ties ins at outdoor ramp (not tied into building). Trench drain cutsheets are shown on C13. Please confirm you have the drains and piping.
5. Please confirm ($26,709) can be removed from your scope/contract value if we are to get this from our concrete sub (specifically for 4” and 6” concrete sidewalks).
6. Confirm you have included MOT

From Civil Sheet C13





Respectfully,

James R. Manyette | Senior Preconstruction Services Manager
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771 | Cell: (407) 810-9590

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Subcontractor Bid Form-Sitework

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Tomoka Construction Services, Inc.
Scope of Work:	Sitework

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

General Conditions / Other	$ 490,962.60
Erosion Control, Site Prep & Grading	$ 709,747.94
Stabilized Subgrade/base, Asphalt Paving and Curbing	$ 873,826.32
Concrete Paving / Flatwork	$ 0
Storm Drainage	$ 319,246.98
Sanitary Sewer	$ 185,058.35
Water	$ 232,386.35
Total Amount:	$ 2,811,226.54
Amount in Words:	two million, eight hundred eleven thousand, two hundred twenty eight - 54/100

(1.2) Alternates (Voluntary)

Alt #1 - suitable fill to owner location < 7miles	$ (70,851.45)
Alt #2 - suitable fill loaded into trucks (by others)	$ (151,347.60)
Stabilized crane access road - 8" CC	$ 26.84 / sy

Continued Next Page

(1.3) Owner Direct Purchase (value of all purchases exceeding $5,000)

Material/Equipment Types:	Piping & Fittings
Amount:	$ 201,845.70 + tax

(1.4) Value Engineering (We encourage voluntary VE/cost savings options) NA

1		$
2		$
3		$

(1.5) MWBE Participation NA

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %: 1.67	

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)
Precast structures	6-8		

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1	Dated:	11-07-24	RFI No.		Dated:	
RFI No.	2	Dated:	11-11-24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10-22-24	WSI No.	4	Dated:	10-26-24
WSI No.	2	Dated:	10-24-24	WSI No.	5	Dated:	10-31-24
WSI No.	3	Dated:	10-24-24	WSI No.	6	Dated:	11-04-24

7 11-04-24
8 11-08-24

(2.3) ASI (Architect's Supplemental Instructions) NA

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda NA

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

Wharton-Smith, Inc. CONSTRUCTION GROUP

PART 3: BIDDER INFORMATION

Tomoka Construction Services, Inc

Company Name

40 Holly street Ormond Beach, FL 32174

Address (Street, City, State, Zip)

386-274-3120 kyle@tomokaconstruction.com

Phone Number **Email Address**

Type of Organization (Check One):

(✓) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable: na

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Tomoka Construction Services, Inc
By: [signature]
Printed Name: Kyle R Hall
Title: PM
Dated: 11-12-2024
License No.: CUC 1225507 / FPC 18-000071

Tomoka Construction Services, Inc.

Wharton-Smith, Inc.

November 12,2024

Project: Port Orange Public Utilities Field Ops Facility - Port Orange, Florida

Plans: Zev Cohen & Associates, Inc. Sheets C1 - C15. Issued 09/30/2024. Revisions 09/24/2024.

Proposal

	Quantity	Units		Unit Cost		Total Bid
1. General Conditions	1	LS	$	107,800.00	$	107,800.00
2. Temp Construction Entrance	2	EA	$	4,000.00	$	8,000.00
3. Silt Fencing	4,735	LF	$	2.00	$	9,470.00
4. Tree Barricade	1,510	LF	$	6.00	$	9,060.00
5. Turbidity Barrier	220	LF	$	15.00	$	3,300.00
6. NPDES NOI & Inspections	1	LS	$	16,520.09	$	16,520.09
7. Erosion Control Maintenance	1	LS	$	4,800.00	$	4,800.00
8. Team Player Fees	1	LS	$	210.60	$	210.60
9. Temp Construction Access	1	LS	$	131,560.00	$	131,560.00
10. Demolition	1	LS	$	6,697.00	$	6,697.00
11. Clearing & Grubbing	13.35	AC	$	10,000.00	$	133,500.00
12. Earthwork	1	LS	$	462,736.25	$	462,736.25
13. Export Excess Spoils	37,095	CY	$	5.28	$	195,861.60
14. Storm Drainage System	1	LS	$	319,246.98	$	319,246.98
15. Sanitary Sewer System	1	LS	$	116,839.35	$	116,839.35
16. Oil/Water Separator 5000 GL	1	LS	$	68,219.00	$	68,219.00
17. Domestic Water System	1	LS	$	169,466.00	$	169,466.00
18. Temp Water System	1	LS	$	25,000.00	$	25,000.00
19. Fire Water System	1	LS	$	37,920.35	$	37,920.35
20. 12" Stabilized Subbase	14,275	SY	$	12.50	$	178,437.50
21. 6" Limerock Base	13,210	SY	$	24.00	$	317,040.00
22. 2" SP 9.5 Asphalt - 2 Lifts	13,210	SY	$	21.33	$	281,769.30
23. Type D Curbing	1,335	LF	$	21.60	$	28,836.00
24. 2' Environmental Curbing	205	LF	$	36.00	$	7,380.00
25. 2' Type F Curbing	1,290	LF	$	29.10	$	37,539.00
26. 3' Environmental Curbing	135	LF	$	36.00	$	4,860.00
27. Storm Inlet Aprons	5	EA	$	1,250.00	$	6,250.00
28. Bahia Sodding	67,100	SF	$	0.45	$	30,195.00
29. Striping & Signage	1	LS	$	10,518.52	$	10,518.52
30. ADA Surface Mount Mats	26	SF	$	46.00	$	1,196.00

40 Holly Street ▲ Ormond Beach, Florida 32174-2935 ▲ Tel: 386.274.3120 ▲ Fax: 386.274.3170

Tomoka Construction Services, Inc.

31. Layout & As-Builts	1	LS	$	73,500.00	$	73,500.00
32. Maintenance of Traffic	1	LS	$	7,500.00	$	7,500.00
			Total Base Bid		$	**2,811,228.54**

Alternates

1. Export Fill to Owner Site	37,095	CY	$	(1.91)	$	(70,851.45)
2. Load Export Fill Into Others	37,095	CY	$	(4.08)	$	(151,347.60)

Qualifications & Exclusions:

1. Permits or permits fees are excluded, unless otherwise noted.
2. Unsuitable material, hazardous material, coquina or cemented stone removal or replacement is excluded.
3. NPDES notice of intent, certified inspections and notice of termination are included. Inspections included through substantial stabilization of project.
4. Storm drainage system dewatering is included, as needed. Testing per AHJ is included. Bar grating of MES are excluded. Roof drainage collector systems are included, as shown.
5. Sanitary sewer system dewatering is included, as needed. Testing per AHJ is included.
6. Oil/Water interceptor dewatering is included, as needed. Testing per AHJ is included. Venting of Oil/Water separator, if required, is excluded and is by others.
7. Domestic water sytem dewatering is included, as needed. Testing per AHJ is included. Meters are excluded and will be by local water purveyor.
8. Fire water system dewatering is included, as needed. Testing per AHJ is included. FDC locking caps or Knox Boxes are excluded.
9. Conduits or sleevings are excluded.
10. Electrical or site lighting is excluded.
11. Flatwork is excluded. Sitework bid packages notes are conflicting on responsible party.
12. Bollards or bike racks are excluded.
13. Bahia sodding proposed for pond banks and berm tops.
14. Temporary parking, construction access & stabilized access are included, per site logistics plan sheet.
15. Bonds are not included within base bid. If required, additional costs would be warranted.
16. Density testing is excluded.
17. Removal, relocation or replacement of existing utilities are excluded, unless otherwise depicted within referenced civil plan drawings.
18. Striping & signage proposed as shown, nothing assumed or implied. Concrete wheelstops are included.

Submitted By: Kyle R Hall

Accepted By / Date

40 Holly Street ▲ Ormond Beach, Florida 32174-2935 ▲ Tel: 386.274.3120 ▲ Fax: 386.274.3170

Christine Carasas

From: Kyle Hall <kyle@tomokaconstruction.com>
Sent: Tuesday, November 12, 2024 1:31 PM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Public Utilities Field Ops Facility SITE WORK BID PACKAGE
Attachments: Tomoka Construction Bid POPW.pdf; PO Public Utilities Bid Form SITEWORK.pdf

Good afternoon,

Please find attached, our subcontractor bid form, Sitework, for the Port Orange Public Utilities Field Ops Facility project. I have also included our internal bid proposal as well, for reference.

Please review the attached and let me know if you have any questions or if anything further is needed.

We do appreciate the opportunity to bid with you on this project

Sincerely,

Kyle Hall

40 Holly Street
Ormond Beach, FL. 32174
www.tomokaconstruction.com
P: 386-274-3120
F: 386-274-3170
C: 386-338-5424

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Subcontractor Bid Form-Sitework

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Wayne Automatic Fire Sprinklers, Inc
Scope of Work:	Site work

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

General Conditions / Other	$ 1,275,070
Erosion Control, Site Prep & Grading	$ 1,147,870
Stabilized Subgrade/base, Asphalt Paving and Curbing	$ 850,650
Concrete Paving / Flatwork	$ 131,680
Storm Drainage	$ 501,570
Sanitary Sewer	$ 268,830
Water	$ 118,330
Total Amount:	$ 4,294,000
Amount in Words:	Four million, Two hundred ninety four thousand dollars

(1.2) Alternates (Voluntary)

NA	$	NA
NA	$	NA
NA	$	NA

Continued Next Page

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	Pipe, Fittings & Structures
Amount:	$ 200,000

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1	NA	$ NA
2	NA	$ NA
3	NA	$ NA

(1.5) MWBE Participation

MWBE	$ NA
LDB	$ NA
VBE	$ NA

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	1

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)
Structures	12-14	NA	NA
NA	NA	NA	NA
NA	NA	NA	NA

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1	Dated:	11/7/24	RFI No.	NA	Dated:	NA
RFI No.	2	Dated:	11/11/24	RFI No.	NA	Dated:	NA
RFI No.	NA	Dated:	NA	RFI No.	NA	Dated:	NA

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10/22/24	WSI No.	4	Dated:	10/28/24
WSI No.	2	Dated:	10/24/24	WSI No.	5	Dated:	10/31/24
WSI No.	3	Dated:	10/24/24	WSI No.	6	Dated:	11/4/24
					7		11/6/24

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.	NA	Dated:	NA	ASI No.	NA	Dated:	NA

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.	NA	Dated:	NA	Addenda No.	NA	Dated:	NA
Addenda No.	NA	Dated:	NA	Addenda No.	NA	Dated:	NA

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

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The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Wayne Automatic Fire Sprinklers, Inc.
Company Name

222 Capital Court, Ocoee FL 34761
Address (Street, City, State, Zip)

407-656-3030 JRmaldonado@waynefire.com
Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of _____.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Wayne Automatic Fire Sprinklers, Inc.
By: _____
Printed Name: Josthen Maldonado
Title: Site estimator
Dated: _____
License No.: _____

WAYNE

Automatic Fire Sprinklers, Inc.®

Total Site Development

Wayne Automatic Fire Sprinklers, Inc.is pleased to provide a proposal for the project and scope listed below.

Attn: James Manyette
Wharton-Smith

PROJECT: Port Orange Utilities				Date: 11/12/2024	
ITEM #	Bid Item Description	QTY	Unit	Unit Price	Total
GENERAL CONDITIONS					
1	MOBILIZATION	1	LS	$21,580.00	$21,580.00
2	SURVEY & CERTIFIED AS-BUILTS	1	LS	$134,880.00	$134,880.00
3	DENSITY TESTING	1	LS	$26,980.00	$26,980.00
4	CLEAR, DEMO, & HAUL	1	LS	$241,070.00	$241,070.00
5	SITE CUT/FILL	67,480	CY	$9.55	$644,640.00
6	EXPORT FILL	50,922	CY	$6.08	$309,440.00
7	BUILDING PAD GRADE	2	EA	$5,785.00	$11,570.00
8	GENERAL GRADE	1	LS	$36,950.00	$36,950.00
9	FINE GRADE	1	LS	$94,600.00	$94,600.00
10	SILT FENCE	5,000	LF	$2.99	$14,940.00
11	INLET PROTECTION	8	EA	$302.50	$2,420.00
12	TREE PROTECTION	33	EA	$443.64	$14,640.00
13	TURBIDITY BARRIER	230	LF	$32.65	$7,510.00
14	CONSTRUCTION ENTRANCE	2	EA	$5,580.00	$11,160.00
15	DEWATERING	1	LS	$285,910.00	$285,910.00
16	PRIVATE LOCATES	1	LS	$6,750.00	$6,750.00
17	SOD POND SLOPES TO GRADE 23.90 (BAHIA)	112,000	SF	$1.08	$120,850.00
18	OVER EXCAVATE ROOT IN BUILDING PAD PER GEOTECH	360	CY	$86.86	$31,270.00
19	2.5" TEMPORARY WATER LINE WITH 3 STUBUPS	1,500	LF	$17.01	$25,510.00
20	6" CRUSHED CONCRETE TEMP PARKING (INSTALLATION & REMOVAL)	2,000	SY	$35.65	$71,300.00
21	8" STABILIZED ACCESS ROAD (INSTALLATION)	2,900	SY	$22.93	$66,500.00
22	8" CRUSHED CONCRETE ACCESS ROAD (INSTALLATION & REMOVAL)	1,500	SY	$42.99	$64,480.00
23	2" & 4" IRRIGATION SLEEVES	220	LF	$27.32	$6,010.00
SUBTOTAL					$2,250,960.00

ITEM #	Bid Item Description	QTY	Unit	Unit Price	Total
SANITARY					
1	SET MANHOLE ON EXISTING LINE W OUTSIDE DROP	1	EA	$21,390.00	$21,390.00
2	6" SDR 26 PVC PIPE	238	LF	$38.82	$9,240.00
3	8" SDR 26 PVC PIPE	518	LF	$48.17	$24,950.00
4	6" CLEANOUT ASSEMBLY	6	EA	$1,868.33	$11,210.00
5	MANHOLE	3	EA	$12,330.00	$36,990.00
6	5000 GALLON GREASE TRAP	1	EA	$95,220.00	$95,220.00
7	Z886 LOADING DOCK TRENCH DRAIN (SETTING ONLY)	25	LF	$533.60	$13,340.00
8	FITTINGS	1	LS	$13,340.00	$13,340.00
9	TESTING	1	LS	$10,920.00	$10,920.00
10	DEWATERING	1	LS	$32,230.00	$32,230.00
SUBTOTAL					$268,830.00

ITEM #	Bid Item Description	QTY	Unit	Unit Price	Total
STORM					
1	CUT MANHOLE TO EXISTING LINE	1	EA	$14,310.00	$14,310.00
2	8" SDR 35 PVC PIPE	28	LF	$28.57	$800.00
3	10" SDR 35 PVC PIPE	1,008	LF	$37.53	$37,830.00
4	12" SDR 35 PVC PIPE	384	LF	$46.85	$17,780.00
5	18" HDPE PIPE	160	LF	$70.00	$11,200.00
6	24" HDPE PIPE	280	LF	$95.43	$26,720.00
7	30" HDPE PIPE	380	LF	$122.34	$46,490.00
8	36" RCP PIPE	40	LF	$246.75	$9,870.00
9	TYPE D INLET	8	EA	$10,026.25	$80,210.00
10	24" ADS MES	3	EA	$2,533.33	$7,600.00
11	30" ADS MES	1	EA	$4,040.00	$4,040.00
12	36" MES	1	EA	$9,550.00	$9,550.00
13	ACO TRENCH DRAIN	105	LF	$272.19	$28,580.00
14	CLEANOUTS	16	EA	$1,210.63	$19,370.00
15	ROOF DRAINS	28	EA	$1,491.07	$41,750.00
16	FITTINGS	1	LS	$28,810.00	$28,810.00
17	TESTING	1	LS	$22,600.00	$22,600.00
18	DEWATERING	1	LS	$94,060.00	$94,060.00
SUBTOTAL					$501,570.00

WAYNE

Automatic Fire Sprinklers, Inc.®

Total Site Development

ITEM #	Bid Item Description	QTY	Unit	Unit Price	Total
WATER					
1	CONNECT TO EXISTING GATEVALVE	1	EA	$4,790.00	$4,790.00
2	2" POLY PIPE	700	LF	$15.06	$10,540.00
3	8" DR18 PVC PIPE	640	LF	$45.75	$29,280.00
4	2" BACKFLOW ASSY FLUSH LINE SERVICE	1	EA	$5,640.00	$5,640.00
5	2" BACKFLOW ASSY MASTER METER (METER BY CITY)	1	EA	$13,530.00	$13,530.00
6	2" GATEVALVE	3	EA	$1,406.67	$4,220.00
7	4" GATEVALVE	2	EA	$1,880.00	$3,760.00
8	8" GATEVALVE	4	EA	$3,020.00	$12,080.00
9	HYDRANT	1	EA	$9,180.00	$9,180.00
10	BLOW-OFF	1	EA	$2,890.00	$2,890.00
11	TEMP JUMPER ASSY	1	EA	$5,640.00	$5,640.00
12	FITTINGS	1	LS	$9,690.00	$9,690.00
13	TESTING	1	LS	$7,090.00	$7,090.00
SUBTOTAL					**$118,330.00**

ITEM #	Bid Item Description	QTY	Unit	Unit Price	Total
FIRE					
1	DESIGN, PERMIT, & INSTALL FIRE LINE	1	LS	$145,000.00	$145,000.00
SUBTOTAL					**$145,000.00**

ITEM #	Bid Item Description	QTY	Unit	Unit Price	Total
PAVING					
1	1.5" SP 9.5 ASPHALT (SINGLE LIFT)	13,200	SY	$25.63	$338,270.00
2	6" LIMEROCK BASE	13,200	SY	$23.02	$303,850.00
3	12" STABILIZED SUB-GRADE	13,200	SY	$9.46	$124,920.00
4	D CURB	1,350	LF	$21.59	$29,140.00
5	F CURB	1,500	LF	$33.72	$50,580.00
6	VALLEY GUTTER	90	LF	$43.22	$3,890.00
7	SIDEWALK	6,200	SF	$8.09	$50,180.00
8	THICKENED EDGE SIDEWALK	880	SF	$10.80	$9,500.00
9	HANDICAP RAMP W/ MAT	2	EA	$2,025.00	$4,050.00
10	DUMPSTER PAD (BOLLARDS, WALLS & GATES BY OTHERS)	1	EA	$24,380.00	$24,380.00
11	BOLLARDS	40	EA	$1,089.25	$43,570.00
12	STRIPING & SIGNAGE	1	LS	$26,980.00	$26,980.00
SUBTOTAL					**$1,009,310.00**

BASE BID

Four Million, Two Hundred Ninety Four Thousand Dollars & Zero Cents **$4,294,000.00**

Bid Qualifications:

1. This proposal is based on plans prepared by Zev Cohen & Associates containing 15 sheets of civil drawings with a revision date of 09/24/24.
2. The removal of unforeseen unsuitable materials is not included.
3. Meters and meter fees are by others.
4. Demo of electrical pipe, wire, poles, panels, etc. by others.
5. Asphalt is based on D.O.T. price index, nominal thickness and recycled.
6. Geotech report provided by Bechtol Engineering And Testing, Inc. Dated June 23,2022.
7. Contractors schedule is subject to revision should adverse or changed conditions occur. Including but not limited to weather changes or acts of God.
8. Strippings or topsoil to remain on site and be placed in non-structural areas.
9. Concrete flatwork, dumpster pads, walls, retaining walls, fences, gates, bollards, handrail, etc. by others.
10. Permits, bonds, fees, npdes, etc. by others.
11. Owner/GC to provide all survey information on-site, including plans, site benchmarks, boundary survey and complete CADD file.
12. Price subject to change if not accepted within fifteen (15) days.
13. Installation of lift station control panel electrical pipe, wire, RTU, odor control, antennas, etc. not included.
14. All sod, landscape, hardscape & irrigation is by others.
15. Well abandonment by others.
16. Any enrollment or participation in owner-controlled (OCIP), contractor-controlled (CCIP), or any other type of consolidated wrap-up insurance program.
17. Concrete ramp & handrails is by others.
18. Concrete pavement washdown area is by others.

Christine Carasas

From: Josthen K. Maldonado <jkmaldonado@waynefire.com>
Sent: Tuesday, November 12, 2024 3:39 PM
To: Wharton Smith Commercial Estimating
Cc: Marcus Drawdy; Scott Davis
Subject: Port Orange Utilities
Attachments: Port Orange Utilities.pdf

Good Afternoon,

Please see attached site proposal for Port Orange Utilities. Let us know if you have any questions.

Thank You.

Josthen Maldonado
Site Estimator
Wayne Automatic Fire Sprinklers, Inc. ®
222 Capitol Court Ocoee, FL 34761
cell: 321-830-7728 ***Main Office:*** 407-656-3030
Ocoee | Jacksonville | Deerfield Beach | Tampa | Ft Myers | Concord, NC | Raleigh, NC

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!

AAA Fence
A Division of Fence Service, Inc.

801 Orange Ave.
www.aaafence.com
Daytona Beach, Fl 32114

Phone: (386) 253-4212
Fax: (386) 253-2878

November 12, 2024

Proposal To:

Wharton-Smith Construction

Job Location:

Port Orange Public Utilities / Ops Bldg

AAA Fence Company does hereby propose to provide materials, labor, equipment, tools and all items necessary to install fencing for this project as per the plans and specifications provided. All work shall be performed in a professional and workmanlike manner, in accordance with standard practices.

Scope of Work:

Decorative PVC Fence

1,090' of 6' high White PVC Fence Classic Rail – Color not called out ……..…$30,710.00

- **Meets or exceeds the detail on page C15**
- **Bottom rail insert is included**
- **All posts are set in concrete**

Optional to Add Aluminum Inserts to End & Line Posts ……Add ……...8,400.00

Galvanized Chain Link Fence w/ 3 Strands of Barb Wire

1,700' of 6' + 1' Chain Link Fence w/ Barb Wire ……..48,450.00

- **All posts are set in concrete**
- **Some connections to existing fence's are required**
- **1 – 12' Double Gate included**
- **As per detail included on page C15**

3 – 30' x 6' + 1' Aluminum Dual Track Cantilever Gates …….67,920.00

1 – 35' x 6' + 1' Aluminum Dual Track Cantilever Gates

- **Hardware for Aluminum Cant Gates Dual Track & 4" round posts**
- **2 – 30' Gates to meet in center – in lieu of one 60' Gate**
- **A 30' opening for a Alum Cant Gate requires approx. 45' of space to open gate**

Gate Operators

4 – All O Matic SL 100 DC Pro Slide Gate Operators w/ Foot pedals …….24,960.00

- **Includes the following: 4 Pedestal Mounts for Operators, surge protection, AOM chain Bracket kits, #40 Armor coated chain & master links, 3 Gooseneck pedestals, 3 KPW 250 wireless key pads, 3 universal receivers, loop wire, loop sealant, loop detectors, 3 siren operated sensors, 3 Knox boxes. As specified in Note #2 on C6.**

Dumpster Gates – Alternate to plan in Site Details shown in section K12

1 – Approx 22’ x 8’ Tall Double Gate Aluminum Louver (Alternate) …….32,260.00

- **Site details are similar**
- **6 5/8” Round sch 40 posts set in concrete – holes blocked out by others**
- **Any painting of posts is by others**
- **Color of Gates to be determined**
- **Steel to Aluminum Barrel hinges included**

Option for Dumpster Gate

1 – 22’ Double Gate x 8’ Tall Whiter PVC mounted to 2” Galv Frames ……7,500.00

- **Gate frames are welded construction, braced & trussed as necessary**
- **2 – 6 5/8” sch 40 gate posts are set in concrete – holes blocked out for setting by others**
- **Gates include two drop bar assemblies – holes for open & closed positions with pipe sleeves in concrete**
- **As per standard Dumpster Detail included with plans (reference M-17)**

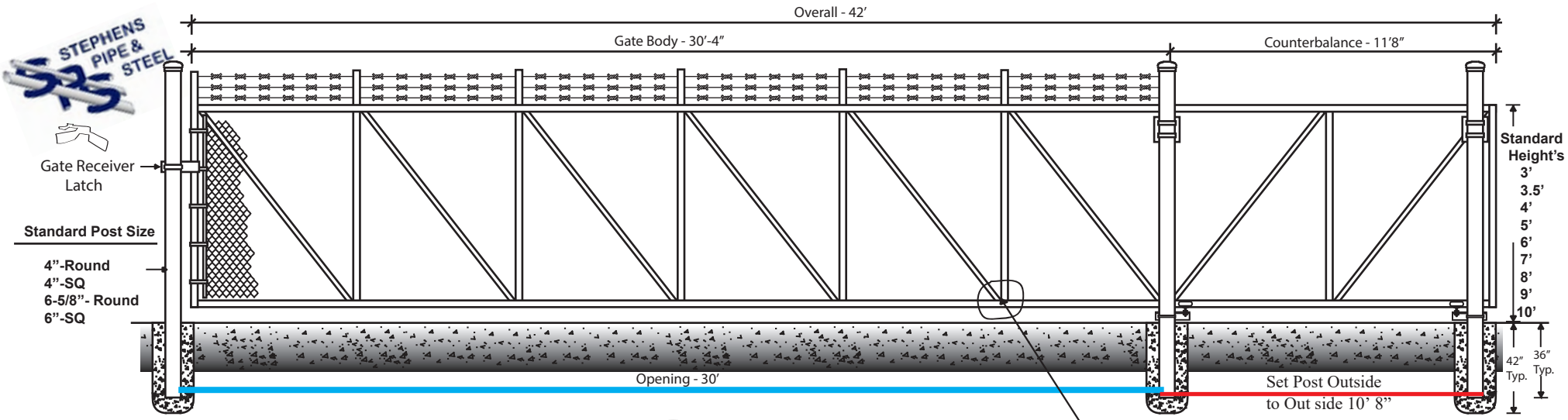
Note:

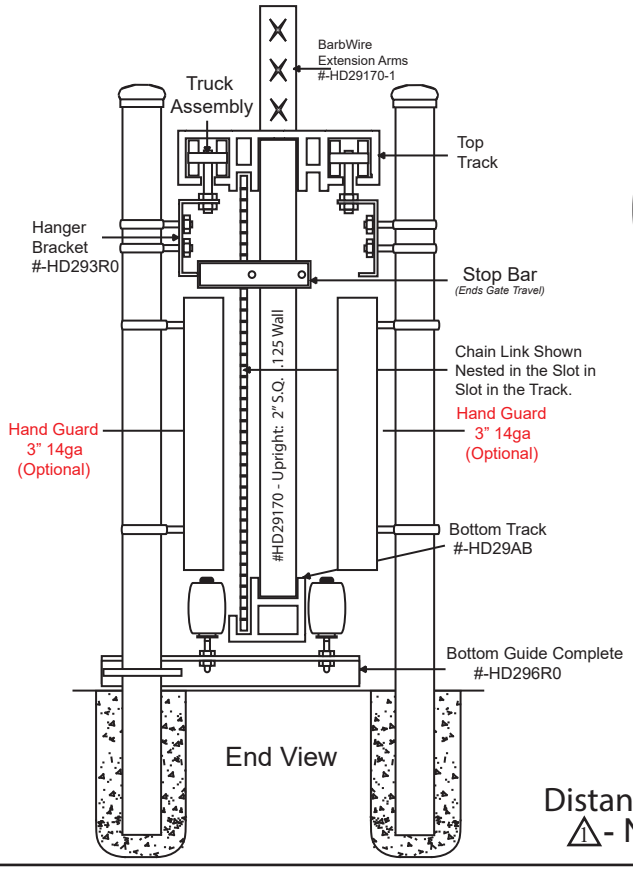
1) **All site work, grading, surveying, is all by others.**
2) **Fence lines are required to be marked for location by others, with a stake every 150’ – 200’ on long lines.**
3) **Any permitting costs are to be added, if necessary.**
4) **Any bonding costs, if req’d, are not included**

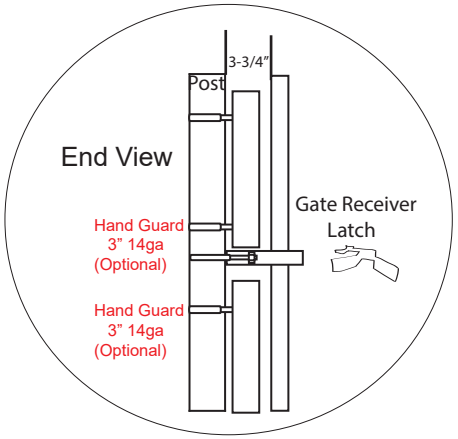
This proposal is subject to standard AAA Fence Company contract terms and conditions.

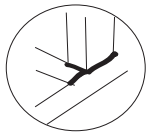
Proposal submitted by:
Rich Crescenzi
rich@aaafence.com

Accepted By: _____ Date: __11/12/2024_____

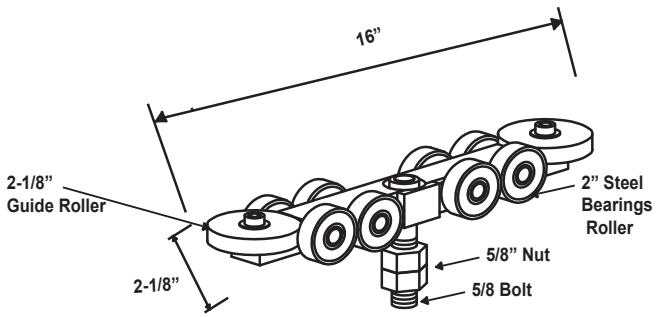








Fillet 3/8" Weld Typ.



Truck Assembly
With sealed roller bearings
#-HD29500

Double Track Post Settings	
Post Size	Post Distance Inside to Inside
4" Round	11-1/2"
4" Square	12-1/4"
6-5/8" Round	12-1/4"
6" Square	13"

Distance -/+
⚠- NTS

Default Specifications	Weight by Ft
#HD29170 - Uprights: 2" S.Q. .125 Wall	1.126
#HD29120 - Diagonals: 1-1/4" S.Q. .125 Wall	0.674
#HD29AT - Double Top Track: 9-1/2" x 3-1/4"	8.97
#HD29AB - Bottom Track: 3-1/4" x 3-1/4"	2.85

All Material 6061-T6 Extruded

Revised - Robert Curry - 04-2019

OnGuard Aluminum Fence Systems

Project:
SPS OnGuard 30' Aluminum Slide Gate With Barb

Approved By/Date	Revision NO.	Drawing NO.
Drawn By: Joe Little	Effective Date	SPS-OG-30-ASG+1

Christine Carasas

From: Rich Crescenzi <rich@aaafence.com>
Sent: Tuesday, November 12, 2024 1:26 PM
To: Wharton Smith Commercial Estimating
Subject: Port Orange Public Utilities - Ops Bldg
Attachments: Port Orange Public Utilities - Ops Bldg.pdf; SPS-OG-30-ASG-Barbed-DBL Tr.pdf

James, See the attached bid. I attached a shop drawing for a Aluminum Dual track Cantilever gate as a reference. Let me know if you have any questions. Thank you,

Rich Crescenzi
Commercial Sales
801 Orange Ave.
Daytona Beach, FL 32114
(386) 253-4212 – Office
(386) 888-0201 – Direct Line
(386) 253-2878 – Fax
rich@aaafence.com

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Aabot Fence
3001 Old Winter Garden Road
Orlando, FL 32805
Tel: 407-207-4401

PROPOSAL

November 18, 2024

Re: Port Orange Public Works – Fencing and Gates

Thank you for the opportunity to provide the following proposal. Supply labor and materials to install the following:

- 690LF of 6'H Galv Chain Link Fence with 3-strands of barbed wire and the following:
  - 2" SCH 40 Line Posts
  - 2-1/2" SCH 40 Term Posts
  - 1-5/8" Top Rail
  - Bottom Tension Wire
- 2063LF of 6'H White PVC Fence around perimeter with the following:
  - 5" square posts
  - 2-EA 30'W Pipe Frame White PVC picket infill with gate automation including operator, loops and photo eyes
  - 1-EA 60'W Bi-Parting Pipe Frame White PVC picket infill with gate automation including operator, loops and photo eyes

Total: $165,743

Exclusions:

- All staking for fence, end, corner, and gates.
- Permitting.
- Surveying.
- Bond costs.
- Engineering, inspections, or testing.
- Workforce training or badging.
- Root damage repair.
- Coring, sawing, or cutting of pavement.
- Tree removal, root raking, and clearing of fence line.
- Fence Demo.
- Privacy Slats/ Privacy Screen/ Wind Baffle.
- Electrical work and running of conduit.
- Fence grounding.
- Underground and overhead utility locates.
- Maintenance of traffic.
- Dewatering.
- Painting.
- Retaining walls, drains, slabs, and concrete curbs.
- Access Control.
- OCIP.
- Door hardware on gates.
- Material Price Escalation.

Our proposal is based on the following conditions:

- All work to be performed under one mobilization with access to all areas, high and dry, with heavy equipment and dump trucks.
- Job is done in sequence w/o interruption during normal working hours and days using one crew.
- Due to volatility of pricing in the current supply chain, pricing is valid for 5 days.
- All labor is Open Shop labor rates.

Please do not hesitate to call if you have any questions regarding this proposal. We look forward to working with you in the near future.

Sincerely,

Valerie Hamil

Christine Carasas

From: Valerie Hamil <Valerie@aabotfence.com>
Sent: Monday, November 18, 2024 8:24 AM
To: Wharton Smith Commercial Estimating
Subject: RE: RFI 003 Response Notification - Port Orange Public Utilities Field Ops Bldg.
Attachments: Port Orange Public Works - Fencing and Gates.docx

Good Morning,

I have our fencing and gates proposal attached. Please let me know if you have any questions.

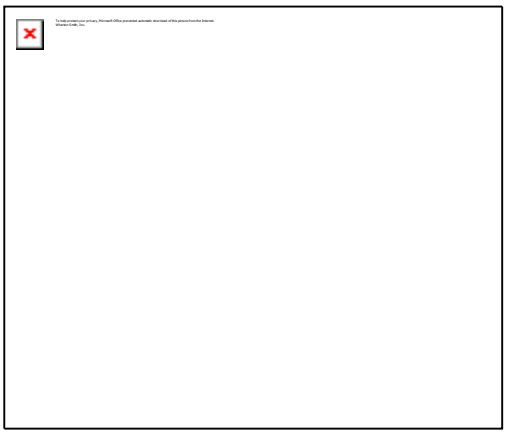
Thank you 😊

Valerie Hamil
Aabot Fence, LLC
3001 Old Winter Garden Rd
Orlando, FL 32805
407-207-4401

From: Wharton-Smith, Inc. <Transmittals@isqftmail.com>
Sent: Friday, November 15, 2024 11:11 AM
To: Valerie Hamil <Valerie@aabotfence.com>
Subject: RFI 003 Response Notification - Port Orange Public Utilities Field Ops Bldg.

RFI RESPONSE NOTIFICATION

From: Wharton-Smith, Inc.
Contact: James Manyette
Email: comest@whartonsmith.com
Phone:
Sent: Friday, November 15, 2024 11:11 AM ET



Attention: **Valerie Hamil**
Firm Name: **Aabot Fence, LLC**

Project: **Port Orange Public Utilities Field Ops Bldg.**

Owner: **City of Port Orange**
Bid Due Date: **Tuesday, November 12, 2024 2:00 PM ET**

Attention All Bidders:
A new RFI Response(s) has been posted to ConstructConnect/iSqFt. This document and any referenced attachments are available under the "Documents" section, under "Other Documents", and can be accessed by following the link below.

Thank you,

Wharton-Smith, Inc.

Click here to view the project

Access Number: VLCP-23B8

Documents referenced in this transmittal:

Pre-GMP RFI Log_CoPO Field Ops-RFI 003 11-15-2024 002.pdf

Let us know your bid intention here:



For help, visit http://www.isqft.com/start/pages/contact-support/ or call us at (877) 4CC-TOOL (422-8665).



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All-Rite Fence Services, LLC.
5115 Old Winter Garden Rd.
Orlando FL 32811
407-295-7093

Proposal

Quote # : 34384

Date: 11/12/2024

To: Wharton-Smith Inc.
750 Monroe Road
Sanford FL 32771

Project: Port Orange Public Utilities Field Ops Bu

Attn: James Manyette

Description	Amount
Provide and install 901 LF +/- of 6' tall galvanized chain link fence.	$22,759.56
696 LF of 6+1 Galvanized chain link fence.	$15,605.33
1,198 LF of 6' Tall PVC by Illusions, color TBD.	$150,489.44
1,74 LF of 42" DOT Handrail at ramp for street sweeper.	$4,530.00
1-8'H X 22'W Double dumpster gate on metal frames louvered and painted to spec.	$16,750.00
(1)35' Aluminum frame PVC Clad Cantilever gate with Lift-Master CSL24UL operator, Photo Eyes and safety loops.	$35,388.00
(1)60' Bi-Parting aluminum frame PVC Clad Cantilever gate with Lift-Master CSL24UL, operators, Photo Eyes and safety loops.	$70,777.80
(1)30' Chain link Cantilever gate with Lift-Master CSL24UL operator, Photo Eyes and safety loops.	$23,496.00

This proposal is valid for 30 days. Please contact your salesperson to proceed with work.

Salesperson: Dan Whitson
dan@allritefence.com

Non-Taxable Amount:	$339,796.13
Taxable Amount:	$0.00
Sales Tax:	$0.00
Quote Total	**$339,796.13**

Serving Central Florida Since 1967

Christine Carasas

From: All-Rite <office@allritefence.com>
Sent: Tuesday, November 12, 2024 2:02 PM
To: Wharton Smith Commercial Estimating; Dan Whitson
Subject: Proposal #34384-Port Orange Public Utilities Field Ops Building
Attachments: ARFS Standard Quote.pdf

Please see attached proposal.
Any questions please contact @Dan Whitson

ALL-RITE FENCE SERVICES, LLC.
"A FENCE FOR EVERY PURPOSE"

Nancy Harley
Administrative Assistant
5115 Old Winter Garden Road, Orlando, FL 32811

Phone: 407-295-7093
Fax: 407-292-8550
Email: office@allritefence.com



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Subcontractor Bid Form-General

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	Sterling Enterprises, L.L.C. DBA Perimeter Solutions Group
Scope of Work:	Fence

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	**$** 179720.60
Amount in Words:	one hundered seventy nine thousand seven hundered tewnty dollars and 60/110's

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding **$50,000**)

Material/Equipment Types:	Fence
Amount:	$ 32000.00

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	2.1

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	1	Dated:	11-7-24	RFI No.		Dated:	
RFI No.		Dated:	11-11-24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	1	Dated:	10-22	WSI No.	4	Dated:	10-28
WSI No.	2	Dated:	10-24	WSI No.	5	Dated:	10-31
WSI No.	3	Dated:	10-24	WSI No.	6	Dated:	11-4

7 11-26 8 11-8

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

Sterling Enterprises, L.L.C. DBA Perimeter Solutions Group
Company Name

230 N Summit Ave Lake Helen, Fl 32744
Address (Street, City, State, Zip)

386-532-2100 ryan@perimetersolutionsgroup.com
Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: Sterling Enterprises, L.L.C. DBA Perimeter Solutions Group
By: Ryan Wilkins
Printed Name: Ryan Wilkins
Title: Vice President
Dated: 11-12-24
License No.: VOL 04041201

Perimeter Solutions Group
PO Box 714
Lake Helen, FL 32744
P (386) 532-2100
www.perimetersolutionsgroup.com

Proposal

ID BID2024-01039
Date: 11/12/2024

Port Orange Public Utilities Field Ops Bldg

Client	Wharton-Smith, Inc PO Box 471028 Lake Monroe, FL 32747	Salesperson	Ryan Wilkins
Jobsite Address	Wharton-Smith, Inc PO Box 471028 Lake Monroe, FL 32747		

Proposal

#	Product	Unit	Price / Rate	Qty / Hrs	Total
1	957' of 6' galvanized chain link		29,216.61	1	29,216.61
2	693' of 6+1 galvanized chain link fence		16,886.29	1	16,886.29
3	1032' of 6' white vinyl privacy		34,052.70	1	34,052.70
4	6' high X 30' opening galvanized chain link cantilever with liftmaster operator Power and conduits by others.		18,450.00	1	18,450.00
5	6' high X 30' opening WHITE VINYL PRIVACY cantilever with liftmaster operator Power and conduits by others.		20,650.00	3	61,950.00
6	Temp fence allowance		7,500.00	1	7,500.00
7	Louvered dumpster enclosure gate		8,165.00	1	8,165.00
8	Survey layout		3,500.00	1	3,500.00
9			0.00	1	0.00
					179,720.60

Signatures

Signature | Print Name & Title | Date

Summary

Subtotal	179,720.60
Tax	0.00
Total	**179,720.60**

Inclusions

PRICE IS VALID FOR 7 CALENDAR DAYS DUE TO SUPPLY CHAIN & FUEL PRICING VOLATILITY

Exclusions

1) SURVEYING PROPERTY LINES OR FENCE LINE STAKING.
2) FENCE LINE PREPARATION INCLUDING: SITE WORK, CLEARING, MOVING, AND GRADING.
3) LOCATING OR RELOCATION OF PRIVATE UNDERGROUND UTILTITIES BEYOND SCOPE OF 811.
4) REPAIR, REPLACEMENT, RELOCATION, OR RE-INSTALLATION OF ADJACENT OR CONFLICTING LANDSCAPING, SOD, OR UNDERGROUND UTILITIES.
5) REMOVAL OF CONCEALED BELOW GRADE CONDITIONS INCLUDING:

ROOTS, STUMPS, LANDSCAPE/CONSTRUCTION DEBRIS, BURIED SLABS/ASPHALT, OR OTHER INORGANIC MATERIAL.

Terms & Conditions

TERMS:
1) PAYMENT OF INVOICES IS DUE UPON COMPLETION OF THE WORK.
2) IF WAIVER OF SUBROGATION IS REQUIRED, ADD $350.00 TO TOTAL.
3) CLIENT AGREES TO PROVIDE PSG ACCESS TO THE WORK AREA FOR A DEFINED PERIOD OF TIME. IF THE CLIENT FAILS TO MAKE THE WORK AREA ACCESIBLE/AVAILABLE THE CLIENT AGREES TO COMPENSATE PSG FOR RE-MOBILIZATION AND OTHER COSTS ASSOCIATED WITH THE DELAY.
4) WARRANTY - THE WORK IS COVERED BY 1-YEAR WARRANT FOR WORKMANSHIP, WHICH DOES NOT INCLUDE UNUSUAL WEATHER EVENTS, ACTS OF GOD, OR WORK CONTRACTED BY THE CLIENT, PERFORMED BY OTHERS IN THE SAME AREA/PROPERTY/PROJECT. THE FENCE PRODUCTS THEMSELVES IS COVERED UNDER A SEPARATE MANUFACTURER'S WARRANTY.
5) WOOD DISCLAIMER - WOOD FENCING IS A NATURAL PRODUCT THAT IN HARSH/HUMID WEATHER CAN FADE WARP, ROT, SPLINTER, AND SHRINK AND THESE MATERIALS ARE NOT COVERED BY A MANUFACTURER'S WARRANTY.
6) PSG ASSUMES NO LIABILITY FOR PROBLEMS AND DAMAGE DUE TO: NATURAL CAUSES, UNKNOWN/CONCEALED BELOW GROUND CONDITIONS.
7) FORCE MAJEURE - PSG'S AGREED TO PERFORMANCE OBLIGATIONS ARE NULLIFIED WHEN CERTAIN EVENTS/CIRCUMSTANCES OCCUR BEYOND PSG'S CONTROL INCLUDING:
*ACTS OF GOD, SUCH AS SEVERE ACTS OF NATURE OR WEATHER EVENTS INCLUDING FLOODS, FIRES, EARTHQUAKES, NAMED STORMS, OR EXPLOSIONS.
*WAR, ACTS OF TERRORISOM, EPIDEMICS, OR PANDEMICS.
*ACTS OF GOVERNMENTAL AUTHORITIES
*STRIKES AND LABOR DISPUTES

Christine Carasas

From: ConstructConnect <DoNotReply@constructconnectmail.com>
Sent: Tuesday, November 12, 2024 11:53 AM
To: Wharton Smith Commercial Estimating
Subject: Received bid for Port Orange Public Utilities Field Ops Bldg.

A simpler, more effective bid process

You've received a bid from Sterling Enterprises, L.L.C. via ConstructConnect

Port Orange Public Utilities Field Ops Bldg.

Project Details

Project Name	Port Orange Public Utilities Field Ops Bldg.
Bid Date	Nov 12, 2024 @ 02:00 PM ET
Project ID	6613997

View Project

Bid Details

Company	Sterling Enterprises, L.L.C.
Bid Amount	$179,721
Submission Date	Nov 12, 2024 @ 11:52 AM ET
Description	
Bid Attachments	Bid Form_General_Rev.10-25 RW.pdf BID2024-01039 PSG.pdf

Contact Details

Primary Contact	Ryan Wilkins
Email	ryan@perimetersolutionsgroup.com
Phone	(386) 532-2100 ext. 1003
Website	



Support Number: (877) 4CC-TOOL (422-8665)

Email: customerservice@constructconnect.com

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LANDSCAPE AND IRRIGATION BID – NOVEMBER 13, 2024

Wharton Smith Commercial
attn: James Manyette
750 Monroe Rd
Sanford, FL 32771
ph: 407-321-8410
comest@whartonsmith.com

RE: Port Orange Public Utilities Field Ops Bldg.

QTY	DESCRIPTION	SPECIFICATIONS	UNIT COST	TOTAL COST
Landscape Materials: (As Per Sheet LA1, LA2, LA3 Dated 09/30/24)				
Trees:				
11	Red Maple	B&B 4" Cal. 16' HT.	$ 990.00	$ 10,890.00
3	River Birch	B&B 2.5" Cal. 10' HT.	$ 400.00	$ 1,200.00
7	Japanese Blueberry Tree	45 Gal. 2.5" Cal. 8'-10' HT. FTG	$ 450.00	$ 3,150.00
7	Eagleston Holly	45 Gal. 2.5" Cal. 10' HT.	$ 700.00	$ 4,900.00
6	Nellie Stevens Holly	45 Gal. 1.5" Cal. 8' HT. 2'CT.	$ 500.00	$ 3,000.00
11	Muskogee Crape Myrtle	30 Gal. 1.5" Cal. 8' HT. Multi	$ 230.00	$ 2,530.00
2	D.D Blanchard Southern Magnolia	45 Gal. 2.5" Cal. 10' HT.	$ 650.00	$ 1,300.00
6	Wax Myttle	45 Gal. 1.5" Cal. 8' HT.	$ 450.00	$ 2,700.00
7	Shumard Red Oak	45 Gal. 2.5" Cal. 10' HT.	$ 500.00	$ 3,500.00
2	High Rise Live Oak	45 Gal. 2.5" Cal. 10' HT.	$ 450.00	$ 900.00
9	Bald Cypress	B&B 4" Cal. 14' HT.	$ 850.00	$ 7,650.00
71	Conventional Staking		$ 35.00	$ 2,485.00
3	Trucking / Handling		$ 650.00	$ 1,950.00
TOTAL TREES				$ 46,155.00

NOTE: Canopy tree materials are subject to change due to trending availability.

Palms:

3	Nitida Palm	B&B 8'-16' CT	$ 1,250.00	$ 3,750.00
4	Sabal Palm	B&B 10' Ct.	$ 350.00	$ 1,400.00
7	Conventional Staking		$ 35.00	$ 245.00
1	Trucking / Handling		$ 650.00	$ 650.00
TOTAL PALMS.....				$ 6,045.00

Shrubs:

212	Jack Frost' Ligustrum	3 Gal. 18" HT.	$ 12.00	$ 2,544.00
23	Curved Leaf Ligustrum	7 Gal. 24" HT.	$ 35.00	$ 805.00
210	Sunshine Ligustrum	7 Gal. 18"-24" HT.	$ 50.00	$ 10,500.00
190	Daruma Dwarf Loropetalum	3 Gal. 18" HT.	$ 17.00	$ 3,230.00
65	Petite Pink Oleander	7 Gal. 24" HT.	$ 50.00	$ 3,250.00
52	Podocarpus	7 Gal. 30"-36" HT.	$ 36.00	$ 1,872.00
7	Schefflera	3 Gal. 18" HT.	$ 13.00	$ 91.00
47	Walter's Viburnum "Withlacoooche"	7 Gal. 24" HT.	$ 36.00	$ 1,692.00
63	Muhly Grass	1 Gal. 10" HT.	$ 5.00	$ 315.00
369	Dwarf Blue Lily of The Nile	1 Gal. 8"-10" HT.	$ 6.00	$ 2,214.00
31	Flax Lily	1 Gal. 12" HT.	$ 5.00	$ 155.00
65	Shore Juniper	3 Gal. 12" HT.	$ 12.00	$ 780.00
441	Liriope	1 Gal. 8"-10" HT.	$ 5.00	$ 2,205.00
114	Society Garlic	1 Gal. 8"-10" HT.	$ 5.00	$ 570.00
143	Coontie Palm	3 Gal. 12" HT.	$ 18.00	$ 2,574.00
3	Trucking / Handling		$ 500.00	$ 1,500.00
TOTAL SHRUBS.....				$ 34,297.00

Mulch:

150	(CY) Pine Bark Mulch	3" Thick, All Planting Beds	$ 54.00	$ 8,100.00
10	(CY) Potting Soil	backfill	$ 34.00	$ 340.00

TOTAL MULCH	$	8,440.00
**TOTAL LANDSCAPE MATERIAL ..... **	**$**	**94,937.00**

Note: Landscape unit cost prices includes: slow release fertilizer, staking materials, installation, sales tax & delivery.

Sod : (As per plant schedule)

200,800	± Sq. Ft. Bahia Sod	**non irrigated / no warranty**	$ 0.50	$	100,400.00

- **Warranty: Only valid if automatic irrigation system is in place and operating at 100% coverage**

**TOTAL SOD..... **	**$**	**100,400.00**

Irrigation System Estimate: (As per sheet IR1, IR2 Dated 09/30/24)

- Install Irrigation System To Provide Coverage To All Interior Landscaped Areas As Per Plan
- Irrigation Source: 1" Water Meter to be installed by others.

(Irrigation for Sod areas NOT included as per plans)

TOTAL IRRIGATION ESTIMATE COST	$	19,067.25
TOTAL IRRIGATION PERMIT ALLOWANCE.....	$	500.00
TOTAL IRRIGATION SLEEVING ALLOWANCE.....	$	2,000.00
**TOTAL IRRIGATION SYSTEM ESTIMATE COST..... **	**$**	**21,567.25**

TOTAL LANDSCAPE MATERIALS.....	$	94,937.00
TOTAL SOD.....	$	100,400.00
TOTAL IRRIGATION SYSTEM ESTIMATE COST.....	$	21,567.25
**TOTAL ESTIMATE COST AMOUNT..... **	**$**	**216,904.25**

Landscape Clarifications:

- Proposal based on grades provided within 1/10 of a foot.
- Sod quantity to be verified on site. Additional sod to be charged at unit cost.
- All areas to receive sod to have final grades provided by others prior to sod arriving on site.
- Prices subject to change *due to availability, valid for 30 days* .
- Existing tree barricades & CU soils (if required) to be provided & installed by others.
- Maintenance of the landscape & irrigation can be provided to owner at an additional cost.
- Warranty: Only valid if automatic irrigation system is in place and operating at 100% coverage

weeds, infestation, disease, or storm damage. to all landscaped areas. Not responsible for damage caused by: drought, freeze, irrigation deficiencies, turf Assumes no liability for the damages or consequential damages caused by conditions beyond our control.

Warranty Coverage: Trees, Palms, and Shrubs - 1 Year
Sod - 60 Days Annuals - N/A

Irrigation Clarifications:

- All high volt electric to pump, controller, etc. to be provided by owner.
- Water/Irrigation Meter &/or Tap &/or Reclaimed Meter &/or Tap to be provided by owner.
- Prices subject to change *due to availability, valid for 30 days* .
- Jack and bore / cut and patch to be provided by owner.
- Damage to existing landscape or sod due to trench work to be replaced by owner
- Installation quote includes materials, labor, sales tax, delivery, furnish & install complete.

James,

Please review our landscape and irrigation proposal and call if you have any questions while qualifying our numbers.

Sincerely,

Garth A. Schweizer,
Landscape Architect/Contractor
Irrigation Contractor

Ana Soto
Project Estimator
407-321-2280

Christine Carasas

From: Ana Soto <estimating@gsla.net>
Sent: Wednesday, November 13, 2024 11:25 AM
To: Wharton Smith Commercial Estimating
Cc: Kaitlyn Calle
Subject: Port Orange Public Utilities Field Ops Bldg.
Attachments: BID FORM 11.13.24.pdf

James,

I apologize for the delay. Please review attached our Landscape and irrigation proposal and call if you have any questions while qualifying our numbers.

We appreciate the opportunity and looking forward to working with you on this project !

Thank you,

Ana Soto | Office Manager
Lead Estimator

Anthologia, Inc. dba GSLA
Office: 407-321-2280
estimating@gsla.net

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REVISED

LANDSCAPE AND IRRIGATION BID – NOVEMBER 14, 2024

Wharton Smith Commercial
attn: James Manyette
750 Monroe Rd
Sanford, FL 32771
ph: 407-321-8410
comest@whartonsmith.com

RE: Port Orange Public Utilities Field Ops Bldg.

QTY	DESCRIPTION	SPECIFICATIONS	UNIT COST	TOTAL COST
Landscape Materials: (As Per Sheet LA1, LA2, LA3 Dated 09/30/24)				
Trees:				
11	Red Maple	B&B 4" Cal. 16' HT.	$ 990.00	$ 10,890.00
3	River Birch	B&B 2.5" Cal. 10' HT.	$ 400.00	$ 1,200.00
7	Japanese Blueberry Tree	45 Gal. 2.5" Cal. 8'-10' HT. FTG	$ 450.00	$ 3,150.00
7	Eagleston Holly	45 Gal. 2.5" Cal. 10' HT.	$ 700.00	$ 4,900.00
6	Nellie Stevens Holly	45 Gal. 1.5" Cal. 8' HT. 2'CT.	$ 500.00	$ 3,000.00
11	Muskogee Crape Myrtle	30 Gal. 1.5" Cal. 8' HT. Multi	$ 230.00	$ 2,530.00
2	D.D Blanchard Southern Magnolia	45 Gal. 2.5" Cal. 10' HT.	$ 650.00	$ 1,300.00
6	Wax Myttle	45 Gal. 1.5" Cal. 8' HT.	$ 450.00	$ 2,700.00
7	Shumard Red Oak	45 Gal. 2.5" Cal. 10' HT.	$ 500.00	$ 3,500.00
2	High Rise Live Oak	45 Gal. 2.5" Cal. 10' HT.	$ 450.00	$ 900.00
9	Bald Cypress	B&B 4" Cal. 14' HT.	$ 850.00	$ 7,650.00
71	Conventional Staking		$ 35.00	$ 2,485.00
3	Trucking / Handling		$ 650.00	$ 1,950.00
TOTAL TREES				$ 46,155.00

NOTE: Canopy tree materials are subject to change due to trending availability.

Palms:

3	Nitida Palm	B&B 8'-16' CT	$ 1,250.00	$ 3,750.00
4	Sabal Palm	B&B 10' Ct.	$ 350.00	$ 1,400.00
7	Conventional Staking		$ 35.00	$ 245.00
1	Trucking / Handling		$ 650.00	$ 650.00
TOTAL PALMS.....				$ 6,045.00

Shrubs:

212	Jack Frost' Ligustrum	3 Gal. 18" HT.	$ 12.00	$ 2,544.00
23	Curved Leaf Ligustrum	7 Gal. 24" HT.	$ 35.00	$ 805.00
210	Sunshine Ligustrum	7 Gal. 18"-24" HT.	$ 50.00	$ 10,500.00
190	Daruma Dwarf Loropetalum	3 Gal. 18" HT.	$ 17.00	$ 3,230.00
65	Petite Pink Oleander	7 Gal. 24" HT.	$ 50.00	$ 3,250.00
52	Podocarpus	7 Gal. 30"-36" HT.	$ 36.00	$ 1,872.00
7	Schefflera	3 Gal. 18" HT.	$ 13.00	$ 91.00
47	Walter's Viburnum "Withlacoooche"	7 Gal. 24" HT.	$ 36.00	$ 1,692.00
63	Muhly Grass	1 Gal. 10" HT.	$ 5.00	$ 315.00
369	Dwarf Blue Lily of The Nile	1 Gal. 8"-10" HT.	$ 6.00	$ 2,214.00
31	Flax Lily	1 Gal. 12" HT.	$ 5.00	$ 155.00
65	Shore Juniper	3 Gal. 12" HT.	$ 12.00	$ 780.00
441	Liriope	1 Gal. 8"-10" HT.	$ 5.00	$ 2,205.00
114	Society Garlic	1 Gal. 8"-10" HT.	$ 5.00	$ 570.00
143	Coontie Palm	3 Gal. 12" HT.	$ 18.00	$ 2,574.00
3	Trucking / Handling		$ 500.00	$ 1,500.00
TOTAL SHRUBS.....				$ 34,297.00

Mulch:

150	(CY) Pine Bark Mulch	3" Thick, All Planting Beds	$ 54.00	$ 8,100.00
10	(CY) Potting Soil	backfill	$ 34.00	$ 340.00

TOTAL MULCH				$	8,440.00
TOTAL LANDSCAPE MATERIAL ..... $ 94,937.00					

Note: Landscape unit cost prices includes: slow release fertilizer, staking materials, installation, sales tax & delivery.

Sod : (As per plant schedule)

200,800	± Sq. Ft. Bahia Sod	**non irrigated / no warranty**	$ 0.50	$	100,400.00

- **Warranty: Only valid if automatic irrigation system is in place and operating at 100% coverage**

TOTAL SOD..... $ 100,400.00

Maintenance for ~~60~~ 90 days:

2	Monthly Landscape Maintenance (Mow, edge, weed eat and blow on a weekly basis)	$ 6,400.00	$	~~12,800.00~~ 19,200.00

TOTAL LANDSCAPE MAINTENANCE FOR 60 DAYS..... $ ~~12,800.00~~ 19,200.00

Irrigation System Estimate: (As per sheet IR1, IR2 Dated 09/30/24)

- Install Irrigation System To Provide Coverage To All Interior Landscaped Areas As Per Plan
- Irrigation Source: 1" Water Meter to be installed by others.

(Irrigation for Sod areas NOT included as per plans)

TOTAL IRRIGATION ESTIMATE COST	$	19,067.25
TOTAL IRRIGATION PERMIT ALLOWANCE.....	$	500.00
TOTAL IRRIGATION SLEEVING ALLOWANCE.....	$	2,000.00
TOTAL IRRIGATION SYSTEM ESTIMATE COST..... $ 21,567.25		

TOTAL LANDSCAPE MATERIALS.....	$	94,937.00
TOTAL SOD..... 90	$	100,400.00
TOTAL LANDSCAPE MAINTENANCE FOR ~~60~~ DAYS.....	$	~~12,800.00~~ 19,200.00
TOTAL IRRIGATION SYSTEM ESTIMATE COST.....	$	21,567.25
TOTAL ESTIMATE COST AMOUNT REVISED..... $ ~~229,704.25~~ 236,104.25		

Landscape Clarifications:

2.5% Bond Rate

- Proposal based on grades provided within 1/10 of a foot.
- Sod quantity to be verified on site. Additional sod to be charged at unit cost.
- All areas to receive sod to have final grades provided by others prior to sod arriving on site.
- Prices subject to change *due to availability, valid for 30 days* .
- Existing tree barricades & CU soils (if required) to be provided & installed by others.
- Maintenance of the landscape & irrigation can be provided to owner at an additional cost.
- Warranty: Only valid if automatic irrigation system is in place and operating at 100% coverage weeds, infestation, disease, or storm damage. to all landscaped areas. Not responsible for

damage caused by: drought, freeze, irrigation deficiencies, turf Assumes no liability for the damages or consequential damages caused by conditions beyond our control.

Warranty Coverage: Trees, Palms, and Shrubs - 1 Year
Sod - 60 Days Annuals - N/A

Irrigation Clarifications:

- All high volt electric to pump, controller, etc. to be provided by owner.
- Water/Irrigation Meter &/or Tap &/or Reclaimed Meter &/or Tap to be provided by owner.
- Prices subject to change *due to availability, valid for 30 days* .
- Jack and bore / cut and patch to be provided by owner.
- Damage to existing landscape or sod due to trench work to be replaced by owner
- Installation quote includes materials, labor, sales tax, delivery, furnish & install complete.

James,

Please review our landscape and irrigation proposal and call if you have any questions while qualifying our numbers.

Sincerely,

Garth A. Schweizer,
Landscape Architect/Contractor
Irrigation Contractor

Ana Soto
Project Estimator
407-321-2280

Subcontractor Bid Form-General

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	LSP Nursery.
Scope of Work:	Lamelscaping / Sod / Irrigation.

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	$ 184,000
Amount in Words:	One Hundred Eighty four Thousand ~~and~~ no/100

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $50,000)

Material/Equipment Types:	
Amount:	$

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %: 2.5%	

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	#1	Dated:	11/09/24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	#1	Dated:	10/22/24	WSI No.	#4	Dated:	10/28/24
WSI No.	#2	Dated:	10/24/24	WSI No.	#5	Dated:	10/31/24
WSI No.	#3	Dated:	10/24/24	WSI No.	#6	Dated:	11/4/24

(2.3) ASI (Architect's Supplemental Instructions)

#7 11/6/24
#8 11/8/24

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

Wharton-Smith, Inc.
CONSTRUCTION GROUP

PART 3: BIDDER INFORMATION

HSP Nursery
Company Name

520 Thor Ave Palm Bay Fl 32904
Address (Street, City, State, Zip)

321-268-8652 jason@hsplandscaping.com
Phone Number **Email Address**

Type of Organization (Check One):

(A) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: HSP Nursery
By: Jason Cally
Printed Name: Jason Cally
Title: SR Project Estimator
Dated: 11/7/24
License No.: 99701607

521 Thor Ave.
Palm Bay, Fl 32909
Phone # 321-724-6176
Fax # 321-728-1053

LSP
Green at its best!

Estimate

Date	Estimate #
11/7/2024	13442

Wharton-Smith, Inc.
750 Monroe Road
Sanford, Fl 32747-1028

Project
Port Orange Public Utilities

Description	Total Cost
Installation of irrigation and landscaping according to the plans and specifications dated 9-30-2024, with no revisions. Landscape material to include: 11 - Red Maple, 4" cal 16' ht 3 - Heritage River Birch, 2.5" Cal 10' ht 7 - Japanese Blueberry Tree, 2.5" cal 10; ht FTG 7 - Eagleston Holly, 2.5" Cal 10' ht 6 - Nellie Stevens Holly, 1.5" Cal 8' ht 11 - Muskogee Crape Myrtle, 1.5" Cal 8' ht 2 - DD Blanchard Southern Magnolia, 2.5" cal 10' ht 6 - Wax Myrtle, 1.5" Cal 8' ht 7 - Shumard Red Oak, 2.5" cal 10' ht 2 - High Rise Live Oak, 2.5" cal 10' ht 9 - Bald Cypress, 4" cal 14' ht 3 - Nitida Palm, Vary CT Hts 8-16' ht 4 - Cabbage Palm, 10' ct matched 212 - Jack Frost Ligustrum, 7 gal 18" ht 23 - Curve Leaf Ligustrum, 7 gal 24" ht 210 - Sunshine Ligustrum, 3 gal 18-24" ht	184,000.00

Total

Please sign and return if accepted!

Signature

521 Thor Ave.
Palm Bay, Fl 32909
Phone # 321-724-6176
Fax # 321-728-1053

LSP
Green at its best!

Estimate

Date	Estimate #
11/7/2024	13442

Wharton-Smith, Inc.
750 Monroe Road
Sanford, Fl 32747-1028

Project
Port Orange Public Utilities

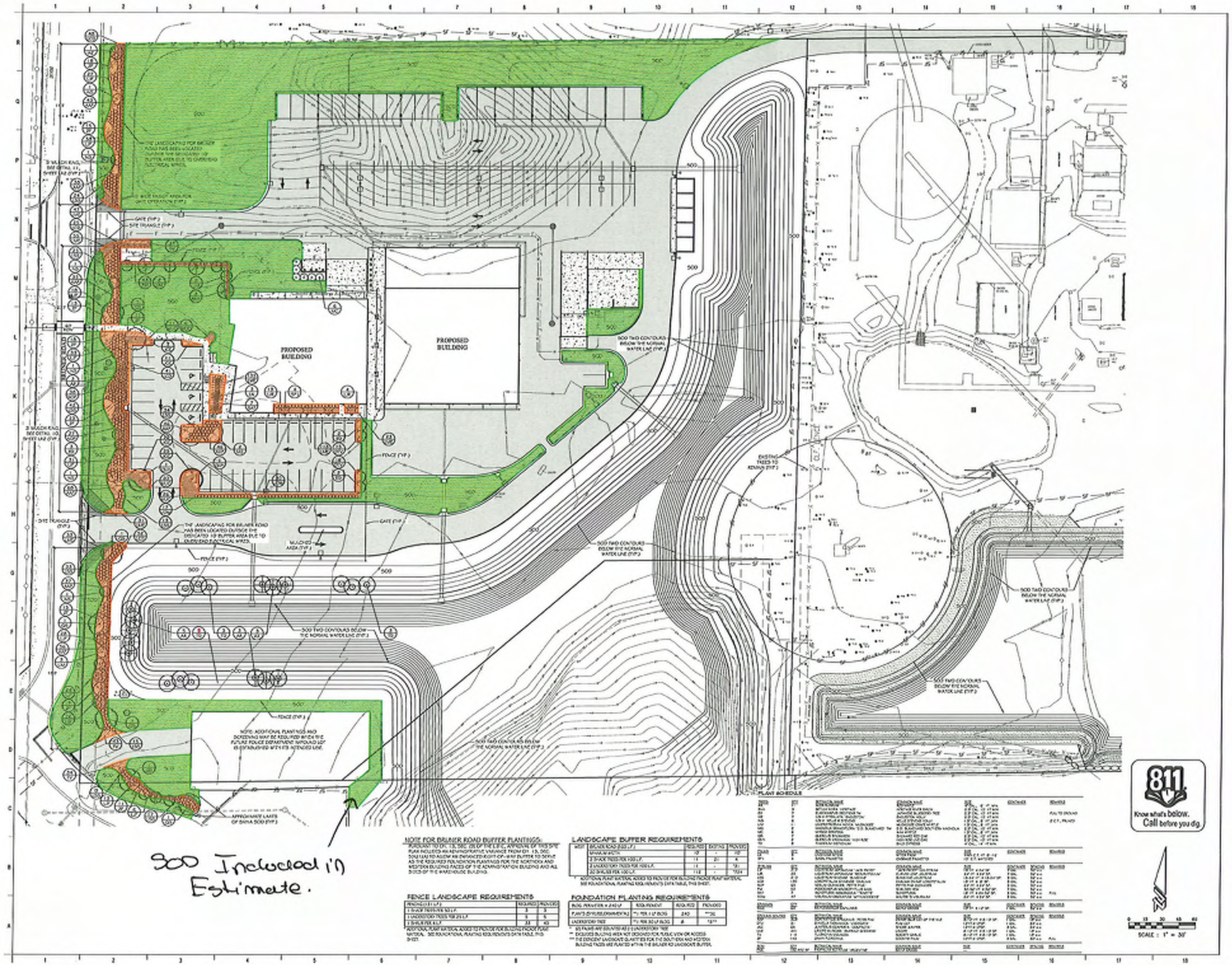
Description	Total Cost
190 - Dwarf Loropetalum, 3 gal 18" ht 65 - Petite Pink Oleander, 3 gal 24" ht 52 - Podocarpus Maki, 7 gal 30-36" ht 7 - Arboricola Trinette, 3 gal 18" ht 47 Walters Viburnum Withlacoochee, 3 gal 24" ht 63 - Muhly Grass, 1 gal 10" ht 369 - Dwarf Blue Lily Of The Nile, 1 gal 8-10" ht 31 - Flax Lilly, 1 gal 12" ht 65 - Shore Juniper, 3 gal 12" ht 441 - Liriope Muscari, 1 gal 8-10" ht 114 - Society Garlic, 1 gal 8-10" ht 143 - Coontie, 3 gal 12" ht 150 - Pine Bark Mulch, cubic yards 81,600 - Bahia Sod, Sq/Ft	

L.S.P. Nursery, Inc. will provide all supervision, labor, materials, tools, machinery, licenses, and insurance necessary to complete the job.
Price valid for 45 days.

Total $184,000.00

Please sign and return if accepted!

Signature _____



NOTE FOR BRUNER ROAD BUFFER PLANTINGS:
PURSUANT TO CH. 13, SEC. 13-29 OF THE L.D.C., APPROVAL OF THIS SITE PLAN INCLUDES AN ENGINEERING VARIANCE FROM CH. 13, SEC. 5.04.04 TO ALLOW AN ENCROACHMENT OF 40' INTO A PORTION OF THE 50' BUFFER AS THE REQUIRED FOUNDATION PLANTINGS FOR THE NORTHSIDE AND WESTSIDE BUILDING FACES OF THE ADMINISTRATION BUILDING AND ALL SIDES OF THE WAREHOUSE BUILDING.

LANDSCAPE BUFFER REQUIREMENTS

WEST BRUNER ROAD (500' L.F.)	REQUIRED	EXISTING	PROVIDED
MINIMUM WIDTH	10'	-	10'
3 SHADE TREES PER 100 L.F.	15	21*	6
2 UNDERSTORY TREES PER 100 L.F.	10	-	10
20 SHRUBS PER 100 L.F.	100	-	1024

* ADDITIONAL PLANT MATERIAL ADDED TO PROVIDE FOR BUILDING FACADE FOUNDATION PLANTING REQUIREMENTS (SEE FOUNDATION PLANTING REQUIREMENTS DATA TABLE, THIS SHEET.

FENCE LANDSCAPE REQUIREMENTS

PERIMETER (1,011 L.F.)	REQUIRED	PROVIDED
1 SHADE TREES PER 50 L.F.	21	21
1 UNDERSTORY TREES PER 25 L.F.	41	41
1 SHRUB PER 4 L.F.	253	253

ADDITIONAL PLANT MATERIAL ADDED TO PROVIDE FOR BUILDING FACADE FOUNDATION PLANTING REQUIREMENTS (SEE FOUNDATION PLANTING REQUIREMENTS DATA TABLE, THIS SHEET.

FOUNDATION PLANTING REQUIREMENTS

BUILDING PERIMETER = 2,452 L.F.	REQUIRED	REQUIRED	PROVIDED
PLANTS (5 PER BUILDING PERIMETER L.F.)	10 PER 1 L.F. BLDG.	245	1024**
UNDERSTORY TREE	1 PER 100 SF OF BLDG.	8	12***

* 50% PLANT SIZE REDUCTION ALLOWED (1 GALLON PER 100 SF)
** EXCLUDES BUILDING AREA NOT DESIGNED FOR PUBLIC VIEW OR ACCESS
*** THE DENSEST LANDSCAPE QUALITIES FOR THE SOUTH AND WESTSIDE BUILDING FACES ARE PLANTED WITHIN THE BRUNER RD LANDSCAPE BUFFER.

PLANT SCHEDULE

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4308 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

SCHENKEL SHULTZ
55 Lic. No. AA-C000617
www.schenkelshultz.com
Copyright © 2024
814 N Orange Avenue,
Winter Park, FL 32789
voice 407.870.3322

ZEV COHEN
& ASSOCIATES, INC.
WWW.ZEVCOHEN.COM

REVISIONS		
MARK	DESCRIPTION	DATE

Know what's below. Call before you dig.

SCALE : 1" = 30'

SEAL

COMM. NO.: 352105
ISSUE DATE: 09/30/2024
DRAWN BY: SHG

LANDSCAPE PLAN & DETAILS

LA1

PERMIT/BID DOCUMENTS

Christine Carasas

From: Jason Cally <Jason@lsplandscaping.com>
Sent: Monday, November 11, 2024 2:32 PM
To: Wharton Smith Commercial Estimating
Subject: From Jason at LSP nursery for Port Orange Utilities project
Attachments: 20241111143644784.pdf; 20241111143703271.pdf

Good afternoon, here is the port orange public Utilities project. I sent along the sod take off to show what I have included in the estimate.
Let me know if you have any questions. Have a good rest of the day.

Jason Cally
Project estimator
LSP Nursery
321-724-6176
321-288-8652

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe!

Subcontractor Bid Form-General

Wharton-Smith, Inc. CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	HSP Nursery.
Scope of Work:	Lamelscaping / Sod / Irrigation.

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	$ 194,500
Amount in Words:	ONE Hundred Nighty four Thousand Five Hundred.

(1.2) Alternates (Voluntary)

& Bahia Sod for Lakes	$ 42,273
Slopes and Flat Areas.	$
(100,650 sqft).	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $50,000)

Material/Equipment Types:	
Amount:	$

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %: 2.5%	

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	#1	Dated:	11/09/24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	#1	Dated:	10/22/24	WSI No.	#4	Dated:	10/28/24
WSI No.	#2	Dated:	10/24/24	WSI No.	#5	Dated:	10/31/24
WSI No.	#3	Dated:	10/24/24	WSI No.	#6	Dated:	11/4/24

(2.3) ASI (Architect's Supplemental Instructions)

#7 11/6/24
#8 11/6/24

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

Wharton-Smith, Inc.
CONSTRUCTION GROUP

PART 3: BIDDER INFORMATION

HSP Nursery
Company Name

520 Thor Ave Palm Bay Fl 32904
Address (Street, City, State, Zip)

321-288-8652 jason@hsplandscaping.com
Phone Number **Email Address**

Type of Organization (Check One):

(X) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of Florida.

Subcontractor's Minority Certification, if applicable:

( )MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: HSP Nursery
By: Jason Cully
Printed Name: Jason Cully
Title: SR Project Estimator
Dated: 11/7/24
License No.: 99701067

Christine Carasas

From: Ari Modlin
Sent: Thursday, November 14, 2024 8:58 AM
To: Christine Carasas
Subject: LSP Landscaping Bid Rev 1
Attachments: 20241113171131291.pdf

Hey, I got this revised bid from LSP, forwarding it to you so you can keep track of it.

Ari Modlin | Preconstruction Services Engineer - Intern
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL, 32771

From: Jason Cally <Jason@lsplandscaping.com>
Sent: Wednesday, November 13, 2024 5:05 PM
To: Ari Modlin <amodlin@whartonsmith.com>
Cc: Daniel Kemack <dkemack@whartonsmith.com>; James Manyette <jmanyette@whartonsmith.com>
Subject: RE: Wharton Smith Port Orange Landscaping Job

OK, Here you go. I put it in as a alternate on the bid sheet.
I will send over the maintenance later. I have to get with my maintenance manager to take a look at it.

Jason Cally
Project estimator
LSP Nursery
321-724-6176
321-288-8652

From: Ari Modlin <amodlin@whartonsmith.com>
Sent: Wednesday, November 13, 2024 4:48 PM
To: Jason Cally <Jason@lsplandscaping.com>
Cc: Daniel Kemack <dkemack@whartonsmith.com>; James Manyette <jmanyette@whartonsmith.com>
Subject: Re: Wharton Smith Port Orange Landscaping Job

Yes, please include those areas. Per the attachment I sent earlier, the red areas will be covered by the site guy, where the waterline will be at and two more contours per the site notes. My number for the sodded area is at ~ 200,000 sf.

Ari Modlin | Preconstruction Services Engineer - Intern
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL, 32771

From: Jason Cally <Jason@lsplandscaping.com>
Sent: Wednesday, November 13, 2024 4:31 PM
To: Ari Modlin <amodlin@whartonsmith.com>
Cc: Daniel Kemack <dkemack@whartonsmith.com>; James Manyette <jmanyette@whartonsmith.com>
Subject: RE: Wharton Smith Port Orange Landscaping Job

Good afternoon, So you want me to sod all the retention slopes and flat areas. See attached. Let me know if this is what you are asking about. I did not include it since the site contractor usually is there before me and carries the sod for the stabilization for the pond slopes.
Let me know and I can get you a updated number or put it as a alternate on the bid sheet.

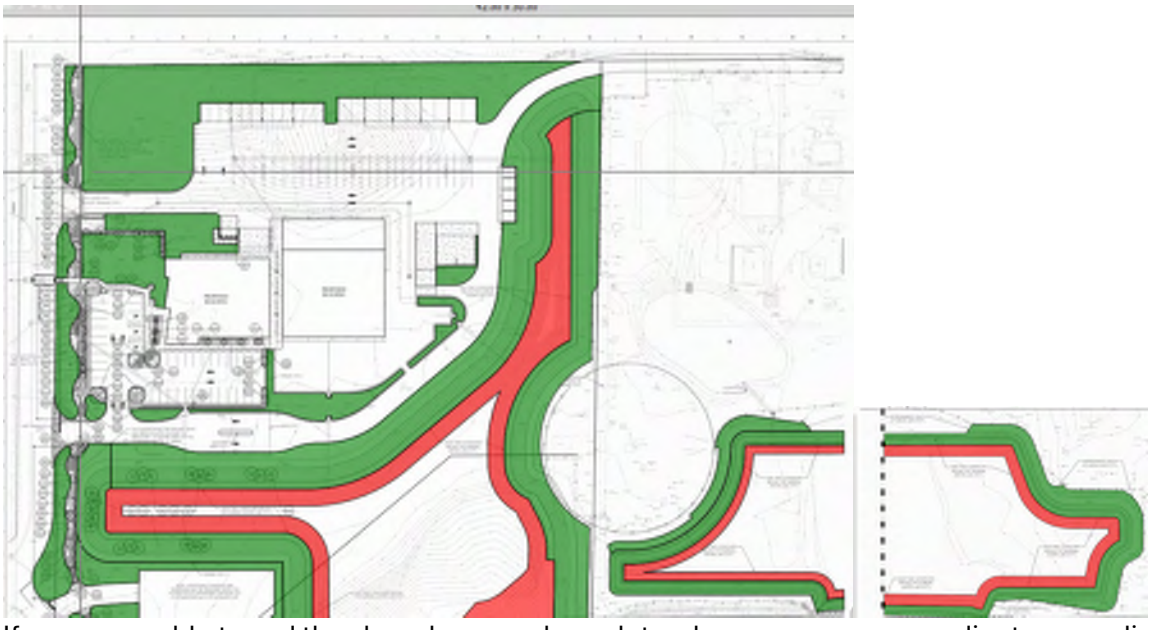
Jason Cally
LSP nursery
321-288-8652

From: Ari Modlin <amodlin@whartonsmith.com>
Sent: Wednesday, November 13, 2024 4:11 PM
To: Jason Cally <Jason@lsplandscaping.com>
Cc: Daniel Kemack <dkemack@whartonsmith.com>; James Manyette <jmanyette@whartonsmith.com>
Subject: Wharton Smith Port Orange Landscaping Job

Hi Jason,
I was hoping you could provide some clarification if your bid contains the following:

1. 12-month warranty for all landscaping items including ground covers; per spec. 32 93 00, 1.72 Yes
2. 90-day maintenance for all landscaping items including ground covers; per spec. 32 93 00, 3.8 I will get you a number for the maintenance for the 90 days

Also, our sod quantities are way off from each other, so I was hoping you could send a revised number on that. I appreciate you attaching your takeoff as it makes it easy to understand where we are off; see attached for our internal takeoff.



If you are unable to sod the sloped areas, please let us know so we can coordinate accordingly.

Thank you and have a good day,
Ari Modlin | Preconstruction Services Engineer - Intern
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL, 32771

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Subcontractor Bid Form-General

Wharton-Smith, Inc.
CONSTRUCTION GROUP

Project: Port Orange Public Utilities Field Operations Facility

To: Wharton-Smith, Inc., 750 Monroe Road, Sanford, FL 32771
(407) 321-8410; comest@whartonsmith.com

Name of Bidder:	STERLING SILVER SCAPE & SOD, INC
Scope of Work:	LANDSCAPE & IRRIGATION

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized themselves with the local conditions, nature and extent of the work, and having carefully examined the Subcontractor Bid Manual, Subcontract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: Port Orange Public Utilities Field Operations Facility in full accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following lump sum price.

PART 1: PRICING

(1.1) Total Base Bid

Amount in Figures:	$ 242422.00
Amount in Words:	TWO HUNDRED FORTY TWO THOUSAND FOUR HUNDRED TWENTY TWO DOLLARS

(1.2) Alternates (Voluntary)

	$
	$
	$

(1.3) Owner Direct Purchase (value of all purchases exceeding $50,000)

Material/Equipment Types:	LANDSCAPE
Amount:	$ 85000.00

Continued Next Page

(1.4) Value Engineering (We encourage voluntary VE/cost savings options)

1		$
2		$
3		$

(1.5) MWBE Participation

MWBE	$ 242,422.00
LDB	$
VBE	$

(1.6) Bond Rate

In the event a Performance & Payment Bond is required, indicate in the space below the **percentage** to be added to the proposal.

Bond Rate %:	3.5%	

(1.7) Long Lead Durations (indicate durations for any long lead equip. 24 weeks +)

Item	Duration (wks)	Item	Duration (wks)

PART 2: BIDDER ACKNOWLEDGEMENT

(2.1) RFI (Request for Information)

The Bidder acknowledges receipt of the following RFI Response(s):

RFI No.	001	Dated:	11/7/24	RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	
RFI No.		Dated:		RFI No.		Dated:	

Continued Next Page

(2.2) WSI (Wharton-Smith Supplemental Instructions)

The Bidder acknowledges receipt of the following Wharton-Smith Supplemental Instruction(s):

WSI No.	001	Dated:	10/22	WSI No.	004	Dated:	10/28
WSI No.	002	Dated:	10/24	WSI No.	005 006	Dated:	10/31 11/4
WSI No.	003	Dated:	10/24	WSI No.	007 008	Dated:	11/6 11/8

(2.3) ASI (Architect's Supplemental Instructions)

The Bidder acknowledges receipt of the following Architect Supplemental Instruction(s):

ASI No.		Dated:		ASI No.		Dated:	

(2.4) Addenda

The Bidder acknowledges receipt of the following Addenda:

Addenda No.		Dated:		Addenda No.		Dated:	
Addenda No.		Dated:		Addenda No.		Dated:	

(2.5) Additional Acknowledgements

The Bidder acknowledges that Bidder has considered and included the requirements of the Subcontractor Bid Manual, dated October 17, 2024, and all other sections, in preparing this Bid.

The Bidder acknowledges time is of the essence and the Project will begin March 6, 2025, with Substantial Completion that must be achieved no later than June 30, 2026, and has included all costs for any required extended hours, extra shifts, weekend and holiday work which may be necessary to complete the Work on schedule.

This Bid will remain subject to acceptance for ninety **90** calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Construction Manager.

The Bidder understands and agrees that the Construction Manager and/or Owner reserves the right to reject this Bid or any and all bids for the Project, and to waive minor irregularities or informalities in any bid and to award Alternates in any order that in the Construction Manager's judgment will be in the Owner's best interest.

The Bidder hereby acknowledges they are licensed to do business in the capacity represented by this Bid and as required by all governing jurisdictional authorities for all locations of the work and as required by the Contract Documents.

The Bidder hereby acknowledges reviewing and accepting without modification the Wharton-Smith, Inc. Subcontract Agreement and agrees to execute same if awarded the project or portion(s) of the Project.

Continued Next Page

PART 3: BIDDER INFORMATION

STERLING SILVER SCAPE & SOD INC

Company Name

2201 PARTIN SETTLEMENT RD KISSIMMEE FL 34745

Address (Street, City, State, Zip)

407-846-3225 ESTIMATING@STERLINGSILVERLANDSCAPING.COM

Phone Number **Email Address**

Type of Organization (Check One):

(✓) Corporation ( ) Sole Proprietorship
( ) Partnership ( ) Joint Venture

If the bidder is a corporation or partnership, the Bidder herby advises that the Bidder is incorporated, or that said partnership exists under the laws of the State of FLORIDA.

Subcontractor's Minority Certification, if applicable:

(✓)MBE ( )WBE ( ) LBE
( )VBE ( )SBE ( ) Other_____

SIGNATURE OF BIDDER

Bidder Name: STERLING SILVER SCAPE & SOD INC

By: Alice Capehart

Printed Name: ALICE CAPEHART

Title: ESTIMATOR

Dated: 11/12/2024

License No.: _____

STERLING SILVER SCAPE SOD, INC.

2201 PARTIN SETTLEMENT ROAD
KISSIMMEE, FLORIDA 34745-0459
407-846-3225 (PHONE) / 407-846-3207 (FAX)

PROPOSAL

STATE OF FLORIDA MBE / DBE

24-264

DATE: 11/12/2024	**PROJECT & LOCATION:** Port Orange Public Utilities Field Ops. Bldg. Port Orange
SUBMITTED TO: Wharton Smith	

DESCRIPTION	QTY		UNIT		TOTAL
Landscape	1	@ $	122,515.00 =	$	122,515.00
Irrigation	1	@ $	29,547.00 =	$	29,547.00
Bahia Sod (+/-SF)	200,800 SF	$	0.45 =	$	90,360.00
	TOTAL PROPOSAL:			**$**	**242,422.00**

QUALIFICATIONS:

1 Plan Sheets: LA1 - LA4 & IR1 - IR2 * dated 9.30.2024
2 All bonding and permits excluded.
3 Maintenance of Traffic by others.
4 Maintenance, mowing, sod pinning and hand watering excluded, unless noted above.
5 Maintenance to be turned over to owner upon completion.
6 General contractor to provide adequate access for scope of work.
7 Pavement cuts, patches and jack or directional bores excluded.
8 The sod measurement will be determined per the actual pallet quantities used.
9 All hardscape, site amenities, edging, root barrier and filter fabric excluded, unless noted above.
10 Not responsible for any wash-outs due to incomplete control structures (i.e. curbs, gutters, etc.) and particularly at bridges, ramps and steep slopes.
11 We exclude replacement of material damaged by others.
12 Grade to be within .10 ft, light hand rake only.
13 Import or export of 4" soils excluded.
14 Existing site soils utilized for planting, will be amended chemically for pH only.
15 This contractor not responsible for removal or replacement of unsuitable soil or unforeseen site conditions.
16 Plant Material per current grade standards and availability. Any plant material that are either unattainable or
17 incompatible with the growth habit of the plant will be disclosed before contract is agreed upon.
18 Plant material species and sizes may vary dependent on market availability and time of year.
19 All plant material provided will be within Florida Grades and Standards Matrix of 'Florida Number One' or Better.
20 All electrical meters, permits, and service connections by others, electrical outlet provided by General
21 Contractor for irrigation controllers, pumps, or pump station.
22 All utility usage costs by others, i.e. water and electric.
23 Contract shall be inclusive of this proposal.
24 Payment terms - net 30 days, late payment finance charge assessment and fees incurred.
25 Meter, backflow, booster pumps and taps by others. Power to controller and pumps by others.
26 Existing trees and vegetation removal, pruning, replacement and protection by others.
27 Existing irrigation removal, relocation, replacement and/or modification excluded.
28 Utility locates by others.
29 Price quote is per specified list on plant legend regardless of projected availability.
30 Pricing contingent upon current fuel prices, units may need to be adjusted should fuel cost increase.
31 Well and Pumps not included unless specified.
32 We include one mobilization.
33 Pricing good for 15 days.

SUBMITTED BY: Alice Capehart/SW

Christine Carasas

From: ConstructConnect <DoNotReply@constructconnectmail.com>
Sent: Tuesday, November 12, 2024 11:14 AM
To: Wharton Smith Commercial Estimating
Subject: Received bid for Port Orange Public Utilities Field Ops Bldg.

A simpler, more effective bid process

You've received a bid from Sterling Silver Scape & Sod via ConstructConnect

Port Orange Public Utilities Field Ops Bldg.

Project Details

Project Name	Port Orange Public Utilities Field Ops Bldg.
Bid Date	Nov 12, 2024 @ 02:00 PM ET
Project ID	6613997

View Project

Bid Details

Company	Sterling Silver Scape & Sod
Bid Amount	$242,422
Submission Date	Nov 12, 2024 @ 11:13 AM ET
Description	Landscape, Irrigation, Sod
Bid Attachments	Bid Sheets Port Orange Public Util 24-264 11 12 2024.pdf

Contact Details

Primary Contact	Alice Capehart

Email	estimating@sterlingsilverlandscaping.com
Phone	(407) 846-3225 ext.
Website	

Support Number: (877) 4CC-TOOL (422-8665)

Email: customerservice@constructconnect.com

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STERLING SILVER SCAPE SOD, INC.

2201 PARTIN SETTLEMENT ROAD
KISSIMMEE, FLORIDA 34745-0459
407-846-3225 (PHONE) / 407-846-3207 (FAX)

PROPOSAL

STATE OF FLORIDA MBE / DBE

24-264

DATE: 11/12/2024	**PROJECT & LOCATION:**
SUBMITTED TO:	Port Orange Public Utilities Field Ops. Bldg.
Wharton Smith	Port Orange

DESCRIPTION	QTY		UNIT		TOTAL
Landscape	1	@ $	122,515.00	= $	122,515.00
Irrigation	1	@ $	29,547.00	= $	29,547.00
Bahia Sod (+/-SF)	200,800 SF	$	0.45	= $	90,360.00
90 Day Maintenance	3 MO	$	7,850.00	$	23,550.00
	TOTAL PROPOSAL:			**$**	**265,972.00**

QUALIFICATIONS:

1 Plan Sheets: LA1 - LA4 & IR1 - IR2 * dated 9.30.2024
2 All bonding and permits excluded.
3 Maintenance of Traffic by others.
4 Maintenance, mowing, sod pinning and hand watering excluded, unless noted above.
5 Maintenance to be turned over to owner upon completion.
6 General contractor to provide adequate access for scope of work.
7 Pavement cuts, patches and jack or directional bores excluded.
8 The sod measurement will be determined per the actual pallet quantities used.
9 All hardscape, site amenities, edging, root barrier and filter fabric excluded, unless noted above.
10 Not responsible for any wash-outs due to incomplete control structures (i.e. curbs, gutters, etc.) and particularly at bridges, ramps and steep slopes.
11 We exclude replacement of material damaged by others.
12 Grade to be within .10 ft, light hand rake only.
13 Import or export of 4" soils excluded.
14 Existing site soils utilized for planting, will be amended chemically for pH only.
15 This contractor not responsible for removal or replacement of unsuitable soil or unforeseen site conditions.
16 Plant Material per current grade standards and availability. Any plant material that are either unattainable or
17 incompatible with the growth habit of the plant will be disclosed before contract is agreed upon.
18 Plant material species and sizes may vary dependent on market availability and time of year.
19 All plant material provided will be within Florida Grades and Standards Matrix of 'Florida Number One' or Better.
20 All electrical meters, permits, and service connections by others, electrical outlet provided by General
21 Contractor for irrigation controllers, pumps, or pump station.
22 All utility usage costs by others, i.e. water and electric.
23 Contract shall be inclusive of this proposal.
24 Payment terms - net 30 days, late payment finance charge assessment and fees incurred.
25 Meter, backflow, booster pumps and taps by others. Power to controller and pumps by others.
26 Existing trees and vegetation removal, pruning, replacement and protection by others.
27 Existing irrigation removal, relocation, replacement and/or modification excluded.
28 Utility locates by others.
29 Price quote is per specified list on plant legend regardless of projected availability.
30 Pricing contingent upon current fuel prices, units may need to be adjusted should fuel cost increase.
31 Well and Pumps not included unless specified.
32 We include one mobilization.
33 Pricing good for 15 days.

SUBMITTED BY: Alice Capehart/SW

James Manyette

From: Estimating <Estimating@SterlingSilverLandscaping.com>
Sent: Wednesday, November 13, 2024 9:02 AM
To: James Manyette
Subject: RE: Port Orange Public Utilities Field Ops Fac.
Attachments: Port Orange Public Utilities Field Ops Bldg 24-264 11 12 2024 Proposal.pdf

James,

Here is our revised proposal with the maintenance add.

Thanks,

Alice

From: James Manyette <jmanyette@whartonsmith.com>
Sent: Tuesday, November 12, 2024 9:14 PM
To: estimating@sterlingsilverlandscaping.com
Cc: Ari Modlin <amodlin@whartonsmith.com>
Subject: Port Orange Public Utilities Field Ops Fac.

Alice – Thanks for your bid on the above project. I'd like to get some scoping items clarified/changed as follows:

1. Please confirm (or provide add) to warrant plantings (per specifications) Tress, shrubs, vines, ornamental grass, groundcovers and other plants for 12 mos from substantial completion date.
2. Please confirm (or provide add) to include plant maintenance (per Spec 329300, 3.7) immediately after planting for a period of 90 days.
3. Looks like you carried the irrigation. What was the qualification #21 about? I assume you are self-performing irrigation and included it as required per drawings/specs right?

Respectfully,

James R. Manyette | Senior Preconstruction Services Manager
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771 | Cell: (407) 810-9590

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YELLOWSTONE LANDSCAPE

Proposal #: 490816
Date: 11/18/2024
From: Luciano Mancilla Jr

Landscape Enhancement Proposal for
Port Orange Public Utilities Field Ops BLDG

LOCATION OF PROPERTY

4505 Clyde Morries Blvd
Port Orange , FL 32129

Landscape Plant/Irrigation Install

DESCRIPTION	QTY	UNIT PRICE	AMOUNT
General Labor	400	$40.00	$16,000.00
Red Maple 4" Caliper	11	$825.00	$9,075.00
Betula Nigra 2.5" Caliper	3	$514.00	$1,542.00
Elaeocarpus Decipiens 2.5" Caliper	7	$624.00	$4,368.00
Eagleston Holly 2.5" Caliper	7	$925.00	$6,475.00
Nellie Steven Holly 8Ft	6	$514.00	$3,084.00
Muskogee Crape Myrtle 1.5	11	$285.00	$3,135.00
Southern Magnolia	2	$585.00	$1,170.00
Shumard Oak 2.5"	7	$442.00	$3,094.00
Myrica Cerifer 1.5"	6	$385.00	$2,310.00
Virginiana Highrise Live Oak 2.5	2	$542.00	$1,084.00
Bald Cypress 4"	9	$775.00	$6,975.00
Livistonia Nitida 8-16 C.T. HT	3	$875.00	$2,625.00
Sabal Palmetto 10Ft	4	$257.00	$1,028.00
7 Gal Jack Frost	212	$45.00	$9,540.00
7 Gal Ligustrum	23	$50.00	$1,150.00
3 gal Sunshine Lugustrum	1	$35.00	$35.00
3 Gal Loropetalum Chinese	190	$16.25	$3,087.50
Pink Oleander 3 Gal	65	$19.25	$1,251.25
7 Gal Yew Plum	52	$50.00	$2,600.00
Schefflera Arboricola 3 Gallon	7	$15.00	$105.00
Virburnum OBO 3 gal	47	$15.25	$716.75
Pink Muhly Grass 1 gal	63	$6.25	$393.75
African Lily 1 Gallon	369	$5.25	$1,937.25

Flax Lily 1 Gallon	31	$10.25	$317.75
Emerald Liriope 1 Gallon	441	$8.25	$3,638.25
Society Garlic 1 Gallon	114	$6.85	$780.90
Zamia Floridana 3 gal	143	$23.25	$3,324.75
Irrigation Part(s)	1	$9,000.00	$9,000.00
General Labor	200	$45.00	$9,000.00
Sod SQFT	206,091	$0.40	$81,873.77
Mulch Pine Bark (YRDS)	125	$56.17	$7,020.74

- This is a budget number for the installation of the plant material, trees, mulch
- Water & Electrical sources to be installed by other contractors.
- No Concrete or Asphalt cutting, patching, or boring is included in the price.
- Plant quantities are based on the Plant Schedule provided with plans.
- Permit costs are not included. If permits are required we will invoice the actual cost of the permit.
- Estimate/Sod/ will be billed at time of install

Terms and Conditions: Signature below authorizes Yellowstone Landscape to perform work as described in this proposal and verifies that the prices and specifications are hereby accepted. This quote is firm for 30 days and change in plans or scope may result in a change of price. All overdue balances will be charged a 1.5% a month, 18% annual percentage rate.

Limited Warranty: Plant material is under a limited warranty for one year. Transplanted material and/or plant material that dies due to conditions out of Yellowstone Landscape's control (i.e., Act of God, vandalism, inadequate irrigation due to water restrictions, etc.) shall not be included in the warranty.

AUTHORIZATION TO PERFORM WORK:

By _____

_____
Print Name/Title

Date _____

Port Orange Public Utilities Field Ops BLDG

Subtotal	**$205,000.00**
Sales Tax	**$0.00**
Proposal Total	**$205,000.00**

THIS IS NOT AN INVOICE

James Manyette

From: Mancilla Jr, Luciano <lmancilla@yellowstonelandscape.com>
Sent: Monday, November 18, 2024 4:19 PM
To: Brown, Eric
Cc: Weatherby, Brian
Subject: RE: Port Orange Public Utilities Field Ops Bldg. Bid
Attachments: Port Orange Public Utilites Field Ops Proposal.pdf

Please see attached is the proposal.

Thanks

From: Brown, Eric <ebrown@yellowstonelandscape.com>
Sent: Tuesday, November 12, 2024 1:42 PM
To: Mancilla Jr, Luciano <lmancilla@yellowstonelandscape.com>
Subject: Port Orange Public Utilities Field Ops Bldg. Bid

We have until the morning of Tuesday 19th next week.

Thanks,

Eric Brown | Business Development Manager
Yellowstone Landscape
1077 Derbyshire Rd, Daytona Beach, FL 32117
Office: 386.248.3298 | Cell: 770.733.3595 | www.yellowstonelandscape.com

YELLOWSTONE LANDSCAPE
Excellence IN COMMERCIAL LANDSCAPING

From: James Manyette <jmanyette@whartonsmith.com>
Sent: Tuesday, November 12, 2024 1:29 PM
To: Brown, Eric <ebrown@yellowstonelandscape.com>
Subject: RE: RFI Response 002 Notification - Port Orange Public Utilities Field Ops Bldg.

This email originated from outside of Yellowstone Landscape
This email originated from outside your organization. Be cautious with unexpected attachments. If it appears suspicious, please use the "Report Suspicious" button to notify our security team.

The last day we could get this would be Tuesday AM, 11/19.

Respectfully,

James R. Manyette | Senior Preconstruction Services Manager
Wharton-Smith, Inc. | Construction Group of Choice | www.whartonsmith.com
750 Monroe Road, Sanford, FL 32771 | Cell: (407) 810-9590

From: Brown, Eric <ebrown@yellowstonelandscape.com>
Sent: Tuesday, November 12, 2024 1:01 PM
To: James Manyette <jmanyette@whartonsmith.com>
Subject: RFI Response 002 Notification - Port Orange Public Utilities Field Ops Bldg.

Good Day James,

Let me know if we can get end of next week on this one. If not I understand our estimator is out with a family emergency till next week.

Thanks again for the opportunity to bid.

Eric Brown | Business Development Manager
Yellowstone Landscape
1077 Derbyshire Rd, Daytona Beach, FL 32117
Office: 386.248.3298 | Cell: 770.733.3595 | www.yellowstonelandscape.com

YELLOWSTONE LANDSCAPE
Excellence IN COMMERCIAL LANDSCAPING

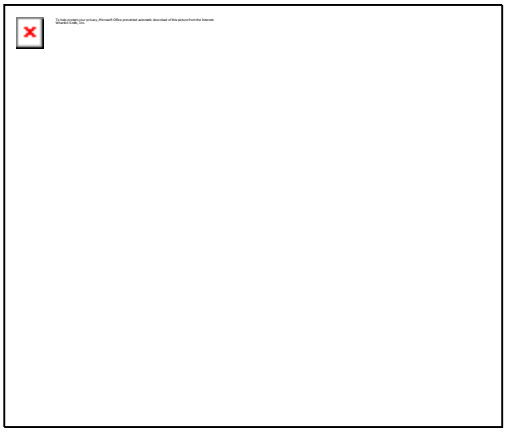
From: Wharton-Smith, Inc. <Transmittals@isqftmail.com>
Sent: Monday, November 11, 2024 12:06 PM
To: Brown, Eric <ebrown@yellowstonelandscape.com>
Subject: RFI Response 002 Notification - Port Orange Public Utilities Field Ops Bldg.

This email originated from outside of Yellowstone Landscape
This email originated from outside your organization. Be cautious with unexpected attachments. If it appears suspicious, please use the "Report Suspicious" button to notify our security team.

RFI RESPONSE NOTIFICATION

From: Wharton-Smith, Inc.
Contact: James Manyette
Email: comest@whartonsmith.com
Phone:

Sent: Monday, November 11, 2024 12:06 PM ET



Attention: **Eric Brown**
Firm Name: **Yellowstone Landscape**

Project: **Port Orange Public Utilities Field Ops Bldg.**
Owner: **City of Port Orange**
Bid Due Date: **Tuesday, November 12, 2024 2:00 PM ET**

Attention All Bidders:
A new RFI Response(s) has been posted to ConstructConnect/iSqFt. This document and any referenced attachments are available under the "Documents" section, under "Other Documents", and can be accessed by following the link below.

Thank you,

Wharton-Smith, Inc.

Click here to view the project

Access Number: S2T7-D84C

Documents referenced in this transmittal:

Pre-GMP RFI Log_CoPO Field Ops-RFI 002 11-11-2024.pdf

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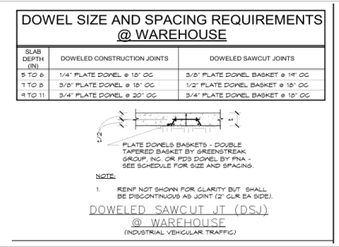
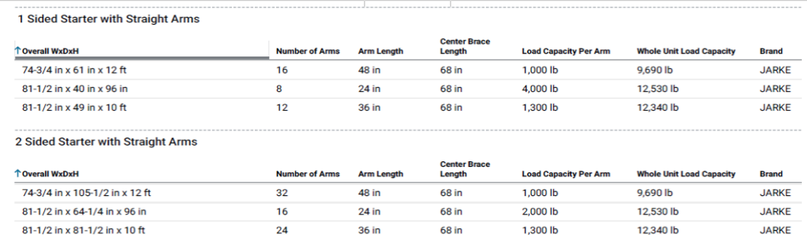
SECTION 5 – BID CLARIFICATIONS, EXCEPTIONS, EXCLUSIONS

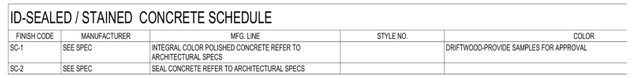
Package #	Scope Issues/Clarifications/Exceptions	Comments
3 - Concrete	Color admixture specification was not given for the integrally colored concrete slab, therefore our recommended subcontractor carried an allowance of $35/CY for the color admixture.	We are confindent our Concrete Scope Adjustment Allowance will cover added costs for this item should the future specification impact it. Full Allowance shown.
4 - Masonry	CMU screen wall thickness for the Dumpster and Mechanical yard enclosures is 8 inch and 12 inch respectively, per Dumpster Wall Reinforcing Schedule on S201.	
5 - Steel Fabrication	In lieu of the Ametco brand premanufactured dumpster gate listed in section 05500, page 6; 2.9-B. we have included a shop fabricated dumpster gate that is similar. Powder coated and with aluminum louvers	Ametco brand is expensive, hence not carried by sub who performs shop fabrication. Submittals from subcontractor are anticipated to be approved
5 - Steel Fabrication	Tube steel supports for TV mounting per G1 and G7 on sheet A901. Instead we include fire retardant treated wood blocking between the studs and vertically in the stud cavity.	Full Steel Scope Adjustment Allowance shown
5 - Structural Steel	Support assembly for the operable partition is not given in the structural drawings,is required per manufacturer's details. Therefore we include an Allowance (ref. Roof framing plan key note 1 on S102).	
21 - Fire Protection	No fire protection or sprinklers have been called out nor provided for the covered warehouse outdoor storage area.	Exclusion
23 - HVAC	No Spec or Model provided for Fire Ready Residential Type Hood for Break Area We have included a 30" front recirculating model with the following features: 1. Electric Shut-Off Assembly Box 2. LCD User Interface 3. Self Contained Fire Suppression System 4. Electronic Detection 5. Plug & Play Design	

Wharton-Smith, Inc. ***City of Port Orange Field Operations Bldg.*** **100% CD Set RFI Log** Sub RFI Due Date: Friday, November 1, 2024

Owner	*City of Port Orange - Junos Reed*	*(386) 506-5754*	jureed@port-orange.org	*Civil: Zev Cohen - Bobby Ball*	bball@zevcohen.com	*(386) 677-2482*	**11/25/2024**
Architect	*Schenkel Shultz- Gay Geiger*	*(321) 239-9723*	GGeiger@schenkelshultz.com	*Structural: BBM - Bora Erbilen*	berbilen@bbmstructural.com	*(407) 645-3423*	
MEP Engr.	*TLC Engineering - Jim Mullen*	*(321) 877-4260*	jim.mullen@tlc-eng.com				

Line	Submitted Date	RFI No.	Design Stage	Drawing/Spec. No.	Trade/Discipline	RFI Question: include drawing keynote/detail numbers, contradictions, etc.	Architect/Engineer Response	Response Date	CM (Wharton-Smith) Response
1	11/1/2024	1-001	CD/GMP	C6 / 32 31 13	Fencing	Specifications lists “decorative fence” as Ameristar Montage II Invincible, a steel rail product, but civil drawings state6' decorative vinyl fence (assumed to be vinyl coated chain link ralso referenced in that same spec. Please advice if any fence is to be steel decorative type and locate.	**Zev Cohen - There is no steel type decorative fence proposed on the plans. Decorative fence is to be 6' Illusions vinyl fence in accordance with detail on Civil Sheet C15.**	11/6/2024	
2	11/1/2024	1-002	CD/GMP	32 31 13	Fencing	The Specification section 1.2.A.2 partially addresses reuse of existing. What specifically is being reused (gates and operators)?	**Zev Cohen - There are no gates or operators that are proposed to be reused.**	11/6/2024	
3	11/1/2024	1-003	CD/GMP	C6	Fencing	I had a question/clarification on the Decorative Vinyl Fence, the detail is calling out Illusions Vinyl Fence, and I wanted to confirm that the 3 powered sliding gates are supposed to be of same material as the vinyl fence attached to?	**Zev Cohen - The two gates for the entrances along Bruner Rd. are to match the 6' vinyl fence. The gate connection to the water treatment plant on the east side is to be 6' chain link.**	11/6/2024	
4	11/1/2024	1-004	CD/GMP		Plumbing - Air Compressor	There is no Specification or manufacturer/model for the air compressor. Please provide	**The air compressor is called out on page P101B note 1.**	11/6/2024	
5	11/1/2024	1-005	CD/GMP	C9 & C13	Plumbing - Oil Water Separator	Is the site contractor going to furnish and install the Oil Water Separator shown on C9 and detailed on C13?	**see WSI Response**	11/1/2024	**Since it is shown on Civil, Plumbing Subcontractor's should not carry these in their base bid, but provide an add option for Oil Water Separators.**
6	11/1/2024	1-006	CD/GMP	A101A	Aluminum Windows	Windows tagged W1, W2 & W3 cannot find dimensions. Please provide details.	**see WSI Response**	11/1/2024	**Dimensions & glazing types are shown on drawing A503**
7	11/1/2024	1-007	CD/GMP	T502	Technology - Cabling	Drawings list part #'s for cable that references cable characterized to 350 MHz, but Specs list cable with 600MHz characteristics. Please clarify if 350MHz (enhanced) or 600MHz (Premium) cable is desire, as there is a large price difference for Premium cable.	**350 MHz is acceptable**	11/6/2024	
8	11/1/2024	1-008	CD/GMP	23 09 00	HVAC - Controls	The Specifications show Trane, Automated Logic, JCI and Siemens as acceptable controls contractors. The Port Orange Police station right next to this project is utilizing Automated Building Controls (ABC) as their controls contractor. Will ABC be an acceptable alternate?	**ABC is acceptable**	11/6/2024	
9	11/1/2024	1-009	CD/GMP	S101 / J8 S201	Concrete - foundations	At the walkway between the Admin and Warehouse buildings are 5 each F40 column footings. There is a section cut J8/S201 calling for a Pedestal. What is the length and width of the pedistal? Is the Pedestal the same size as in detail A15/S401?	**See information in J8/S201 and the Column & A.B. Schedule on J8/S401. That section A15/S401 that they are referring to is for the other exterior column at the bottom left corner of the building, not for the freezeway columns.**	11/6/2024	
10	11/1/2024	1-010	CD/GMP	C9 & C13	Civil - Site	The Utility Plan (C9) shows that there is a “previously installed sleeve” for the water main to cross under the driveway. Has the size of the sleeve been verified?	**Zev Cohen - The tap of the existing 12" water main has already been made and an 8" pvc water main has been installed under the driveway. The line has been stubbed out just north of the driveway with a valve and a 2" blowoff. See image below for approximate valve and blowoff location. Proposed 8" water main is to connect to and continue from this location.**	11/6/2024	
11	11/1/2024	1-011	CD/GMP	WSI Sitework Bid Package	Civil - Site	Please verify where 2 1/2” temporary water line will be hooked up at to verify amount of pipe needed. Also verify location of the 3 stub outs requested in the bid package.	**WSI to answer**		**Tap location will be at the permament point mentioned in RFI #1 - 010 above. The stub out will be at WSI jobsite trailer, oil separator location and at the laydown yard.**
12	11/1/2024	1-012	CD/GMP	n/a	Civil - Site	When will there be clarification as to where the excess fill dirt will be stored? At the onsite meeting there was discussion of 3 possible options.	**see WSI Response**	11/6/2024	**These alternates were provided with WSI # 007 uploaded to ConstructConnect 11/6/2024**
13	11/6/2024	1-013	CD/GMP	M500	HVAC Controls	Please confirm that the control schematic for Multizone - mixed air- VAV AHU shown in M500 is to be provided by the BAS contractor for AHU-1 and AHU-2. If the units are to be provided with a factory mounted controller, and the BAS contractor is to only integrate.	The control schematic for Multizone - mixed air- VAV AHU shown in M500 is to be provided by the BAS contractor for AHU-1. ***(11/11/2024) AHU-2 is a constant volume unit and not applicable to the “Multizone - Mixed Air- VAV AHU Control Schematic”. AHU-2 is to be controlled by a wall mounted thermostat that needs to be integrated into the BAS.***	Updated on: 11/11/2024	
14	11/6/2024	1-014	CD/GMP	C-10 and WSI Site Layout Plan	Civil	RFI from Virtual Pre-Bid Meeting: Please provide details/info. on what Wharton-Smith desires for temporary access/delivery roads.	**see WSI Response**	11/6/2024	**Please see revised Site Layout Plan dated 11/6/2024. All temporary entrances shall be constructed per drawing C10 detailM-21. Include (1) temporary access road (shown brown) at southside of the property and a 20' x 300' stabilized access road (black w/red outline) constructed of with 8" crushed concrete along the north and east of the new Admin/Warehouse Bldgs.**

Line	Submitted Date	RFI No.	Design Stage	Drawing/Spec. No.	Trade/Discipline	RFI Question: include drawing keynote/detail numbers, contradictions, etc.	Architect/Engineer Response	Response Date	CM (Wharton-Smith) Response
15	11/7/2024	1-015	CD/GMP	A160, A161A & A161B	Concrete Finish	The Finish Plan shows several areas to receive the floor finish of SC-1. SC-1 under the "The Sealed/Stained Concrete Schedule" tells us this is an integral color polished concrete refer to architectural specs. Spec Section 03 39 35 Integrally Colored Concrete confirms this is integral color concrete. Please clarify if SC-1 is to be integral colored concrete and not stained concrete as the schedule is titled.	**Schenkel Shultz-Correct, the schedule header is a misleading Revit template title.** **SC-1 is integral colored polished concrete.** **SC-2 is sealed concrete (intended for the support spaces like mech./elect. and storage room. If it is easier to coordinate the slab pour those few spaces can also be integral color, but they do not have to be polished.**	11/7/2024	
16	11/7/2024	2-016	CD/GMP	A522 & Spec. 09 24 00	Stucco	Please confirm that per A522, lath will be attached over all substrates receiving stucco treated with fluid applied air and moisture barrier per details A6, A13, H1 and not direct applied (no lath) per detail N1. Also confrim that vinyl stucco trim accessories, including 1" wide reveals are acceptable per specification 09 24 00	**If the Air & Water barrier as specified in 07 25 00.2.2.2 is used then you can direct bond with no lath. If another product is proposed then refer to requirements in 2.2.B.** **The note highlighted in detail A13 should be edited to match the other referenced details.** **1" vinyl reveals are acceptable.**	11/8/2024	
17	11/11/2024	2-017	CD/GMP	FP Series Drawings	Fire Protection	The FP documents do not call for protection in the covered warehouse storage area. Does this area need fire sprinkler protection (Reference 9.2.3 of NFPA 13 2019). If protection is required will it need to be a dry system?			**(11/11/2024) Until receipt of the engineer's response please bid base bid as shown and provide an Add option to protect this area with dry system.**
18	11/11/2024	2-018	CD/GMP	FP Series Drawings	Fire Protection	The FP documents call for sidewall fire sprinklers to protect the breezeway. Do these sprinkler heads need to be dry type sprinklers?			**(11/11/2024) Until receipt of the engineer's response please bid base bid as shown and provide an Add option to protect this area with dry system.**
19	11/11/2024	2-019	CD/GMP	A160 & Spec 081416	Doors, Frames & Hardware	We need to know what the wood door species and cut is for the wood doors on this project. The documents (spec section 081416) refer us to the interior finish schedule which is on sheet A160 for this information, however this information is not defined for us (i.e. WD-2).	**The wood doors shall match PL-1 (Wilsonart Walnut Heights). Recommend quarter sawn walnut unless maple can be stained to match PL-1.**	11/11/2024	
20	11/8/2024	2-020	CD/GMP	S201 & Detail A2	Concrete - SOG	The Warehouse slab on grade is to be reinforced with #4 @16" oc ew. On sheet S201 Detail A12 calls for sawcuts to receive plate dowel baskets. With the scheduled reinforcing in the SOG is the dowel basket still required?			**(11/11/2024) Until receipt of the engineer's response please bid base bid as shown with dowel baskets and provide option to should these not be required.**
21	11/8/2024	2-021	CD/GMP	P101B	Plumbing	There are (3) water hose reels on the plumbing plans in the Warehouse Bldg.; however, there is no pecification or other make/model info. for them. Please advise.			
22	11/11/2024	2-022	CD/GMP	A171A, A901 & 10 51 29	Div 10, Lockers,	A171A E9: Phenolic Lockers As per specifications acceptable manufactures are List & Spectrum. When referencing A901 A5 /A9 requests (2) adjustable PLAM shelves which neither manufacturer offers. A1 tates PLAM doors not Phenolic. Specifications 10.51.29 requests sloped tops, but these are recessed lockers. Please advise/clarify	**The phenolic lockers are to be in the shower rooms without shelves with sloped tops. The lockers in the corridor are recessed millwork.**	11/11/2024	
23	11/11/2024	2-023	CD/GMP	A171B	Div 10, Pipe Arm Rack	A171B E23 Pipe Arm Rack Jarke SC-10J per manufacturer dimensions are 81-1/2"W x 49"D x 10"H. However, description states HD 46"W x 32"D x 120"H which is not a manufacturer's option. See chart and advise as we have 19'2.5" of useable space, so what size?			
24	11/11/2024	2-024	CD/GMP	A171B	Div. 10, Pallet and Pipe racking systems	Will they accept any other manufacturers on the pallet racking or the pipe racks?			
25	11/12/2024	2-025	CD/GMP		Door Frame, Glazing and rating	Doors 109B and 154 (located at the breezeway) are Glass-over glass fire rated and impact rated. However the manufacturer's cannot support this glazing anymore (discontinued). We can get either impact rated with assemblies as shown or UL Labeled Fire Rated Flush Doors. A solution to maintain G2 elevation could be to switch the door, frame and hardware manufactures at these 2 door 109B and 154.	**The fire rating should take precedence. Change doors 109B and 154 to Type N from G2.....**		
26	11/13/2024	2-026	CD/GMP	A201 - L1 East Admin Elevation	Arch- Wall Type/Finish	The type of wall material (ie., stucco, metal panel, etc.) is not identified on the A201-L1 Elevation (nor elsewhere) for the east facing white wall apearing to have control joints. It is not shaded with the dotted pattern like other Stucco walls and has no call out keynote.			
27	11/14/2024	2-027	CD/GMP	C6, Note 2	Fencing - Powered Gates	The documents reference a 60' slideing Powered Fence Gate. Subcontractors are stating that manufacturers do not recommend such a long gate be sliding (maintenance/motor issues, etc.). Please advise if a 60' cantilevere "swing" gate and/or (2) 30' swing gates would be acceptable. We have both alterates bid.			



1 Sided Starter with Straight Arms

Overall WxDxH	Number of Arms	Arm Length	Center Brace Length	Load Capacity Per Arm	Whole Unit Load Capacity	Brand
74-3/4 in x 61 in x 12 ft	16	48 in	68 in	1,000 lb	9,690 lb	JARKE
81-1/2 in x 40 in x 96 in	8	24 in	68 in	4,000 lb	12,530 lb	JARKE
81-1/2 in x 49 in x 10 ft	12	36 in	68 in	1,300 lb	12,340 lb	JARKE

2 Sided Starter with Straight Arms

Overall WxDxH	Number of Arms	Arm Length	Center Brace Length	Load Capacity Per Arm	Whole Unit Load Capacity	Brand
74-3/4 in x 105-1/2 in x 12 ft	32	48 in	68 in	1,000 lb	9,690 lb	JARKE
81-1/2 in x 64-1/4 in x 96 in	16	24 in	68 in	2,000 lb	12,530 lb	JARKE
81-1/2 in x 81-1/2 in x 10 ft	24	36 in	68 in	1,300 lb	12,340 lb	JARKE



Wharton-Smith Contact:
James De La Rosa – Project Executive
jdelarosa@whartonsmith.com

Architect: Schenkel Shultz

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Standard Form of Agreement Between Owner and Construction Manager as Constructor where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price

AGREEMENT made as of the 6th day of November in the year 2024. *(In words, indicate day, month, and year.)*

BETWEEN the Owner:
(Name, legal status, address, and other information)

City of Port Orange
1000 City Center Circle
Port Orange, FL 32129

and the Construction Manager:
(Name, legal status, address, and other information)

Wharton-Smith, Inc.
750 Monroe Road
Sanford, FL 32771

for the following Project:
(Name, location, and detailed description)

Public Utilities Field Operations Facility
City of Port Orange

The Architect:
(Name, legal status, address, and other information)

Schenkel Schultz, Inc.
200 East Robinson Street, Suite 300
Orlando, FL 32801

The Owner and Construction Manager agree as follows.

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

AIA Document A201™–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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ARTICLE 1 INITIAL INFORMATION

§ 1.1 This Agreement is based on the Initial Information set forth in this Section 1.1.
(For each item in this section, insert the information or a statement such as "not applicable" or "unknown at time of execution.")

§ 1.1.1 The Owner's program for the Project, as described in Section 4.1.1:
(Insert the Owner's program, identify documentation that establishes the Owner's program, or state the manner in which the program will be developed.)

Provide services described in the Preconstruction Phase Scope of Services attached hereto as Exhibit "D" related to the construction of the City of Port Orange Public Utilities Field Operations Facility that will consist of a 11,500 SF Administration Building, a 12,300 SF Warehouse, and all associated site improvements.

§ 1.1.2 The Project's physical characteristics:
(Identify or describe pertinent information about the Project's physical characteristics, such as size; location; dimensions; geotechnical reports; site boundaries; topographic surveys; traffic and utility studies; availability of public and private utilities and services; legal description of the site, etc.)

See § 1.1 above.

§ 1.1.3 The Owner's budget for the Guaranteed Maximum Price, as defined in Article 6:
(Provide total and, if known, a line item breakdown.)

To be determined.

§ 1.1.4 The Owner's anticipated design and construction milestone dates:

.1 Design phase milestone dates, if any:

Pre-Construction Services Start Date: The Date of this Agreement

Construction Drawings shall be completed by: Four (4) months from the date hereof

Pre-Construction Services End Date: Four (4) months from the date hereof

.2 Construction commencement date: The date of execution of the Guaranteed Maximum Price Amendment by both Parties (attached hereto as Exhibit "A").

.3 Substantial Completion date or dates: To be provided and agreed upon by both Parties in the Guaranteed Maximum Price Amendment (attached hereto as Exhibit "A").

(Paragraph deleted)

.4 Other milestone dates: To be provided and agreed upon by both Parties in the Guaranteed Maximum Price Amendment (attached hereto as Exhibit "A").

§ 1.1.5 The Owner's requirements for accelerated or fast-track scheduling, or phased construction, are set forth below:
(Identify any requirements for fast-track scheduling or phased construction.)

NOT APPLICABLE

§ 1.1.6 The Owner's anticipated Sustainable Objective for the Project:
(Identify and describe the Owner's Sustainable Objective for the Project, if any.)

NOT APPLICABLE

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§ 1.1.6.1 (Intentionally omitted.)

§ 1.1.7 Other Project information:
(Identify special characteristics or needs of the Project not provided elsewhere.)

NOT APPLICABLE

§ 1.1.8 The Owner identifies the following representative in accordance with Section 4.2:
(List name, address, and other contact information.)

Junos Reed, City Engineer
City of Port Orange
1000 City Center Circle
Port Orange, FL 32129
Phone: 386-506-5757
Email: jureed@port-orange.org

§ 1.1.9 The persons or entities, in addition to the Owner's representative, who are required to review the Construction Manager's submittals to the Owner are as follows:
(List name, address and other contact information.)

NOT APPLICABLE

§ 1.1.10 The Owner may retain consultants and contractors for each Project.
(List name, legal status, address, and other contact information.)

.1 Geotechnical Engineer:

NOT APPLICABLE

.2 Civil Engineer:

NOT APPLICABLE

.3 Other, if any:
(List any other consultants retained by the Owner, such as a Project or Program Manager.)

NOT APPLICABLE

§ 1.1.11 The Architect's representative:
(List name, address, and other contact information.)

Gay Geiger
Schenkel Schultz, Inc.
200 East Robinson Street, Suite 300
Orlando, FL 32801
Phone: 407-872-3322
Email: ggeiger@schenkelshultz.com

§ 1.1.12 The Construction Manager identifies the following representative in accordance with Article 3:
(List name, address, and other contact information.)

James De LaRosa, Project Executive
Wharton-Smith, Inc.
750 Monroe Road
Sanford, FL 32771
Phone: 689-267-8629

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Email: jdelarosa@whartonsmith.com

§ 1.1.13 The Owner's requirements for the Construction Manager's staffing plan for Preconstruction Services, as required under Section 3.1.9:
(List any Owner-specific requirements to be included in the staffing plan.)

NOT APPLICABLE

§ 1.1.14 The Owner's requirements for subcontractor procurement for the performance of the Work:
(List any Owner-specific requirements for subcontractor procurement.)

The Construction Manager shall seek to develop subcontractor interest in the Project and shall furnish to the Owner and Architect for their information a list of possible subcontractors, including suppliers who are to furnish materials or equipment fabricated to a special design, from whom proposals will be requested for each principal portion of the Work. The Architect will promptly reply in writing to the Construction Manager if the Architect or Owner know of any objection to such subcontractor or supplier. The receipt of such list shall not require the Owner or Architect to investigate the qualifications of proposed subcontractors or suppliers, nor shall it waive the right of the Owner or Architect to object to or reject any proposed subcontractor or supplier within (5) business days of receipt of Construction Manager's list of possible subcontractors. Provided, however, if Owner or Architect object to a subcontractor or supplier, Owner shall be responsible to compensate Construction Manager should there be additional cost associated with utilizing Owner or Architect's preferred subcontractor or supplier. Further, Owner or Architect shall not object to a subcontractor or supplier due to the price of the work.

§ 1.1.15 Other Initial Information on which this Agreement is based:

See Preconstruction Phase – Scope of Services attached hereto as Exhibit "D".

§ 1.2 The Owner and Construction Manager may rely on the Initial Information. Both parties, however, recognize that such information may materially change and, in that event, the Owner and the Construction Manager shall appropriately adjust the Project schedule, the Construction Manager's services, and the Construction Manager's compensation. The Owner shall adjust the Owner's budget for the Guaranteed Maximum Price and the Owner's anticipated design and construction milestones, as necessary, to accommodate material changes in the Initial Information.

§ 1.3 Neither the Owner's nor the Construction Manager's representative shall be changed without ten days' prior notice to the other party.

ARTICLE 2 GENERAL PROVISIONS

§ 2.1 The Contract Documents

The Contract Documents consist of this Agreement, the Guaranteed Maximum Price Amendment(s) (attached hereto as Exhibit "A"), the Insurance and Bonds (attached hereto as Exhibit "B" and Exhibit "B-1"), AIA Document A201-2017 General Conditions (as modified by Owner and attached hereto as Exhibit "C") Conditions of the Contract (General Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in § 15.2 of this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract and are as fully a part of the Contract as if attached to this Agreement or repeated herein. Upon the Owner's acceptance of the Construction Manager's Guaranteed Maximum Price proposal, the Contract Documents will also include the documents described in Section 3.2.3 and identified in the Guaranteed Maximum Price Amendment and revisions prepared by the Architect and furnished by the Owner as described in Section 3.2.8. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. If anything in the other Contract Documents, other than a Modification, is inconsistent with this Agreement, this Agreement shall govern. An enumeration of the Contract Documents, other than a Modification, appears in Article 15.

§ 2.2 Relationship of the Parties

The Construction Manager accepts the relationship of trust and confidence established by this Agreement and covenants with the Owner to cooperate with the Architect and exercise the Construction Manager's skill and judgment in furthering the interests of the Owner to furnish efficient construction administration, management services, and supervision; to furnish at all times an adequate supply of workers and materials; and to perform the Work in an expeditious and economical manner consistent with the Owner's interests. The Owner agrees to furnish or approve, in a timely manner,

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information required by the Construction Manager and to make payments to the Construction Manager in accordance with the requirements of the Contract Documents.

§ 2.3 General Conditions

§ 2.3.1 For the Preconstruction Phase, AIA Document A201™–2017, General Conditions of the Contract for Construction as modified by Owner (hereinafter "A201-2017"), shall apply as follows: Section 1.5, Ownership and Use of Documents; Section 1.7, Digital Data Use and Transmission; Section 1.8, Building Information Model Use and Reliance; Section 2.2.4, Confidential Information; Section 3.12.10, Professional Services; Section 10.3, Hazardous Materials; Section 13.1, Governing Law. The term "Contractor" as used in A201–2017 shall mean the Construction Manager.

§ 2.3.2 For the Construction Phase, the general conditions of the contract shall be as set forth in A201–2017, which document is incorporated herein by reference. The term "Contractor" as used in A201–2017 shall mean the Construction Manager.

ARTICLE 3 CONSTRUCTION MANAGER'S RESPONSIBILITIES

The Construction Manager's Preconstruction Phase responsibilities are set forth in Sections 3.1 and 3.2, and in the applicable provisions of A201-2017 referenced in Section 2.3.1. The Construction Manager's Construction Phase responsibilities are set forth in Section 3.3. The Owner and Construction Manager may agree, in consultation with the Architect, for the Construction Phase to commence prior to completion of the Preconstruction Phase, in which case, both phases will proceed concurrently. The Construction Manager shall identify a representative authorized to act on behalf of the Construction Manager with respect to the Project. The standard of care for the professional services performed by the Construction Manager and its Sub-Consultants pursuant to this Agreement shall be the care and skill ordinarily used by members of the same profession practicing under similar conditions at the same time and locality of the Project.

§ 3.1 Preconstruction Phase

§ 3.1.1 Extent of Responsibility

The Construction Manager shall exercise reasonable care in performing its Preconstruction Services. The Owner and Architect shall be entitled to rely on, and shall not be responsible for, the accuracy, completeness, and timeliness of services and information furnished by the Construction Manager. The Construction Manager, however, does not warrant or guarantee estimates and schedules except as may be included as part of the Guaranteed Maximum Price. The recommendations and advice of the Construction Manager concerning design alternatives shall be subject to the review and approval of the Owner. The Construction Manager is not required to ascertain that the Drawings and Specifications are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Construction Manager shall promptly report to the Architect and Owner any nonconformity discovered by or made known to the Construction Manager as a request for information in such form as the Architect may require.

§ 3.1.2 The Construction Manager shall provide a preliminary evaluation of the Owner's program, schedule and construction budget requirements, each in terms of the other.

§ 3.1.3 Consultation

§ 3.1.3.1 The Construction Manager shall schedule and conduct meetings with the Architect and Owner to discuss such matters as procedures, progress, coordination, and scheduling of the Work.

§ 3.1.3.2 The Construction Manager shall advise the Owner and Architect on proposed site use and improvements, selection of materials, building systems, and equipment. The Construction Manager shall also provide recommendations to the Owner and Architect, consistent with the Project requirements, on constructability; availability of materials and labor; time requirements for procurement, installation and construction; prefabrication; and factors related to construction cost including, but not limited to, costs of alternative designs or materials, preliminary budgets, life-cycle data, and possible cost reductions. The Construction Manager shall consult with the Architect regarding professional services to be provided by the Construction Manager during the Construction Phase.

§ 3.1.3.3 (Intentionally omitted.)

§ 3.1.4 Project Schedule

When Project requirements in Section 4.1.1 have been sufficiently identified, the Construction Manager shall prepare and periodically update a Project schedule for the Architect's review and the Owner's acceptance. The Construction Manager

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shall obtain the Architect's approval for the portion of the Project schedule relating to the performance of the Architect's services. The Project schedule shall coordinate and integrate the Construction Manager's services, the Architect's services, other Owner consultants' services, and the Owner's responsibilities; and identify items that affect the Project's timely completion. The updated Project schedule shall include the following: submission of the Guaranteed Maximum Price proposal; components of the Work; times of commencement and completion required of each Subcontractor; ordering and delivery of products, including those that must be ordered in advance of construction; and the occupancy requirements of the Owner.

§ 3.1.5 Phased Construction

The Construction Manager shall make recommendations to the Owner and Architect regarding the phased construction of the Work, if such phased construction is appropriate for the Project. The Construction Manager shall take into consideration cost reductions, cost information, constructability, provisions for temporary facilities, and procurement and construction scheduling issues.

§ 3.1.6 Cost Estimates

§ 3.1.6.1 Based on the preliminary design and other design criteria prepared by the Architect, the Construction Manager shall prepare, for the Architect's review and the Owner's approval, preliminary estimates of the Cost of the Work or the cost of program requirements using area, volume, or similar conceptual estimating techniques. If the Architect or Construction Manager suggests alternative materials and systems, the Construction Manager shall provide cost evaluations of those alternative materials and systems.

§ 3.1.6.2 As the Architect progresses with the preparation of the Schematic Design, Design Development and Construction Documents, the Construction Manager shall prepare and updateat appropriate intervals agreed to by the Owner, Construction Manager and Architect, an estimate of the Cost of the Work with increasing detail and refinement. The Construction Manager shall include in the estimate those costs to allow for the further development of the design, price escalation, and market conditions, until such time as the Owner and Construction Manager agree on a Guaranteed Maximum Price for the Work. The estimate shall be provided for the Architect's review and the Owner's approval. The Construction Manager shall inform the Owner and Architect in the event that the estimate of the Cost of the Work exceeds the latest approved Project budget, and make recommendations for corrective action.

§ 3.1.6.3 If the Architect is providing cost estimating services and a discrepancy exists between the Construction Manager's cost estimates and the Architect's cost estimates, the Construction Manager and the Architect shall work together to reconcile the cost estimates.

§ 3.1.7 As the Architect progresses with the preparation of the Schematic Design, Design Development and Construction Documents, the Construction Manager shall consult with the Owner and Architect and make recommendations regarding constructability and schedules, for the Architect's review and the Owner's approval.

§ 3.1.8 The Construction Manager shall provide recommendations and information to the Owner and Architect regarding equipment, materials, services, and temporary Project facilities.

§ 3.1.9 The Construction Manager shall provide a staffing plan for Preconstruction Phase services at the Owner's request for the Owner's review and approval.

§ 3.1.10

§ 3.1.11 Subcontractors and Suppliers

§ 3.1.11.1 If the Owner has provided requirements for subcontractor procurement in section 1.1.14, the Construction Manager shall provide a subcontracting plan, addressing the Owner's requirements, for the Owner's review and approval.

§ 3.1.11.2 The Construction Manager shall develop bidders' interest in the Project.

§ 3.1.11.3 The processes described in Article 9 shall apply if bid packages will be issued during the Preconstruction Phase.

§ 3.1.12 Procurement

The Construction Manager shall prepare, for the Architect's review and the Owner's acceptance, a procurement schedule for items that must be ordered in advance of construction. The Construction Manager shall expedite and coordinate the

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ordering and delivery of materials that must be ordered in advance of construction. If the Owner agrees to procure any items prior to the establishment of the Guaranteed Maximum Price, the Owner shall procure the items on terms and conditions as set forth in Section 3.4.5 of the A201-2017 General Conditions.

§ 3.1.13 Compliance with Laws

The Construction Manager shall comply with applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to its performance under this Contract, and with equal employment opportunity programs, and other programs as may be required by governmental and quasi-governmental authorities.

§ 3.1.14 Other Preconstruction Services

Insert a description of any other Preconstruction Phase services to be provided by the Construction Manager, or reference an exhibit attached to this document

(Describe any other Preconstruction Phase services, such as providing cash flow projections, development of a project information management system, early selection or procurement of subcontractors, etc.)

NOT APPLICABLE

§ 3.2 Guaranteed Maximum Price Proposal

§ 3.2.1 At a time to be mutually agreed upon by the Owner and the Construction Manager, the Construction Manager shall prepare a Guaranteed Maximum Price proposal for the Owner's and Architect's review, and the Owner's acceptance. The Guaranteed Maximum Price in the proposal shall be the sum of the Construction Manager's estimate of the Cost of the Work, the Construction Manager's contingency described in Section 3.2.4, and the Construction Manager's Fee described in Section 6.1.2. If the Owner does not accept the Construction Manager's Guaranteed Maximum Price proposal (Exhibit "A") then the Construction Manager shall have no obligation or right to proceed with construction. Owner retains the right to proceed with construction with another construction manager or contractor.

§ 3.2.2 To the extent that the Contract Documents are anticipated to require further development, the Guaranteed Maximum Price includes the costs attributable to such further development consistent with the Contract Documents and reasonably inferable therefrom. Such further development does not include changes in scope, systems, kinds and quality of materials, finishes, or equipment, all of which, if required, shall be incorporated by Change Order.

§ 3.2.3 The Construction Manager shall include with the Guaranteed Maximum Price proposal a written statement of its basis, which shall include the following:

.1 A list of the Drawings and Specifications, including all Addenda thereto, and the Conditions of the Contract;

.2 A list of allowances and a statement of their basis;

.3 A list of the clarifications and assumptions made by the Construction Manager in the preparation of the Guaranteed Maximum Price proposal, including assumptions under Section 3.2.2;

.4 A statement of the proposed Guaranteed Maximum Price, including a statement of the estimated Cost of the Work organized by trade categories or systems, including allowances; the Construction Manager's contingency set forth in Section 3.2.4; and the Construction Manager's Fee; and

.5 The anticipated date of Substantial Completion upon which the proposed Guaranteed Maximum Price is based

.5 A date by which the Owner must accept the Guaranteed Maximum Price.

§ 3.2.4 Contingency

§ 3.2.4.1 Construction Manager's Contingency

The estimated Cost of Work shall include the Construction Manager's Contingency, an amount mutually agreeable between the Construction Manager and Owner, to cover costs arising under Subparagraph 3.2.2, and other costs which are properly reimbursable as Costs of Work, but not the basis for a Change Order. The Construction Manager's Contingency is for the exclusive use of the Construction Manager while executing the construction Work to address unexpected circumstances, force majeure impacts, and to correct unanticipated circumstances which are not otherwise reimbursable and do not constitute a change in the Work, as defined in this Agreement. The Construction Manager's Contingency shall only be adjusted by a written Change Order; and it shall be clearly noted on the Change Order that costs are allocated against the Construction Manager's Contingency. The Construction Manager shall maintain a Contingency tracking log updated each time Construction Manager's contingency funds are used.

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§ 3.2.4.2 Buyout Contingency

It is expected that some cost savings between the Construction Manager's Guaranteed Maximum Price (GMP) and the actual Cost of Work may be generated as a result of the final bidding and negotiations of subcontracts. Any cost savings generated as a result of the final bidding or negotiation of subcontracts, and actual expenses by the Construction Manager, which are less than was estimated in establishing the GMP shall be retained by the Owner as the Buyout Contingency. The negotiated fee and general conditions will not be adjusted as result of these savings. The Buyout Contingency shall only be adjusted by means of the Owner issuing a written Change Order and it shall be clearly noted on the Change Order that costs are allocated against the Buyout Contingency. The Construction Manager shall maintain a Buyout Contingency tracking log updated each time Buyout contingency funds are used. The Buyout Contingency remains in the Project until final completion where remaining funds shall be returned to the Owner.

§ 3.2.5 The Construction Manager shall meet with the Owner and Architect to review the Guaranteed Maximum Price proposal. In the event that the Owner or Architect discover any inconsistencies or inaccuracies in the information presented, they shall promptly notify the Construction Manager, who shall make appropriate adjustments to the Guaranteed Maximum Price proposal, its basis, or both.

§ 3.2.6 Following acceptance of a Guaranteed Maximum Price, the Owner and Construction Manager shall execute the Guaranteed Maximum Price Amendment(s) amending this Agreement, a copy of which the Owner shall provide to the Architect. The Guaranteed Maximum Price Amendment(s) shall set forth the agreed upon Guaranteed Maximum Price with the information and assumptions upon which it is based. The Guaranteed Maximum Price shall be subject to additions and deductions by a change in the Work as provided in the Contract Documents, and the Date of Substantial Completion shall be subject to adjustment as provided in the Contract Documents.

§ 3.2.7 The Construction Manager shall not incur any cost to be reimbursed as part of the Cost of the Work prior to the execution of the Guaranteed Maximum Price Amendment(s), unless the Owner provides prior written authorization for such costs.

§ 3.2.8 The Owner shall authorize written revisions to the Contract Documents that incorporate the agreed-upon assumptions and clarifications contained in the Guaranteed Maximum Price Amendment(s). The Owner shall furnish such revised Contract Documents to the Construction Manager. The Construction Manager shall notify the Owner and Architect of any inconsistencies between the agreed-upon assumptions and clarifications contained in the Guaranteed Maximum Price Amendment(s) and the revised Contract Documents and any increase in the Guaranteed Maximum Price, if any.

§ 3.2.9 The Construction Manager shall include in the Guaranteed Maximum Price all sales, consumer, use and similar taxes for the Work provided by the Construction Manager that are legally enacted, whether or not yet effective, at the time the Guaranteed Maximum Price Amendment is executed.

§ 3.3 Construction Phase

§ 3.3.1 General

§ 3.3.1.1 For purposes of Section 8.1.2 of A201–2017, the date of commencement of the Work shall mean the date of commencement of the Construction Phase.

§ 3.3.1.2 The Construction Phase shall commence as mutually agreed to by the Owner and Construction Manager . The written agreement shall set forth a description of the Work to be performed by the Construction Manager, and any insurance and bond requirements for Work performed prior to execution of the Guaranteed Maximum Price Amendment(s).

§ 3.3.2 Administration

§ 3.3.2.1 The Construction Manager shall schedule and conduct meetings to discuss such matters as procedures, progress, coordination, scheduling, and status of the Work. The Construction Manager shall prepare and promptly distribute minutes of the meetings to the Owner and Architect.

§ 3.3.2.2 Upon the execution of the Guaranteed Maximum Price Amendment, the Construction Manager shall prepare and submit to the Owner and Architect a construction schedule for the Work and a submittal schedule in accordance with Section 3.10 of A201–2017.

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§ 3.3.2.3 Monthly Report

The Construction Manager shall record the progress of the Project. On a monthly basis, or otherwise as agreed to by the Owner, the Construction Manager shall submit written progress reports to the Owner and Architect, showing percentages of completion and other information required by the Owner.

§ 3.3.2.4 Daily Logs

The Construction Manager shall keep, and make available to the Owner and Architect, a daily log containing a record for each day of weather, portions of the Work in progress, number of workers on site, identification of equipment on site, problems that might affect progress of the work, accidents, injuries, and other information required by the Owner.

§ 3.3.2.5 Cost Control

The Construction Manager shall develop a system of cost control for the Work, including regular monitoring of actual costs for activities in progress and estimates for uncompleted tasks and proposed changes. The Construction Manager shall identify variances between actual and estimated costs and report the variances to the Owner and Architect, and shall provide this information in its monthly reports, and payment applications to the Owner and Architect and make access available via Procore, in accordance with Section 3.3.2.3 above.

§ 3.4 CONSTRUCTION MANAGER'S KEY PERSONNEL

The Construction Manager shall provide accounting of Construction Manager's Consultants, Design Professionals, and Suppliers as set forth in Article A.5 Construction Manager's Key Personnel, of the Guaranteed Maximum Price Amendment(s), Exhibit "A" via the Certificates of Payment Application.

ARTICLE 4 OWNER'S RESPONSIBILITIES

§ 4.1 Information and Services Required of the Owner

§ 4.1.1 The Owner shall provide information with reasonable promptness, regarding requirements for and limitations on the Project, including a written program which shall set forth the Owner's objectives, constraints, and criteria, including schedule, space requirements and relationships, flexibility and expandability, special equipment, systems, sustainability and site requirements.

§ 4.1.2 (Intentionally omitted.)

§ 4.1.3 The Owner shall establish and may periodically update the Owner's budget for the Project, including (1) the budget for the Cost of the Work as defined in Article 7, (2) the Owner's other costs, and (3) reasonable contingencies related to all of these costs. If the Owner significantly increases or decreases the Owner's budget for the Cost of the Work, the Owner shall notify the Construction Manager and Architect. The Owner and the Architect, in consultation with the Construction Manager, shall thereafter agree to a corresponding change in the Project's scope and quality.

§ 4.1.4 **Structural and Environmental Tests, Surveys and Reports.** During the Preconstruction Phase, the Owner shall furnish the following information or services with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Construction Manager's performance of the Work with reasonable promptness after receiving the Construction Manager's written request for such information or services. The Construction Manager shall be entitled to rely on the accuracy of information and services furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 4.1.4.1 The Owner shall furnish tests, inspections, and reports, required by law and as otherwise agreed to by the parties, such as structural, mechanical, and chemical tests, tests for air and water pollution, and tests for hazardous materials with reasonable promptness.

§ 4.1.4.2 The Owner shall furnish surveys with reasonable promptness describing physical characteristics, legal limitations and utility locations for the site of the Project, and a written legal description of the site. The surveys and legal information shall include, as applicable, grades and lines of streets, alleys, pavements and adjoining property and structures; designated wetlands; adjacent drainage; rights-of-way, restrictions, easements, encroachments, zoning, deed restrictions, boundaries and contours of the site; locations, dimensions and other necessary data with respect to existing buildings, other improvements and trees; and information concerning available utility services and lines, both public and private, above and below grade, including inverts and depths. All the information on the survey shall be referenced to a Project benchmark.

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§ 4.1.4.3 The Owner may furnish services of geotechnical engineers, which may include test borings, test pits, determinations of soil bearing values, percolation tests, evaluations of hazardous materials, seismic evaluation, ground corrosion tests and resistivity tests, including necessary operations for anticipating subsoil conditions, with written reports and appropriate recommendations.

§ 4.1.5 During the Construction Phase, the Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Construction Manager's performance of the Work with reasonable promptness after receiving the Construction Manager's written request for such information or services.

§ 4.1.6

§ 4.2 Owner's Designated Representative
The Owner's Representative is named in § 1.1.8 or designee. The Owner's Representative is authorized to act on Owner's behalf as provided herein and in applicable law, regulation, or ordinance. The Owner's Representative has the authority to reject unsatisfactory work and to stop the work, if necessary, to insure its proper execution. Failure of the Owner's Representative, in any one or more instances, to insist on strict performance of any of the terms of this Contract or to exercise any option herein conferred shall not be construed as a waiver or relinquishment for the future insistence of any such terms or options.

§ 4.2.1 Legal Requirements. The Owner shall furnish all legal, insurance and accounting services, including auditing services, that may be reasonably necessary at any time for the Project to meet the Owner's needs and interests.

§ 4.3 Architect
The Owner shall retain an Architect to provide services, duties and responsibilities as described in AIA Standard Form of Agreement Between Owner and Architect.

ARTICLE 5 COMPENSATION AND PAYMENTS FOR PRECONSTRUCTION PHASE SERVICES
§ 5.1 Compensation
§ 5.1.1 For the Construction Manager's Preconstruction Phase services described in Sections 3.1 and 3.2, the Owner shall compensate the Construction Manager as follows:
(Insert amount of, or basis for, compensation and include a list of reimbursable cost items, as applicable.)

Preconstruction Services will be set at a stipulated sum of One Hundred Sixteen Thousand Nine Hundred Thirty-Two Dollars and Zero Cents ($116,932.00).

§ 5.1.2 The hourly billing rates for Preconstruction Phase services of the Construction Manager and the Construction Manager's Consultants and Subcontractors, if any, are set forth below.
(If applicable, attach an exhibit of hourly billing rates or insert them below.)

WSI Wage Rate - 2024

Position	Name of Person Filing Role	Total Rate
Project Director	To Be Determined	$161.00
CMAR Manager	To Be Determined	$169.00
Executive Management	James De La Rosa	$169.00
Senior Project Manager	Keri Strawder	$151.00
Project Manager	To Be Determined	$130.00
Assistant Project Manager	To Be Determined	$112.00
Project Engineer	To Be Determined	$84.00
Project Engineer – Intern	To Be Determined	$51.00
General Superintendent	Tim Moore	$163.00
Senior Superintendent	To Be Determined	$152.00
Superintendent	To Be Determined	$131.00
Assistant Superintendent	To Be Determined	$118.00
Field Engineer	To Be Determined	$89.00

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Administrative Assistant	Jennifer Butcher	$83.00
Safety Manager	Travis Chaput	$118.00
Project Accountant	To Be Determined	$105.00

§ 5.1.2.1 Hourly billing rates for Preconstruction Phase services include all costs to be paid or incurred by the Construction Manager, as required by law or collective bargaining agreements, for taxes, insurance, contributions, assessments and benefits and, for personnel not covered by collective bargaining agreements, customary benefits such as sick leave, medical and health benefits, holidays, vacations and pensions, and shall remain unchanged unless the parties execute a Modification.

§ 5.1.3 Compensation for Preconstruction Phase Services shall be equitably adjusted if such services extend beyond one hundred twenty (120) calendar days from the date of this Agreement or if the originally contemplated scope of services is significantly modified.

§ 5.2 Payments

§ 5.2.1 Unless otherwise agreed, payments for services shall be made monthly in proportion to services performed.

§ 5.2.2 Payments are due and payable thirty (30) days upon presentation of the Construction Manager's invoice.

- Proposed Start Date: Pre-Construction Services: August 7, 2024
- Proposed End Date : Pre-Construction Services: October 2024 (estimated)

ARTICLE 6 COMPENSATION FOR CONSTRUCTION PHASE SERVICES

§ 6.1 Contract Sum

§ 6.1.1 If the Owner accepts the Construction Manager's Contract Sum for construction and executes Exhibit "A", then the Owner shall pay the Construction Manager the Contract Sum in current funds for the Construction Manager's performance of the Contract after execution of the Guaranteed Maximum Price Amendment(s). The Contract Sum is the Cost of the Work as defined in Article 7 plus the Construction Manager's Fee.

§ 6.1.2 The Construction Manager's Fee:
(State a lump sum, percentage of Cost of the Work or other provision for determining the Construction Manager's Fee.)

Eight and a half percent (8.5%) of the Cost of the Work.

§ 6.1.3 The method of adjustment of the Construction Manager's Fee for changes in the Work:

In the event of Owner directed changes, the Construction Manager's Fee shall be eight and a half percent (8.5%) of the increase in the Cost of Work for the changes.

§ 6.1.4 Limitations, if any, on a Subcontractor's overhead and profit for increases in the cost of its portion of the Work:

Subcontractors increased costs of work for Owner directed changes shall include five percent (5%) overhead and five percent (5%) profit.

§ 6.1.5 Rental rates for Construction Manager-owned equipment shall not exceed the standard rental rate paid at the place of the Project.

§ 6.1.6 Liquidated damages, if any:
(Insert terms and conditions for liquidated damages, if any.)

The Owner and Construction Manager acknowledge and agree that it would be difficult to determine, with any reasonable degree of certainty, the amount of damages which the Owner would sustain in the event that the Construction Manager fails to attain Substantial Completion of the Work on or before the date established. The Construction Manager acknowledges and understands that failure to fully complete the Work within the aforesaid time periods will result in substantial loss and damages suffered by the Owner. Therefore, if the Construction Manager shall neglect, fail, or refuse to complete the Work within the Contract Time, or any proper extension thereof granted by the Owner in a properly

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executed Change Order, the Construction Manager agrees to pay the Owner liquidated damages in the amount(s) of $500 for each and every calendar day that the Construction Manager shall be in default for untimely completion after expiration of the Contract Time for Substantial Completion. However, liquidated damages shall be limited to and not exceed the fee earned by the Construction Manager in order for the liquidated damages to not be deemed a penalty. Such payments shall constitute liquidated damages, not a penalty, and shall be cumulative, it being understood and agreed by the Construction Manager that the Owner's actual damages in the event of a delay in Substantial Completion would be difficult, if not impossible, to determine. Time is of the essence of this Agreement. Any such liquidated damages may, at the option of the Owner, be withheld and deducted from any unpaid portion of the Guaranteed Maximum Price. Liquidated damages shall be the sole and exclusive remedy for delay.

§ 6.1.7 Other:
(Insert provisions for bonus, cost savings or other incentives, if any, that might result in a change to the Contract Sum.)

NOT APPLICABLE

§ 6.2 Guaranteed Maximum Price
The Construction Manager guarantees that the Contract Sum shall not exceed the Guaranteed Maximum Price set forth in the Guaranteed Maximum Price Amendment(s), subject to additions and deductions by Change Order as provided in the Contract Documents. Costs which would cause the Guaranteed Maximum Price to be exceeded shall be paid by the Construction Manager without reimbursement by the Owner.

§ 6.3 Changes in the Work
§ 6.3.1 The Owner may, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions. The Owner shall issue such changes in writing. The Construction Manager may be entitled to an equitable adjustment in the Contract Time and/or Guaranteed Maximum Price as a result of changes in the Work.

§ 6.3.1.1 The Architect may order minor changes in the Work as provided in Article 7 of AIA Document A201–2017, General Conditions of the Contract for Construction.

§ 6.3.2 Adjustments to the Guaranteed Maximum Price on account of changes in the Work subsequent to the execution of the Guaranteed Maximum Price Amendment may be determined by any of the methods listed in Article 7 of AIA Document A201–2017, General Conditions of the Contract for Construction.

§ 6.3.3 Adjustments to subcontracts awarded on the basis of a stipulated sum shall be determined in accordance with Article 7 of A201–2017, as they refer to "cost" and "fee," and not by Articles 6 and 7 of this Agreement. Adjustments to subcontracts awarded with the Owner's prior written consent on the basis of cost plus a fee shall be calculated in accordance with the terms of those subcontracts.

§ 6.3.4 In calculating adjustments to the Guaranteed Maximum Price, the terms "cost" and "costs" as used in Article 7 of AIA Document A201–2017 shall mean the Cost of the Work as defined in Article 7 of this Agreement and the term "fee" shall mean the Construction Manager's Fee as defined in Section 6.1.2 of this Agreement.

§ 6.3.5 If no specific provision is made in Section 6.1.3 for adjustment of the Construction Manager's Fee in the case of changes in the Work, or if the extent of such changes is such, in the aggregate, that application of the adjustment provisions of Section 6.1.3 will cause substantial inequity to the Owner or Construction Manager, the Construction Manager's Fee shall be equitably adjusted on the same basis that was used to establish the Fee for the original Work, and the Guaranteed Maximum Price shall be adjusted accordingly.

ARTICLE 7 COST OF THE WORK FOR CONSTRUCTION PHASE

§ 7.1 Costs to Be Reimbursed
§ 7.1.1 The term Cost of the Work shall mean costs necessarily incurred by the Construction Manager in the proper performance of the Work. The Cost of the Work shall include only the items set forth in Sections 7.1 through 7.7.

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§ 7.1.2 Where, pursuant to the Contract Documents, any cost is subject to the Owner's prior approval, the Construction Manager shall obtain such approval in writing prior to incurring the cost.

§ 7.1.3 Costs shall be at rates not higher than the standard rates paid at the place of the Project, except with prior approval of the Owner.

§ 7.2 Labor Costs

§ 7.2.1 Wages or salaries of construction workers directly employed by the Construction Manager to perform the construction of the Work at the site or, with the Owner's prior approval, at off-site workshops.

§ 7.2.2 (Intentionally omitted.)

§ 7.2.2.1
(Paragraphs deleted)
(Intentionally Omitted.)

§ 7.2.3 Wages and salaries of the Construction Manager's supervisory or administrative personnel engaged at factories, workshops or while traveling, in expediting the production or transportation of materials or equipment required for the Work, but only for that portion of their time required for the Work.

§ 7.2.4 Costs paid or incurred by the Construction Manager, as required by law or collective bargaining agreements, for taxes, insurance, contributions, assessments and benefits and, for personnel not covered by collective bargaining agreements, customary benefits such as sick leave, medical and health benefits, holidays, vacations and pensions, provided such costs are based on wages and salaries included in the Cost of the Work under Sections 7.2.1 through 7.2.3.

§ 7.2.5 If agreed rates for labor costs, in lieu of actual costs, are provided in this Agreement, the rates shall remain unchanged throughout the duration of this Agreement, unless the parties execute a Modification.

§ 7.3 Subcontract Costs

Payments made by the Construction Manager to Subcontractors in accordance with the requirements of the subcontracts and this Agreement.

§ 7.4 Costs of Materials and Equipment Incorporated in the Completed Construction

§ 7.4.1 Costs, including transportation and storage at the site, of materials and equipment incorporated, or to be incorporated, in the completed construction.

§ 7.4.2 Costs of materials described in the preceding Section 7.4.1 in excess of those actually installed to allow for reasonable waste and spoilage. Unused excess materials, if any, shall become the Owner's property at the completion of the Work or, at the Owner's option, shall be sold by the Construction Manager. Any amounts realized from such sales shall be credited to the Owner as a deduction from the Cost of the Work.

§ 7.5 Costs of Other Materials and Equipment, Temporary Facilities and Related Items

§ 7.5.1 Costs of transportation, storage, installation, dismantling, maintenance, and removal of materials, supplies, temporary facilities, machinery, equipment and hand tools not customarily owned by construction workers that are provided by the Construction Manager at the site and fully consumed in the performance of the Work. Costs of materials, supplies, temporary facilities, machinery, equipment, and tools, that are not fully consumed, shall be based on the cost or value of the item at the time it is first used on the Project site less the value of the item when it is no longer used at the Project site. Costs for items not fully consumed by the Construction Manager shall mean fair market value.

§ 7.5.2 Rental charges for temporary facilities, machinery, equipment, and hand tools not customarily owned by construction workers that are provided by the Construction Manager at the site, and the costs of transportation, installation, dismantling, minor repairs, and removal of such temporary facilities, machinery, equipment, and hand tools. Rates and quantities of equipment owned by the Construction Manager, or a related party as defined in Section 7.8, shall be subject to the Owner's prior approval. The total rental cost of any such equipment may not exceed the purchase price of any comparable item.

§ 7.5.3 Costs of removal of debris from the site of the Work and its proper and legal disposal.

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§ 7.5.4 Costs of the Construction Manager's site office, including general office equipment and supplies.

§ 7.5.5 Costs of materials and equipment suitably stored off the site at a mutually acceptable location, subject to the Owner's prior approval. Off-site storage shall be in a bonded and insured facility approved by the Owner.

§ 7.6 Miscellaneous Costs

§ 7.6.1 Premiums for that portion of insurance and bonds required by the Contract Documents that can be directly attributed to this Contract.

§ 7.6.1.1 Costs for self-insurance, for either full or partial amounts of the coverages required by the Contract Documents, with the Owner's prior approval. Coverages and costs must be disclosed in the Guaranteed Maximum Price Proposal and accepted by the Owner in the Guaranteed Maximum Price Amendment(s).

§ 7.6.1.2 Costs for insurance through a captive insurer owned or controlled by the Construction Manager, with the Owner's prior approval.

§ 7.6.2 Sales, use, or similar taxes, imposed by a governmental authority, that are related to the Work and for which the Construction Manager is liable.

§ 7.6.3 Fees and assessments for the building permit, and for other permits, licenses, and inspections, for which the Construction Manager is required by the Contract Documents to pay.

§ 7.6.4 Fees of laboratories for tests required by the Contract Documents; except those related to defective or nonconforming Work for which reimbursement is excluded under Article 13 of AIA Document A201–2017 or by other provisions of the Contract Documents, and which do not fall within the scope of Section 7.7.3.

§ 7.6.5 Royalties and license fees paid for the use of a particular design, process, or product, required by the Contract Documents.

§ 7.6.5.1 The cost of defending suits or claims for infringement of patent rights arising from requirements of the Contract Documents, payments made in accordance with legal judgments against the Construction Manager resulting from such suits or claims, and payments of settlements made with the Owner's consent. The costs of legal defenses, judgments, and settlements shall not be included in the Cost of the Work used to calculate the Construction Manager's Fee or subject to the Guaranteed Maximum Price.

§ 7.6.6 Costs for communications services, electronic equipment, and software, directly related to the Work and located at the site, with the Owner's prior approval.

§ 7.6.7 Costs of document reproductions and delivery charges.

§ 7.6.8 (Intentionally omitted.)

§ 7.6.9 (Intentionally omitted.)

§ 7.6.10 (Intentionally omitted.)

§ 7.6.11 That portion of the reasonable expenses of the Construction Manager's supervisory or administrative personnel incurred while traveling outside the Sanford area in discharge of duties connected with the Work.

§ 7.7 Other Costs and Emergencies

§ 7.7.1 Other costs incurred in the performance of the Work, with the Owner's prior approval.

§ 7.7.2 Costs incurred in taking action to prevent threatened damage, injury, or loss, in case of an emergency affecting the safety of persons and property, as provided in Article 10 of AIA Document A201–2017.

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§ 7.7.3 Notwithstanding anything herein to the contrary, no costs shall be paid by the Owner to the Construction Manager for any expenses made necessary to correct defective workmanship or to correct any Work not in conformance with the Contract Documents or to correct any deficiency or damage caused by negligent acts by the Construction Manager as determined by the Architect.

§ 7.7.4 The costs described in Sections 7.1 through 7.7 shall be included in the Cost of the Work, notwithstanding any provision of AIA Document A201–2017 or other Conditions of the Contract which may require the Construction Manager to pay such costs, unless such costs are excluded by the provisions of Section 7.9.

§ 7.8 Related Party Transactions

§ 7.8.1 For purposes of this Section 7.8, the term "related party" shall mean (1) a parent, subsidiary, affiliate, or other entity having common ownership of, or sharing common management with, the Construction Manager; (2) any entity in which any stockholder in, or management employee of, the Construction Manager holds an equity interest in excess of ten percent in the aggregate; (3) any entity which has the right to control the business or affairs of the Construction Manager; or (4) any person, or any member of the immediate family of any person, who has the right to control the business or affairs of the Construction Manager.

§ 7.8.2 If any of the costs to be reimbursed arise from a transaction between the Construction Manager and a related party, the Construction Manager shall notify the Owner of the specific nature of the contemplated transaction, including the identity of the related party and the anticipated cost to be incurred, before any such transaction is consummated or cost incurred. If the Owner, after such notification, authorizes the proposed transaction in writing, then the cost incurred shall be included as a cost to be reimbursed, and the Construction Manager shall procure the Work, equipment, goods, or service, from the related party, as a Subcontractor, according to the terms of Article 9. If the Owner fails to authorize the transaction in writing, the Construction Manager shall procure the Work, equipment, goods, or service from some person or entity other than a related party according to the terms of Article 9.

§ 7.9 Costs Not To Be Reimbursed

§ 7.9.1 The Cost of the Work shall not include the items listed below:

.1 Salaries and other compensation of the Construction Manager's personnel stationed at the Construction Manager's principal office or offices other than the site office, except as specifically provided in Section 7.2, or as may be provided in Article 14;

.2 Bonuses, profit sharing, incentive compensation, and any other discretionary payments, paid to anyone hired by the Construction Manager or paid to any Subcontractor or vendor, unless the Owner has provided prior approval;

.3 Expenses of the Construction Manager's principal office and offices other than the site office;

.4 Overhead and general expenses, except as may be expressly included in Sections 7.1 to 7.7;

.5 The Construction Manager's capital expenses, including interest on the Construction Manager's capital employed for the Work;

.6 Except as provided in Section 7.7.3 of this Agreement, costs due to the negligence of, or failure to fulfill a specific responsibility of the Contract by, the Construction Manager, Subcontractors, and suppliers, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable;

.7 Any cost not specifically and expressly described in Sections 7.1 to 7.7;

.8 Costs, other than costs included in Change Orders approved by the Owner, that would cause the Guaranteed Maximum Price to be exceeded;

.9 Costs for services incurred during the Preconstruction Phase;

.10 Rental costs of machinery and equipment, except as specifically provided in Section 7.5.2.; and

.11 Legal costs of whatever nature.

ARTICLE 8 DISCOUNTS, REBATES, AND REFUNDS

§ 8.1 Cash discounts obtained on payments made by the Construction Manager shall accrue to the Owner if (1) before making the payment, the Construction Manager included the amount to be paid, less such discount, in an Application for Payment and received payment from the Owner, or (2) the Owner has deposited funds with the Construction Manager with which to make payments; otherwise, cash discounts shall accrue to the Construction Manager. Trade discounts, rebates, refunds, and amounts received from sales of surplus materials and equipment shall accrue to the Owner, and the Construction Manager shall make provisions so that they can be obtained.

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§ 8.2 Amounts that accrue to the Owner in accordance with the provisions of Section 8.1 shall be credited to the Owner as a deduction from the Cost of the Work.

ARTICLE 9 SUBCONTRACTS AND OTHER AGREEMENTS

§ 9.1 The Construction Manager shall obtain bids on all of the Work, including obtaining third party bids on any work the Construction Manager desires to self-perform. Those portions of the Work that the Construction Manager does not customarily perform with the Construction Manager's own personnel shall be performed under subcontracts or other appropriate agreements with the Construction Manager. The Owner may designate specific persons from whom, or entities from which, the Construction Manager shall obtain bids. The Construction Manager shall obtain bids from Subcontractors, and from suppliers of materials or equipment fabricated especially for the Work, who are qualified to perform that portion of the Work in accordance with the requirements of the Contract Documents. Upon request by Owner, Construction Manager shall deliver such bids and bid tabulations to the Architect and Owner within a reasonable period of time. The Owner then has the right to review the Construction Manager's list of proposed subcontractors and suppliers in consultation with the Architect and, subject to Section 9.1.1, to object to any subcontractor or supplier within (5) five business days. Any advice of the Architect, or approval or objection by the Owner, shall not relieve the Construction Manager of its responsibility to perform the Work in accordance with the Contract Documents. The Construction Manager shall not be required to contract with anyone to whom the Construction Manager has reasonable objection. Copies of executed contracts, subcontracts and supplier contracts shall be provided by the Construction Manager to the Owner within a reasonable time period.

§ 9.1.1 When a specific subcontractor or supplier (1) is recommended to the Owner by the Construction Manager; (2) is qualified to perform that portion of the Work; and (3) has submitted a bid that conforms to the requirements of the Contract Documents without reservations or exceptions, but the Owner requires that another bid be accepted, then the Construction Manager may require that a Change Order be issued to adjust the Guaranteed Maximum Price by the difference between the bid of the person or entity recommended to the Owner by the Construction Manager and the amount of the subcontract or other agreement actually signed with the person or entity designated by the Owner.

§ 9.2 Subcontracts or other agreements shall conform to the applicable payment provisions of this Agreement, and shall not be awarded on the basis of cost plus a fee without the Owner's prior written approval. If a subcontract is awarded on the basis of cost plus a fee, the Construction Manager shall provide in the subcontract for the Owner to receive the same audit rights with regard to the Subcontractor as the Owner receives with regard to the Construction Manager in Article 10.

ARTICLE 10 ACCOUNTING RECORDS

The Construction Manager shall keep full and detailed records and accounts related to the Cost of the Work, and exercise such controls, as may be necessary for proper financial management under this Contract and to substantiate all costs incurred. The accounting and control systems shall be satisfactory to the Owner. The Owner and the Owner's auditors shall, during regular business hours and upon reasonable notice, be afforded access to, and shall be permitted to audit and copy, the Construction Manager's records and accounts, including complete documentation supporting accounting entries, books, job cost reports, correspondence, instructions, drawings, receipts, subcontracts, Subcontractor's proposals, Subcontractor's invoices, purchase orders, vouchers, memoranda, and other data relating to this Contract. The Construction Manager shall preserve these records for a period of three years after final payment, or for such longer period as may be required by law.

ARTICLE 11 PAYMENTS FOR CONSTRUCTION PHASE SERVICES

§ 11.1 Progress Payments

§ 11.1.1 Based upon Applications for Payment submitted to the Architect by the Construction Manager, and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum, to the Construction Manager, as provided below and elsewhere in the Contract Documents, and in conformance with Florida's Prompt Payment Statutes.

§ 11.1.2 (Intentionally omitted.)

§ 11.1.3 Provided that an Application for Payment is received by the Architect not later than the 25th day of a month, the Owner shall make payment of the amount certified to the Construction Manager not later than the 25th day of the following month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than thirty (30) days after the Architect receives the Application for Payment.

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(Federal, state or local laws may require payment within a certain period of time.)

§ 11.1.4 With each Application for Payment, the Construction Manager shall submit receipted invoices or invoices with check vouchers attached, each subcontractor's application for payment and or invoice, affidavits, lien waivers and such other documents required by Article 9 of A201-2017 and any other evidence required by the Owner or Architect to demonstrate that payments already made by the Construction Manager on account of the Cost of the Work equal or exceed progress payments already received by the Construction Manager less that portion of the progress payments attributable to the Construction Manager's Fee.

§ 11.1.5 Each Application for Payment shall be based on the most recent schedule of values submitted by the Construction Manager in accordance with the Contract Documents. The schedule of values shall allocate the entire Guaranteed Maximum Price among: (1) the various portions of the Work; (2) any contingency for costs that are included in the Guaranteed Maximum Price but not otherwise allocated to another line item or included in a Change Order; and (3) the Construction Manager's Fee.

§ 11.1.5.1 The schedule of values shall be prepared in such form and supported by such data to substantiate its accuracy as the Architect and the Owner may require. Submission of the schedule of values shall be a representation by the Construction Manager that the values scheduled therein are accurate and for subcontracted work, match the applicable subcontract amounts. Any inaccuracies shall be corrected immediately by the Construction Manager so as to maintain the accuracy of the schedule of values. The schedule of values shall be used as a basis for reviewing and processing the Construction Manager's Applications for Payment.

§ 11.1.5.2 The allocation of the Guaranteed Maximum Price under this Section 11.1.5 shall not constitute a separate guaranteed maximum price for the Cost of the Work of each individual line item in the schedule of values.

§ 11.1.5.3 When the Construction Manager allocates costs from a contingency to another line item in the schedule of values, the Construction Manager shall submit supporting documentation to the Architect.

§ 11.1.6 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment. The percentage of completion shall be the lesser of (1) the percentage of that portion of the Work which has actually been completed, or (2) the percentage obtained by dividing (a) the expense that has actually been incurred by the Construction Manager on account of that portion of the Work and for which the Construction Manager has made payment or intends to make payment prior to the next Application for Payment, by (b) the share of the Guaranteed Maximum Price allocated to that portion of the Work in the schedule of values.

§ 11.1.7 In accordance with AIA Document A201–2017 and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 11.1.7.1 The amount of each progress payment shall first include:

.1 That portion of the Guaranteed Maximum Price properly allocable to completed Work as determined by multiplying the percentage of completion of each portion of the Work by the share of the Guaranteed Maximum Price allocated to that portion of the Work in the most recent schedule of values;

.2 That portion of the Guaranteed Maximum Price properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction or, if approved in writing in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and

.3 The Construction Manager's Fee, computed upon the Cost of the Work described in the preceding Sections 11.1.7.1.1 and 11.1.7.1.2 at the rate stated in Section 6.1.2 or, if the Construction Manager's Fee is stated as a fixed sum in that Section, an amount that bears the same ratio to that fixed-sum fee as the Cost of the Work included in Sections 11.1.7.1.1 and 11.1.7.1.2 bears to a reasonable estimate of the probable Cost of the Work upon its completion.

§ 11.1.7.2 The amount of each progress payment shall then be reduced by:

.1 The aggregate of any amounts previously paid by the Owner;

.2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;

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.3 Any amount for which the Construction Manager does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Construction Manager intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017;

.5 The shortfall, if any, indicated by the Construction Manager in the documentation required by Section 11.1.4 to substantiate prior Applications for Payment, or resulting from errors subsequently discovered by the Owner's auditors in such documentation; and

.6 Retainage withheld pursuant to Section 11.1.8.

§ 11.1.8 Retainage

§ 11.1.8.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:
(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

Five percent (5%)

§ 11.1.8.1.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

Insurance, bonds, and general conditions.

§ 11.1.8.2 Reduction or limitation of retainage, if any, shall be as follows:
(If the retainage established in Section 11.1.8.1 is to be modified prior to Substantial Completion of the entire Work, insert provisions for such modification.)

See § 11.1.8.1 above.

§ 11.1.8.3 Except as set forth in this Section 11.1.8.3, upon Substantial Completion of the Work, the Construction Manager may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 11.1.8. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:
(Insert any other conditions for release of retainage, such as upon completion of the Owner's audit and reconciliation, upon Substantial Completion.)

§ 11.1.9 If final completion of the Work is materially delayed through no fault of the Construction Manager, the Owner shall pay the Construction Manager any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 11.1.10 Except with the Owner's prior written approval, the Construction Manager shall not make advance payments to suppliers for materials or equipment which have not been delivered and suitably stored at the site.

§ 11.1.11 The Owner and the Construction Manager shall agree upon a mutually acceptable procedure for review and approval of payments to Subcontractors.

§ 11.1.12 In taking action on the Construction Manager's Applications for Payment the Architect shall be entitled to rely on the accuracy and completeness of the information furnished by the Construction Manager, and such action shall not be deemed to be a representation that (1) the Architect has made a detailed examination, audit, or arithmetic verification, of the documentation submitted in accordance with Section 11.1.4 or other supporting data; (2) that the Architect has made exhaustive or continuous on-site inspections; or (3) that the Architect has made examinations to ascertain how or for what purposes the Construction Manager has used amounts previously paid on account of the Contract. Such examinations, audits, and verifications, if required by the Owner, will be performed by the Owner's auditors acting in the sole interest of the Owner.

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§ 11.2 Final Payment

§ 11.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Construction Manager when

.1 the Construction Manager has fully performed the Contract, except for the Construction Manager's responsibility to correct Work reported on the Owner provided Certificate of Substantial Completion, and as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment;

.2 the Construction Manager has submitted a final accounting for the Cost of the Work and a final Application for Payment;

.3 the Construction Manager's application for Final Payment has been certified by the Architect and submitted to the Owner with all warranties, guarantees, close out documents including Consent of Surety to Final Payment (, and receipt by Owner of Contractor's Final Payment Affidavit, Conditional Final Release of Lien upon receipt of final payment Construction Manager shall submit Unconditional Final Release of Lien, manufacturers' manuals of operation and any other items required under the Contract Documents. Complete as-built drawings in paper document and digital PDF format (scan document file acceptable) submitted to and accepted by the Architect for production of the final Project record documents; and

.4 a final Certificate for Payment has been issued by the Architect in accordance with Section 11.2.2.2; and

.5 in accordance with applicable Florida Prompt Payment Statutes

§ 11.2.2 Within 30 days of the Owner's receipt of the Construction Manager's final accounting for the Cost of the Work, the Owner shall conduct an audit of the Cost of the Work or notify the Architect that it will not conduct an audit.

§ 11.2.2.1 If the Owner conducts an audit of the Cost of the Work, the Owner shall, within 10 days after completion of the audit, submit a written report based upon the auditors' findings to the Architect.

§ 11.2.2.2 Within seven days after receipt of the written report described in Section 11.2.2.1, or receipt of notice that the Owner will not conduct an audit, and provided that the other conditions of Section 11.2.1 have been met, the Architect will either issue to the Owner a final Certificate for Payment with a copy to the Construction Manager, or notify the Construction Manager and Owner in writing of the Architect's reasons for withholding a certificate as provided in Article 9 of AIA Document A201–2017. The time periods stated in this Section 11.2.2 supersede those stated in Article 9 of AIA Document A201–2017. The Architect is not responsible for verifying the accuracy of the Construction Manager's final accounting.

§ 11.2.2.3 If the Owner's auditors' report concludes that the Cost of the Work, as substantiated by the Construction Manager's final accounting, is less than claimed by the Construction Manager, the Construction Manager shall be entitled to request mediation of the disputed amount without seeking an initial decision pursuant to Article 15 of AIA Document A201–2017. A request for mediation shall be made by the Construction Manager within 30 days after the Construction Manager's receipt of a copy of the Architect's final Certificate for Payment. Failure to request mediation within this 30-day period shall result in the substantiated amount reported by the Owner's auditors becoming binding on the Construction Manager. Pending a final resolution of the disputed amount, the Owner shall pay the Construction Manager the amount certified in the Architect's final Certificate for Payment.

§ 11.2.2.4 The amount of the final payment shall be calculated as follows:

.1 Take the sum of the Cost of the Work substantiated by the Construction Manager's final accounting and the Construction Manager's Fee, but not more than the Guaranteed Maximum Price.

.2 Subtract amounts, if any, for which the Architect withholds, in whole or in part, a final Certificate for Payment as provided in Section 9.5.1 of A201-2017 or other provisions of the Contract Documents.

.3 Subtract the aggregate of previous payments made by the Owner.

.4 If the aggregate of previous payments made by the Owner exceeds the amount due the Construction Manager, the Construction Manager shall reimburse the difference to the Owner.

§ 11.2.3 The Owner's final payment to the Construction Manager shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

Init.
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§ 11.2.4 If, subsequent to final payment, and at the Owner's request, the Construction Manager incurs costs, described in Sections 7.1 through 7.7, and not excluded by Section 7.9, the Owner shall reimburse the Construction Manager for such costs applicable thereto, on the same basis as if such costs had been incurred prior to final payment, but not in excess of the Guaranteed Maximum Price.

§ 11.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.
(Insert rate of interest agreed upon, if any.)

4.5% annually

ARTICLE 12 DISPUTE RESOLUTION

The parties expressly agree to opt out of the provisions of Section 558.05, Florida Statutes. The provisions of Chapter 558, Florida Statutes shall not apply to this Agreement.

§ 12.1 Initial Decision Maker

§ 12.1.1 Any Claim between the Owner and Construction Manager shall be resolved in accordance with the provisions set forth in this Article 12 and Article 15 of A201–2017. However, for Claims arising from or relating to the Construction Manager's Preconstruction Phase services, no decision by the Initial Decision Maker shall be required as a condition precedent to mediation or binding dispute resolution, and Section 12.1.2 of this Agreement shall not apply.

§ 12.1.2 The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017 for Claims arising from or relating to the Construction Manager's Construction Phase services.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

§ 12.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by mediation pursuant to and set forth in Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

(Paragraph deleted)

[X] Litigation in a court of competent jurisdiction

(Paragraphs deleted)

If the Owner and Construction Manager do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

§ 12.2.1 The Parties expressly waive any and all right to trial by jury in any action filed by either Party or parties.

ARTICLE 13 TERMINATION OR SUSPENSION

§ 13.1 Termination Prior to Execution of the Guaranteed Maximum Price Amendment

§ 13.1.1 If the Owner and the Construction Manager do not reach an agreement on the Guaranteed Maximum Price, the Owner may terminate this Agreement upon not less than seven days' written notice to the Construction Manager, and the Construction Manager may terminate this Agreement, upon not less than seven days' written notice to the Owner.

§ 13.1.2 In the event of termination of this Agreement pursuant to Section 13.1.1, the Construction Manager shall be compensated for Preconstruction Phase services and Work performed prior to receipt of a notice of termination, in

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accordance with the terms of this Agreement. In no event shall the Construction Manager's compensation under this Section exceed the compensation set forth in Section 5.1.

§ 13.1.3 Prior to the execution of the Guaranteed Maximum Price Amendment, the Owner may terminate this Agreement upon not less than seven days' written notice to the Construction Manager for the Owner's convenience and without cause, and the Construction Manager may terminate this Agreement, upon not less than seven days' written notice to the Owner, for the reasons set forth in Article 14 of A201–2017.

§ 13.1.4 In the event of termination of this Agreement pursuant to Section 13.1.3, the Construction Manager shall be equitably compensated for Preconstruction Phase services and Work performed prior to receipt of a notice of termination. In no event shall the Construction Manager's compensation under this Section exceed the compensation set forth in Section 5.1.

§ 13.1.5 If the Owner terminates the Contract pursuant to Section 13.1.3 after the commencement of the Construction Phase but prior to the execution of the Guaranteed Maximum Price Amendment, the Owner shall pay to the Construction Manager an amount calculated as follows, which amount shall be in addition to any compensation paid to the Construction Manager under Section 13.1.4:

.1 Take the Cost of the Work incurred by the Construction Manager to the date of termination;

.2 Add the Construction Manager's Fee computed upon the Cost of the Work to the date of termination at the rate stated in Section 6.1 or, if the Construction Manager's Fee is stated as a fixed sum in that Section, an amount that bears the same ratio to that fixed-sum Fee as the Cost of the Work at the time of termination bears to a reasonable estimate of the probable Cost of the Work upon its completion; and

.3 Subtract the aggregate of previous payments made by the Owner for Construction Phase services.

§ 13.1.6 The Owner shall also pay the Construction Manager fair compensation, either by purchase or rental at the election of the Owner, for any equipment owned by the Construction Manager that the Owner elects to retain and that is not otherwise included in the Cost of the Work under Section 13.1.5.1. To the extent that the Owner elects to take legal assignment of subcontracts and purchase orders (including rental agreements), the Construction Manager shall, as a condition of receiving the payments referred to in this Article 13, execute and deliver all such papers and take all such steps, including the legal assignment of such subcontracts and other contractual rights of the Construction Manager, as the Owner may require for the purpose of fully vesting in the Owner the rights and benefits of the Construction Manager under such subcontracts or purchase orders. All Subcontracts, purchase orders and rental agreements entered into by the Construction Manager will contain provisions allowing for assignment to the Owner as described above.

§ 13.1.6.1 If the Owner accepts assignment of subcontracts, purchase orders or rental agreements as described above, the Owner will reimburse or indemnify the Construction Manager for all costs arising under the subcontract, purchase order or rental agreement, if those costs would have been reimbursable as Cost of the Work if the contract had not been terminated. If the Owner chooses not to accept assignment of any subcontract, purchase order or rental agreement that would have constituted a Cost of the Work had this agreement not been terminated, the Construction Manager will terminate the subcontract, purchase order or rental agreement and the Owner will pay the Construction Manager the costs necessarily incurred by the Construction Manager because of such termination not including attorneys' fees.

§ 13.1.6.2 In no event shall the Owner be liable to Construction Manager for anticipated fee or profit for Work not performed.

§ 13.2 Termination or Suspension Following Execution of the Guaranteed Maximum Price Amendment

§ 13.2.1 Termination

The Contract may be terminated by the Owner or the Construction Manager as provided in Article 14 of AIA Document A201–2017.

§ 13.2.2 Termination by the Owner for Cause

§ 13.2.2.1 If the Owner terminates the Contract for cause as provided in Article 14 of AIA Document A201–2017, the amount, if any, to be paid to the Construction Manager under Article 14 of AIA Document A201–2017 shall not cause the Guaranteed Maximum Price to be exceeded, nor shall it exceed an amount calculated as follows:

.1 Take the Cost of the Work incurred by the Construction Manager to the date of termination;

.2 Add the Construction Manager's Fee, computed upon the Cost of the Work to the date of termination at the rate stated in Section 6.1 or, if the Construction Manager' Fee is stated as a fixed sum in that Section, an

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amount that bears the same ratio to that fixed-sum Fee as the Cost of the Work at the time of termination bears to a reasonable estimate of the probable Cost of the Work upon its completion;

.3 Subtract the aggregate of previous payments made by the Owner; and

.4 Subtract the costs and damages incurred, or to be incurred, by the Owner under Article 14 of AIA Document A201–2017.

§ 13.2.2.2 The Owner shall also pay the Construction Manager fair compensation, either by purchase or rental at the election of the Owner, for any equipment owned by the Construction Manager that the Owner elects to retain and that is not otherwise included in the Cost of the Work under Section 13.2.2.1.1. To the extent that the Owner elects to take legal assignment of subcontracts and purchase orders (including rental agreements), the Construction Manager shall, as a condition of receiving the payments referred to in this Article 13, execute and deliver all such papers and take all such steps, including the legal assignment of such subcontracts and other contractual rights of the Construction Manager, as the Owner may require for the purpose of fully vesting in the Owner the rights and benefits of the Construction Manager under such subcontracts or purchase orders.

§ 13.2.3 Termination by the Owner for Convenience

If the Owner terminates the Contract for convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Construction Manager a termination fee as follows:

(Insert the amount of or method for determining the fee, if any, payable to the Construction Manager following a termination for the Owner's convenience.)

The amount of Construction Manager's fee earned as of the date of termination, the cost of the Work completed up to date of completion, and reasonable termination expenses but not overhead or profit on uncompleted work.

§ 13.3 Suspension

The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017; in such case, the Guaranteed Maximum Price and Contract Time, if established, shall be increased as provided in Article 14 of AIA Document A201–2017, except that the term "profit" shall be understood to mean the Construction Manager's Fee as described in Sections 6.1 and 6.3.5 of this Agreement.

ARTICLE 14 MISCELLANEOUS PROVISIONS

§ 14.1 Terms in this Agreement shall have the same meaning as those in A201–2017. Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 14.2 Successors and Assigns

§ 14.2.1 The Owner and Construction Manager, respectively, bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 14.2.2 of this Agreement, and in Section 13.2.2 of A201–2017, neither party to the Contract shall assign the Contract as a whole or in part without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 14.2.2 The Owner may, without consent of the Construction Manager, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Construction Manager shall execute all consents reasonably required to facilitate the assignment.

§ 14.3 Insurance and Bonds

§ 14.3.1 Preconstruction Phase

The Construction Manager shall maintain the following insurance for the duration of the Preconstruction Services performed under this Agreement. If any of the requirements set forth below exceed the types and limits the Construction Manager normally maintains, the Owner shall reimburse the Construction Manager for any additional cost.

§ 14.3.1.1 Commercial General Liability with policy limits of not less than three million dollars and zero cents ($ 3,000,000.00) for each occurrence and five million dollars and zero cents ($ 5,000,000.00) in the aggregate for bodily injury and property damage.

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§ 14.3.1.2 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Construction Manager with policy limits of not less than three million dollars and zero cents ($ 3,000,000.00) per accident for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles, along with any other statutorily required automobile coverage.

§ 14.3.1.3 The Construction Manager may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided that such primary and excess or umbrella liability insurance policies result in the same or greater coverage as the coverages required under Sections 14.3.1.1 and 14.3.1.2, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ 14.3.1.4 Workers' Compensation at statutory limits as required by Chapter 440 F.S., and Employers Liability with policy limits not less than one million dollars and zero cents ($ 1,000,000.00) each accident, one million dollars and zero cents ($ 1,000,000.00) each employee, and one million dollars and zero cents ($ 1,000,000.00) policy limit.

§ 14.3.1.5 Professional Liability covering negligent acts, errors and omissions in the performance of professional services, with policy limits of not less than three million dollars and zero cents ($ 3,000,000.00) per claim and three million dollars and zero cents ($ 3,000,000.00) in the aggregate.

§ 14.3.1.6 Other Insurance
(List below any other insurance coverage to be provided by the Construction Manager and any applicable limits.)

Coverage	Limits
See Exhibits "B" and "B-1".	

§ 14.3.1.7 Additional Insured Obligations. To the fullest extent permitted by law, the Construction Manager shall cause the primary and excess or umbrella polices for Commercial General Liability and Automobile Liability to include the Owner as an additional insured for claims caused in whole or in part by the Construction Manager's negligent acts or omissions. The additional insured coverage shall be primary and non-contributory to any of the Owner's insurance policies and shall apply to both ongoing and completed operations.

§ 14.3.1.8 The Construction Manager shall provide certificates of insurance to the Owner that evidence compliance with the requirements in this Section 14.3.1.

§ 14.3.2 Construction Phase
After execution of the Guaranteed Maximum Price Amendment, the Owner and the Construction Manager shall purchase and maintain insurance as set forth in Exhibit "B", Insurance and Bonds, and elsewhere in the Contract Documents.

(Paragraph deleted)
§ 14.4
(Paragraphs deleted)
During the Construction Phase, Construction Manager shall provide insurance as required in Exhibit "B" and Exhibit "B-1".

§ 14.5 Other provisions:

CHAPTER 558 NOTICE OF CLAIM

CHAPTER 558, FLORIDA STATUTES, CONTAINS IMPORTANT REQUIREMENTS YOU MUST FOLLOW BEFORE YOU MAY BRING ANY LEGAL ACTION FOR AN ALLEGED CONSTRUCTION DEFECT. SIXTY DAYS BEFORE YOU BRING ANY LEGAL ACTION, YOU MUST DELIVER TO THE OTHER PARTY TO THIS CONTRACT A WRITTEN NOTICE, REFERRING TO CHAPTER 558, OF ANY CONSTRUCTION CONDITIONS YOU ALLEGE ARE DEFECTIVE AND PROVIDE SUCH PERSON THE OPPORTUNITY TO INSPECT THE ALLEGED CONSTRUCTION DEFECTS AND TO CONSIDER MAKING AN OFFER TO REPAIR OR PAY FOR THE ALLEGED CONSTRUCTION DEFECTS. YOU ARE NOT OBLIGATED TO ACCEPT ANY OFFER WHICH MAY BE MADE. THERE ARE STRICT DEADLINES AND PROCEDURES

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UNDER THIS FLORIDA LAW WHICH MUST BE MET AND FOLLOWED TO PROTECT YOUR INTERESTS.

No person or entity shall be deemed to be a third party beneficiary of any provisions of the Contract, nor shall any provisions thereof be interpreted to create a right of action or otherwise permit anyone not a signatory party to the Contract to maintain an action for personal injury or property damage.

ARTICLE 15 SCOPE OF THE AGREEMENT

§ 15.1 This Agreement represents the entire and integrated agreement between the Owner and the Construction Manager and supersedes all prior negotiations, representations or agreements, either written or oral. This Agreement may be amended only by written instrument signed by both Owner and Construction Manager.

§ 15.2 The following documents comprise the Agreement:

.1 AIA Document A133™–2019 (as modified by Owner), Standard Form of Agreement Between Owner and Construction Manager as Constructor where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price

.2 AIA Document A133™-2019, Exhibit A, Guaranteed Maximum Price Amendment, if executed

.3 AIA Document A133™–2019, Exhibit B, Insurance and Bonds

.4 AIA Document A201™–2017, General Conditions of the Contract for Construction (as modified by Owner), Exhibit "C"

.5

(Paragraphs deleted)

Other documents, if any, listed below:

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201–2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Construction Manager's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

Exhibit "A"	AIA Document A133™-2019, Exhibit A, Guaranteed Maximum Price Amendment, if executed by the Parties
Exhibit "B"	AIA Document A133™–2019, Exhibit B, Insurance and Bonds
Exhibit "B-1"	Owner's Insurance and Bond Requirements for Construction Manager
Exhibit "C"	AIA Document A201™–2017, General Conditions of the Contract for Construction (as modified by Owner)
Exhibit "D"	Preconstruction Phase – Scope of Services
Exhibit "E"	Waiver and Partial Releases, Final Waivers and Releases of Lien, Construction Manager's Affidavit of Outstanding Accounts, Construction Manager's Final Affidavit
Exhibit "F"	Contractor's Completion Checklist
Exhibit "G"	Application for Payment
Exhibit "H"	Payment and Performance Bond

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SIGNATURES

This Agreement may be executed in counterparts, each of which shall constitute an original and all of which shall constitute one and the same instrument. In the event the Parties hereto execute and deliver this Agreement by signing and delivery using facsimile or e-mail transmission, such signing and delivery of facsimile signatures shall be effective and shall have the same effect as if original signatures were delivered. The Parties each stipulate and agree that for the purposes of validity, enforceability, and admissibility, this Agreement may be signed electronically and that a photocopy, facsimile, scanned Portable Document Format ("PDF") image or image generated through the electronic DocuSign© program shall have the same force and effect as an original signature. If both Parties are unable to sign electronically, each Party shall execute at least two (2) originals in blue ink, of which one is to be delivered to the Architect and the remainder to the Owner.

This Agreement is entered into as of the day and year first written above.

CITY OF PORT ORANGE	**WHARTON-SMITH, INC.**
OWNER *(Signature)*	**CONSTRUCTION MANAGER** *(Signature)*
Donald Burnette, mayor	Darin A. Crafton, Chief Operating Officer - Commercial
(Printed name and title)	*(Printed name and title)*
WITNESS *(Signature)*	**WITNESS** *(Signature)*
Amanda Bonin, Deputy City Clerk	Francine Guillemette, Administrative Supervisor
(Printed name and title)	*(Printed name and title)*

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AIA DOCUMENT A133-2019, EXHIBIT A
GUARANTEED MAXIMUM PRICE AMENDMENT

(IF EXECUTED)

AIA® Document A133® – 2019 Exhibit A

Guaranteed Maximum Price Amendment

To be completed by Construction Manager after completion of Construction Drawings and submitted to Owner for Approval.

This **Exhibit "A" Guaranteed Maximum Price Amendment dated the** _____ **day of** _____ **in the year** _____, is incorporated into the accompanying **AIA Document A133™–2019, Standard Form of Agreement Between Owner and Construction Manager as Constructor** where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price **dated the** _____ **day of** _____ **in the year** _____ (the "Agreement").
(In words, indicate day, month, and year.)

for the following **PROJECT:**
(Name and address or location)

Public Utilities Field Operations Facility
City of Port Orange

THE OWNER:
(Name, legal status, and address)

City of Port Orange
1000 City Center Circle
Port Orange, FL 32129

THE CONSTRUCTION MANAGER:
(Name, legal status, and address)

Wharton-Smith, Inc.
750 Monroe Road
Sanford, FL 32771

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

AIA Document A201™–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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ARTICLE A.1 GUARANTEED MAXIMUM PRICE

§ A.1.1 Guaranteed Maximum Price

Pursuant to Section 3.2.6 of the Agreement, the Owner and Construction Manager, for the Project referenced above, hereby amend the Agreement to establish a Guaranteed Maximum Price. As agreed by the Owner and Construction Manager, the Guaranteed Maximum Price is an amount that the Contract Sum shall not exceed. The Contract Sum consists of the Construction Manager's Fee plus the Cost of the Work, as that term is defined in Article 6 of the Agreement.

§ A.1.1.1 The Contract Sum is guaranteed by the Construction Manager not to exceed ($), subject to additions and deductions by Change Order as provided in the Contract Documents, and subject to Article A.6 below.

§ A.1.1.2 Itemized Statement of the Guaranteed Maximum Price. Provided below is an itemized statement of the Guaranteed Maximum Price organized by trade categories, including allowances; the Construction Manager's contingency; alternates; the Construction Manager's Fee; and other items that comprise the Guaranteed Maximum Price as defined in Section 3.2.1 of the Agreement.
(Provide itemized statement below or reference an attachment.)

§ A.1.1.3 The Construction Manager's Fee is set forth in Section 6.1.2 of the Agreement.

§ A.1.1.4 The method of adjustment of the Construction Manager's Fee for changes in the Work is set forth in Section 6.1.3 of the Agreement.

§ A.1.1.5 Alternates

§ A.1.1.5.1 Alternates, if any, included in the Guaranteed Maximum Price:

Item	Price

§ A.1.1.5.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this **Exhibit "A"**. Upon acceptance, the Owner shall issue a Modification to the Agreement.
(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance

§ A.1.1.6 Unit prices, if any:
(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit ($0.00)

ARTICLE A.2 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ A.2.1 The date of commencement of the Work shall be:
(Check one of the following boxes.)

[ ] The date of execution of this Amendment.

[X] Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

The Construction Manager shall commence construction of the Project within ten (10) days of the written Notice to Proceed from the Architect. All Work shall be properly completed in accordance with the terms of the A133 - 2019 Standard Form of Agreement as modified by Owner, A201 – 2017 General

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Conditions as modified by Owner, and this Guaranteed Maximum Price Amendment and shall be completed within the Contract Time. Except as modified herein, the A133 - 2019 Standard Form of Agreement and A201 – 2017 General Conditions as modified by Owner shall remain in full force and effect.

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of execution of this Amendment.

§ A.2.2 Unless otherwise provided, the Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work. The Contract Time shall be measured from the date of commencement of the Work.

§ A.2.3 Substantial Completion

§ A.2.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Construction Manager shall achieve Substantial Completion of the entire Work:
(Check the following boxes and complete the necessary information.)

[ ] Not later than ( ) calendar days from the date of commencement of the Work.

[X] By the following date:

§ A.2.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Construction Manager shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date

§ A.2.3.3 If the Construction Manager fails to achieve Substantial Completion as provided in this Section A.2.3, liquidated damages, if any, shall be assessed as set forth in Section 6.1.6 of the Agreement.

§ A.2.3.4 The Owner and Construction Manager acknowledge and agree that it would be difficult to determine, with any reasonable degree of certainty, the amount of damages which the Owner would sustain in the event that the Construction Manager fails to attain Substantial Completion of the Work on or before the date established. The Construction Manager acknowledges and understands that failure to fully complete the Work within the aforesaid time periods will result in substantial loss and damages suffered by the Owner. Therefore, if the Construction Manager shall neglect, fail, or refuse to complete the Work within the Contract Time, or any proper extension thereof granted by the Owner in a properly executed Change Order, the Construction Manager agrees to pay the Owner liquidated damages in the amount of $500 for each and every calendar day that the Construction Manager shall be in default for untimely completion after expiration of the Contract Time for Substantial Completion. Such payments shall constitute liquidated damages, not a penalty, and shall be cumulative, it being understood and agreed by the Construction Manager that the Owner's actual damages in the event of a delay in Substantial Completion would be difficult, if not impossible, to determine. Time is of the essence of this Agreement. Any such liquidated damages may, at the option of the Owner, be withheld and deducted from any unpaid portion of the Guaranteed Maximum Price.

ARTICLE A.3 INFORMATION UPON WHICH AMENDMENT IS BASED

§ A.3.1 The Guaranteed Maximum Price and Contract Time set forth in this Amendment are based on the Contract Documents and the following:

§ A.3.1.1 The following Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

§ A.3.1.2 The following Specifications:
(Either list the Specifications here, or refer to an exhibit attached to this Amendment.)

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Section	Title	Date	Pages

§ A.3.1.3 The following Drawings:
(Either list the Drawings here, or refer to an exhibit attached to this Amendment.)

Number	Title	Date

§ A.3.1.4 The Sustainability Plan, if any:
(If the Owner identified a Sustainable Objective in the Owner's Criteria, identify the document or documents that comprise the Sustainability Plan by title, date and number of pages, and include other identifying information. The Sustainability Plan identifies and describes the Sustainable Objective; the targeted Sustainable Measures; implementation strategies selected to achieve the Sustainable Measures; the Owner's and Construction Manager's roles and responsibilities associated with achieving the Sustainable Measures; the specific details about design reviews, testing or metrics to verify achievement of each Sustainable Measure; and the Sustainability Documentation required for the Project, as those terms are defined in **Exhibit C** to the Agreement.)

Title	Date	Pages

(Paragraph deleted)
§ A.3.1.5 Allowances, if any, included in the Guaranteed Maximum Price:
(Identify each allowance.)

Item	Price

§ A.3.1.6 Assumptions and clarifications, if any, upon which the Guaranteed Maximum Price is based:
(Identify each assumption and clarification.)

§ A.3.1.7 The Guaranteed Maximum Price is based upon the following Construction Manager's Project Schedule:
(List any other documents or information here, or refer to an exhibit attached to this Amendment.)

(Paragraph deleted)
ARTICLE A.4 INSURANCE AND BONDS
§ A.4.1 The Construction Manager shall purchase and maintain insurance and bonds as set forth in **Exhibit "B"** and **Exhibit "B-1"**, made part of this Guaranteed Maximum Price Amendment, and elsewhere in the Contract Documents. Payment and Performance Bonds shall be in the amount of the Contract Sum and shall be in the form attached hereto as **Exhibit "H"** to the Agreement.

ARTICLE A.5 CONSTRUCTION MANAGER'S CONSULTANTS, CONTRACTORS, DESIGN PROFESSIONALS, AND SUPPLIERS
§ A.5.1 The Construction Manager shall disclose all consultants, contractors, design professionals, and suppliers to the Owner throughout the Project as services are retained.
(List name, discipline, address, and other information.)

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ARTICLE A.6 POTENTIALLY TIME AND PRICE IMPACTED MATERIAL

As of the date of this Agreement, certain markets providing essential materials to the Project are experiencing or are expected to experience significant, industry-wide economic fluctuation during the performance of this Agreement that may impact price, availability and delivery time frames ("Potentially Time Impacted Material").

§ A.6.1 DIRECT COST PRICE AND TIME: Owner and Construction Manager shall agree upon a method for establishing the market price as of the date of this Agreement ("Direct Cost Price") and the method for calculating an adjustment in the pricing for Potentially Time and Price Impacted Materials.

§ A.6.2 ADJUSTMENT IN DIRECT COST PRICE: If during the course of the Project a Potentially Time and Price Impacted Material item experiences an increase or decrease in its Direct Cost Price, not to exceed nine percent (9%) of the Direct Cost Price, either Party may notify the other in writing for an equitable adjustment to the Contract Price, not to exceed nine percent (9%) of the Direct Cost Price, arises and shall provide appropriate documentation substantiating such adjustment. An adjustment in the pricing for a Potentially Time and Price Impacted Material shall not include any amount for overhead and profit.

§ A.6.2.1 In the event of a decrease in a Direct Cost Price, the Contract Price shall be equitably adjusted to reflect such decrease, but only for those Potentially Time and Price Impacted Materials delivered on or after the date on which written notice of the adjusted Direct Cost Price is given.

§ A.6.2.2 In the event of an increase in a Direct Cost Price, the Contract Price shall be equitably adjusted to reflect such increase, but only for those Potentially Time and Price Impacted Materials delivered on or after the date on which written notice of the adjustment in Direct Cost Price. Such increase in the Guaranteed Maximum Price shall not exceed none percent (9%). Potentially Time and Price Impacted Materials shall not be delivered to the site prior to written acceptance of increase.

§ A.6.2.3 No adjustment shall be made for any quantities of Potentially Time and Price Impacted Materials scheduled for delivery under the terms of this Agreement prior to the date on which written notice of the adjustment in the Direct Cost Price is given, unless the failure to deliver such quantities before that date is beyond the control of and without the fault of the Contractor, its Subcontractors and Material Suppliers.

§ A.6.2.4 Payment, if any, for an adjustment shall be made in accordance with the change order terms of the Agreement.

§ A.6.3 TIME IMPACT AND AVAILABILITY: If the Construction Manager is delayed at any time in the commencement or progress of the Work due to delay in the delivery of, or unavailability of, a Potentially Time and Price Impacted Material, beyond the control of and without fault of the Construction Manager, its Subcontractors and Material Suppliers, the Construction Manager shall be entitled to an equitable extension of the Contract Time and an equitable adjustment to the Contract Price, not to exceed nine (9%) of the Guaranteed Maximum Price. Owner and Construction Manager shall undertake reasonable steps to mitigate the effects of such delays.

SIGNATURES

This Agreement may be executed in counterparts, each of which shall constitute an original and all of which shall constitute one and the same instrument. In the event the Parties hereto execute and deliver this Agreement by signing and delivery using facsimile or e-mail transmission, such signing and delivery of facsimile signatures shall be effective and shall have the same effect as if original signatures were delivered. The Parties each stipulate and agree that for the purposes of validity, enforceability, and admissibility, this Agreement may be signed electronically and that a photocopy, facsimile, scanned Portable Document Format ("PDF") image or image generated through the electronic DocuSign© program shall have the same force and effect as an original signature. If both Parties are unable to sign electronically, each Party shall execute at least two (2) originals in blue ink, of which one is to be delivered to the Architect and the remainder to the Owner.

This Amendment to the Agreement entered into as of the day and year first written above.

CITY OF PORT ORANGE **WHARTON-SMITH, INC.**

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OWNER *(Signature)*	**CONSTRUCTION MANAGER** *(Signature)*
(Printed name and title)	*(Printed name and title)*
WITNESS *(Signature)*	**WITNESS** *(Signature)*
(Printed name and title)	*(Printed name and title)*

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AIA DOCUMENT A133–2019, EXHIBIT B
INSURANCE AND BONDS

(SEE ATTACHED)

AIA® Document A133® – 2019 Exhibit B

Insurance and Bonds

(Insurance and Bonds Requirements are also stated in Exhibit "B-1")

This Insurance and Bonds Exhibit is part of the Agreement, between the Owner and the Construction Manager, dated the _____ day of _____ in the year _____. *(In words, indicate day, month and year.)*

for the following **PROJECT:**
(Name and location or address)

Public Utilities Field Operations Facility
City of Port Orange

THE OWNER:
(Name, legal status, and address)

City of Port Orange
1000 City Center Circle
Port Orange, FL 32129

THE CONSTRUCTION MANAGER:
(Name, legal status, and address)

Wharton-Smith, Inc.
750 Monroe Road
Sanford, FL 32771

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with AIA Document A201™–2017, General Conditions of the Contract for Construction. Article 11 of A201™–2017 contains additional insurance provisions.

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B.2 (INTENTIONALLY OMITTED.)

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ARTICLE B.1 GENERAL

The Owner and Construction Manager shall purchase and maintain insurance, and provide bonds, as set forth in this Exhibit "B" and "B-1". In the event of all conflict between this Exhibit "B" and Exhibit "B-1", the provisions of Exhibit "B" shall control.. As used in this Exhibit, the term General Conditions refers to AIA Document A201™–2017, General Conditions of the Contract for Construction.

(Paragraphs deleted)

ARTICLE B.2 (INTENTIONALLY OMITTED.)

(Paragraphs deleted)
(Table deleted)
(Paragraphs deleted)
(Table deleted)

ARTICLE B.3 CONSTRUCTION MANAGER'S INSURANCE AND BONDS

§ B.3.1 General

§ B.3.1.1 Certificates of Insurance. The Construction Manager shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Article B.3 and Exhibit "B-1" at the following times: (1) prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the periods required by Section B.3.2.1 and Section B.3.3.1. The certificates will show the Owner as an additional insured on the Construction Manager's Commercial General Liability and excess or umbrella liability policy or policies.

§ B.3.1.2 Deductibles and Self-Insured Retentions. The Construction Manager shall disclose to the Owner any deductible or self- insured retentions applicable to any insurance required to be provided by the Construction Manager.

§ B.3.1.3 Additional Insured Obligations. To the fullest extent permitted by law, the Construction Manager shall cause the commercial general liability coverage to include (1) the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Construction Manager's negligent acts or omissions during the Construction Manager's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Construction Manager's negligent acts or omissions for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. To the extent commercially available, the additional insured coverage shall be no less than that provided by the most current Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's consultants, CG 20 32 07 04.

§ B.3.2 Construction Manager's Required Insurance Coverage

§ B.3.2.1 The Construction Manager shall purchase and maintain the following types and limits of insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Construction Manager shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:
(If the Construction Manager is required to maintain insurance for a duration other than the expiration of the period for correction of Work, state the duration.)

§ B.3.2.2 Commercial General Liability

§ B.3.2.2.1 Commercial General Liability insurance for the Project as required by Exhibit "B-1" written on an occurrence form with policy limits of not less than the amount stated in Exhibit "B-1" for each occurrence, general aggregate, and aggregate for products-completed operations hazard, providing coverage for claims including

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.1 damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person;
.2 personal injury and advertising injury;
.3 damages because of physical damage to or destruction of tangible property, including the loss of use of such property;
.4 bodily injury or property damage arising out of completed operations; and
.5 the Construction Manager's indemnity obligations under Section 3.18 of the General Conditions.

§ B.3.2.2.2 The Construction Manager's Commercial General Liability policy under this Section B.3.2.2 shall not contain an exclusion or restriction of coverage for the following:

.1 Claims by one insured against another insured, if the exclusion or restriction is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim.
.2 Claims for property damage to the Construction Manager's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor.
.3 Claims for bodily injury other than to employees of the insured.
.4 Claims for indemnity under Section 3.18 of the General Conditions arising out of injury to employees of the insured.
.5 Claims or loss excluded under a prior work endorsement or other similar exclusionary language.
.6 Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language.
.7 Claims related to residential, multi-family, or other habitational projects, if the Work is to be performed on such a project.
.8 Claims related to roofing, if the Work involves roofing.
.9 Claims related to exterior insulation finish systems (EIFS), synthetic stucco or similar exterior coatings or surfaces, if the Work involves such coatings or surfaces.
.10 Claims related to earth subsidence or movement, where the Work involves such hazards.
.11 Claims related to explosion, collapse and underground hazards, where the Work involves such hazards.

§ B.3.2.3 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Construction Manager, with policy limits of not less than the amount stated in Exhibit "B-1" per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage.

§ B.3.2.4 The Construction Manager may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella insurance policies result in the same or greater coverage as the coverages required under Section B.3.2.2 and B.3.2.3, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ B.3.2.5 Workers' Compensation as stated in Exhibit "B-1".

§ B.3.2.6 Employers' Liability with policy limits not less than the amount stated in Exhibit "B-1" for each accident, each employee, and policy limit.

§ B.3.2.7 Jones Act, and the Longshore & Harbor Workers' Compensation Act, as required, if the Work involves hazards arising from work on or near navigable waterways, including vessels and docks

§ B.3.2.8 If the Construction Manager is required to furnish professional services as part of the Work, the Construction Manager shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than the amount stated in Exhibit "B-1" per claim and in the aggregate.

§ B.3.2.9 If the Work involves the transport, dissemination, use, or release of pollutants, the Construction Manager shall procure Pollution Liability insurance, with policy limits of not less than the amount stated in Exhibit "B-1" per claim and in the aggregate.

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§ B.3.2.10 Coverage under Sections B.3.2.8 and B.3.2.9 may be procured through a Combined Professional Liability and Pollution Liability insurance policy, with combined policy limits of not less than the amount stated in Exhibit "B-1" per claim and in the aggregate.

§ B.3.2.11 Insurance for maritime liability risks associated with the operation of a vessel, if the Work requires such activities, with policy limits of not less than the amount stated in Exhibit "B-1" per claim and in the aggregate.

§ B.3.2.12 Insurance for the use or operation of manned or unmanned aircraft, if the Work requires such activities, with policy limits of not less than the amount stated in Exhibit "B-1" per claim and in the aggregate.

§ B.3.3 (Intentionally omitted.)

(Paragraphs deleted)
§ B.3.4 (Intentionally omitted.)

§ B.3.5 Additional Insurance Requirements
Coverages and other insurance requirements are described in Exhibit "B-1" Insurance and Bonds and such requirements in Exhibit "B-1" shall control in the event of a conflict between this Exhibit "B" and Exhibit "B-1".

(Paragraph deleted)
(Table deleted)
ARTICLE B.4 SPECIAL TERMS AND CONDITIONS
Special terms and conditions that modify this Insurance and Bonds Exhibit, if any, are as follows:

See Exhibit "B-1" which modifies this Exhibit "B" if any provisions of this Exhibit are inconsistent with Exhibit "B-1".

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AIA DOCUMENT A133-2019, EXHIBIT B-1
Owner's Insurance and Bond Requirements of Construction Manager

1. **Insurance and Bond Coverage To Be Provided By Construction Manager.** This Exhibit (the "Insurance and Bond Requirements") is attached as an Exhibit as part of the Contract Documents. In the event of conflict between any of the following Insurance and Bond Requirements and any provision in the Contract Documents, these requirements control, amend and supplement the conflicting provision. Subject to review and revision in writing by Owner from time to time, in Owner's good faith judgment, the following insurance shall be maintained by Construction Manager ("CM") at CM's expense (unless provisions below state "at Owner's expense") with coverage and limits of not less than those set forth below at all times during the term of the Agreement and thereafter as required.

No.	Specifications	Coverages, Limits and Other Requirements
A.	**LIABILITY**	
1.	**Commercial General Liability**. CM shall maintain commercial general liability ("CGL") insurance and, if necessary, commercial excess insurance, issued on an Occurrence Basis meeting at least the following specifications:	
1.1	**Minimum Limits**	The limits of coverage shall not be less than the following amounts. The policy limits required herein may be provided by a combination of primary and excess policies, but in no event shall the total limits of liability available for any one occurrence or accident be less than the amount required herein. $3,000,000 Per Occurrence $35,000,000 Products and Completed Operations Aggregate $3,000,000 Personal and Advertising Injury
1.2	**General Aggregate**	A Designated Construction Project(s) General Aggregate Limit shall be provided on the most recent ISO form.
1.3	**Post-Completion Coverage**	CM agrees to maintain Products-Completed Operations coverage with respect to the Work performed under the Agreement in identical coverage, form and amount, including required endorsements, for the full term of the Statute of Repose following Date of Substantial Completion of the Work by CM. CM shall provide written representation to Owner stating Work completion date.
1.4	**Form**	This insurance is to be issued on the most recent ISO form and shall cover liability arising from premises, ongoing and completed operations.

1.5	**Insured Contracts**	Coverage shall include but not be limited to liability assumed by CM under the Agreement, including the tort liability of another assumed in a business contract, and shall include unmodified Separation of Insureds coverage.
1.6	**Additional Insureds**	Insureds and additional insureds shall include: Owner, Owner's parent corporation, and its subsidiaries and respective members, officers and directors, Contractor, and all Loss Payees and Mortgagees as Named Insureds. Additional Insured status shall be provided in favor of Owner on the most recent ISO form to the extent permitted by law.
1.7	**Electronic Data**	This insurance is to include an Electronic Data Liability endorsement on the most recent ISO form with coverage to the full limits of the policy(ies).
1.8	**Personal Injury Contractual Liability**	The personal injury contractual liability exclusion shall be deleted.
1.9	**Primary and Noncontributory**	This insurance shall be endorsed to provide primary and noncontributing liability coverage on the most recent ISO form. It is the specific intent of the parties to the Agreement that all insurance required herein shall be primary to and shall seek no contribution from any other insurance (primary, umbrella, contingent or excess) maintained by Owner, with Owner's insurance being excess, secondary and noncontributing.
1.10	**Waiver of Right of Recovery and Subrogation**	CM agrees to waive its rights of recovery and shall cause this insurance to be endorsed to waive all rights of subrogation in favor of Owner on the most recent ISO form.
1.11	**Notice of Cancellation**	This insurance shall be endorsed to provide a 30 day notice of cancellation to Owner.

1.12	**Prohibitions**	Prohibited exclusions/limitations or their equivalents include but are not limited to: a. Amendment of Insured Contract Definition on the most recent ISO form; b. Any endorsement modifying the Employer's Liability exclusion; c. Classification or Business Description; d. Construction Defect Completed Operations; e. Contractual Liability Limitation on the most recent ISO form; f. Damage to Work Performed by Subcontractors on Your Behalf on the most recent ISO form; g. Explosion, Collapse and Underground Property Damage Hazard, on the most recent ISO form; h. Habitational or Residential; i. "Insured vs. Insured" except Named Insured vs. Named Insured; j. Known, Continuous or Progressive Injury or Damage; k. Limitation of Coverage to Designated Premises, Project or Operation on the most recent ISO form; l. Noncumulation; m. Overspray; n. Prior Injury or Prior Damage or Prior Work; o. Punitive, Exemplary or Multiplied Damages (Where Permitted by Law is acceptable); p. Roofing Warranties, Exclusions or Limitations, including Open Roof or Torch Work; q. Subsidence exclusion; r. Work Height exclusion; s. Any other exclusion or limitation reasonably unacceptable to Owner.

2.0	**Business Auto Liability.** CM is to maintain business auto insurance and, if necessary, commercial excess insurance, meeting at least the following specifications:	
2.1	**Minimum Limits**	The limits of liability shall be no less than $3,000,000 per accident. The policy limits required herein may be provided by a combination of primary and excess policies, but in no event shall the total limits of liability available for any one occurrence or accident be less than the amount required herein.
2.2	**Form**	This insurance is to be issued on the current edition of the most recent ISO form.
2.3	**Scope**	This insurance is to cover damages because of bodily injury or property damages caused by an accident and resulting from the ownership, maintenance or use (1) of any auto, including owned, hired and non-owned autos, and (2) of any mobile equipment subject to compulsory insurance or financial responsibility laws or other motor vehicle insurance laws.
2.4	**Additional Insureds**	Insureds and additional insureds shall include: Owner, Owner's parent corporation, and its subsidiaries and respective members, officers and directors, Contractor, and all Loss Payees and Mortgagees as Named Insureds. Additional Insured status shall be provided in favor of Owner on the most recent ISO form.
2.5	**Primary and Noncontributory**	This insurance shall be endorsed to provide primary and noncontributory liability coverage on the most recent ISO form.
2.6	**Waiver of Right of Recovery and Subrogation**	CM agrees to waive its rights of recovery and shall cause this insurance to be endorsed to waive all rights of subrogation in favor of Owner on the most recent ISO form.
2.7	**Notice of Cancellation**	This insurance shall be endorsed to provide a 30 day notice of cancellation to Owner.

3.0	**Workers' Compensation and Employer's Liability.** CM is to maintain workers' compensation and employer's liability insurance and, if necessary, commercial excess insurance, meeting at least the following specifications:	
3.1	**Workers' Compensation Limits**	The minimum limits of this insurance shall be no less than the statutory limits or $~~$~~1,000,000, whichever is greater.
3.2	**Employer's Liability Limits**	The minimum limits of this insurance shall be no less than $~~$~~1,000,000 each accident and disease. The policy limits required herein may be provided by a combination of primary and excess policies, but in no event shall the total limits of liability available for any one occurrence or accident be less than the amount required herein.
3.3	**Territory**	The state in which the Work is to be performed must be listed under Item 3.A. on the Information Page of the policy.
3.4	**Scope**	This insurance is to cover liability arising out the CM's employment of workers and anyone for whom the CM may be liable for workers' compensation claims. Worker's compensation insurance is required and no "alternative" form of insurance is permitted.
3.5	**Prohibitions**	Employees leased through a Professional Employment Organization ("PEO") are not permitted.
3.6	**Stop Gap**	Stop Gap coverage must be provided if Work is to be performed in a monopolistic state, listing the state(s) in which Work is to be performed.
3.7	**United States Longshoremen and Harbor Workers ("USL&H")**	USL&H coverage must be provided where such exposure exists listing the state(s) in which Work is to be performed.
3.8	**Waiver of Right of Recovery and Subrogation**	To the extent permitted by law, CM agrees to waive its rights of recovery and shall cause this insurance to be endorsed to waive all rights of subrogation in favor of Owner on form WC 42 03 04 B.
3.9	**Notice of Cancellation**	This insurance shall be endorsed to provide a 30 day notice of cancellation to Owner.

4.0	**Excess Liability.** If any of the required coverages are to be maintained by and through excess liability insurance, CM is to maintain excess liability insurance meeting at least the following specifications:	
4.1	**Minimum Limits**	The minimum limits provided by a combination of primary and excess policies shall be no less than: $5,000,000 Each Occurrence $5,000,000 Annual Aggregate
4.2	**Scope**	This insurance shall follow form of the underlying coverages. It shall be excess over and be no less broad than all coverages and conditions described above, including but not limited to the required additional insured status, designated construction project(s) and/or location(s) general aggregate, waiver of subrogation, notice of cancellation, and prohibited exclusions or limitations, and will be primary to and not seek contribution from any other insurance (primary, umbrella, contingent or excess) maintained by Owner.
4.3	**Concurrency**	Such coverage shall have the same inception date as the commercial general liability and employer's liability coverages.
4.4	**Drop Down Coverage**	Drop-down coverage shall be provided for reduction and/or exhaustion of underlying aggregate limits.
4.5	**Defense Costs**	This insurance is to include a duty to defend any insured.

5.0	**Professional Liability.** CM shall maintain Professional Liability insurance meeting at least the following specifications:	
5.1	**Minimum Limits**	Limits of liability for CM, Architect, Structural Engineer, Mechanical/Electrical/Plumbing and Civil Engineer Consultant's Professional Liability shall be no less than $3,000,000 each claim If a combined Pollution Liability and Professional Liability policy is utilized, CM's limits shall be no less than $3,000,000 Each Loss and Aggregate. Professional Liability of other Specialty Consultants, unless otherwise required or specified by Owner at the time the subcontract with a Specialty Consultant is entered into by the CM, shall be no less than: $3,000,000 each loss
5.2	**Scope**	Such insurance shall cover all professional services rendered by the CM and its vicarious liability arising out of engagement of subconsultants and subcontractors under the Agreement, including but not limited to design or design/build services.
5.3	**Waiver of Right of Recovery and Subrogation**	CM agrees to waive its rights of recovery and shall cause this insurance to be endorsed to waive all rights of subrogation in favor of Owner.
5.4	**Notice of Cancellation**	This insurance shall be endorsed to provide a 30 day notice of cancellation to Owner.
5.5	**Retroactive Date**	Any retroactive date must be effective prior to beginning of services for the Owner.

5.6	**Prohibitions**	This insurance is not permitted to include any type of exclusion or limitation of coverage applicable to claims arising from: a. Bodily Injury or Property Damage Where Coverage Is Provided on Behalf of Design Professionals or Construction Managers; b. Habitational or Residential Operations; c. Mold and/or Microbial Matter and/or Fungus and/or Biological Substance; and d. Punitive, Exemplary or Multiplied Damages (Where Permitted By Law is acceptable). A professional liability endorsement to a general liability policy is not acceptable.
5.7	**Term**	Policies written on a Claims-Made basis shall be maintained for at least two years beyond termination of the Agreement. The purchase of an extended discovery period or an extended reporting period on a Claims-Made policy will not be sufficient to meet the terms of this provision.

6.0	**Pollution Liability.** CM shall maintain Pollution Liability insurance meeting at least the following specifications:	
6.1	**Minimum Limits**	Limits of coverage shall be no less than: $3,000,000 each claim If a combined Pollution Liability and Professional Liability policy is utilized, the limits shall be $3,000,000 Each Loss and Aggregate.
6.2	**Scope**	The policy must provide coverage for: a. the full scope of the named insured's Work (on-going and completed) as described within the scope of Work for the Agreement; b. loss arising from pollutants including but not limited to fungus, bacteria, biological substances, mold, microbial matter, asbestos, lead, silica and contaminated drywall; c. third party liability for bodily injury, property damage, clean up expenses, and defense arising from the operations; d. diminution of value and Natural Resources damages; e. contractual liability, and f. claims arising from owned and non-owned disposal sites utilized in the performance of the Agreement. Coverage extensions to the General Liability insurance policy without a separate insurance agreement for Contractors Pollution Liability insurance will not fulfill this requirement
6.3	**Additional Insured**	Insureds and additional insureds shall include: Owner, Owner's parent corporation, and its subsidiaries and respective members, officers and directors, Contractor, and all Loss Payees and Mortgagees as Named Insureds.
6.4	**Insured Contracts**	Coverage shall include but not be limited to liability assumed by Contractor under the Agreement, including the tort liability of another assumed in a business contract.
6.5	**Primary and Noncontributory Coverage**	This insurance shall be endorsed to provide primary and noncontributing liability coverage. It is the specific intent of the parties to the Agreement that all insurance required herein shall be primary to and shall seek no contribution from all insurance held by Owner, with Owner's insurance being excess, secondary and noncontributing.

6.6	**Waiver of Right of Recovery and Subrogation**	CM agrees to waive its rights of recovery and shall cause this insurance to be endorsed to waive all rights of subrogation in favor of Owner.
6.7	**Notice of Cancellation**	This insurance shall be endorsed to provide a 30 day notice of cancellation to Owner.
6.8	**Retroactive Date**	If coverage is provided on a Claims Made basis, coverage will at least be retroactive to the earlier of the date of the Agreement or the commencement of CM services relation to the Work.
6.9	**Prohibitions**	This insurance is not permitted to include any type of exclusion or limitation of coverage applicable to claims arising from: a. Insured vs. Insured actions. However, exclusion for claims made between insured within the same economic family are acceptable; b. Impaired Property That Has Not Been Physically Injured; c. Materials Supplied or Handled by The Named Insured. However, exclusions for the sale and manufacture of products are allowed. Exclusionary language pertaining to materials supplied by the insured shall be reviewed by the certificate holder for approval; d. Property Damage to The Work Performed by the CM; e. Faulty Workmanship as it relates to clean up costs; f. Punitive, Exemplary or Multiplied Damages (Where Permitted by law is acceptable); g. Work Performed by Subcontractors, and h. Contractual Liability incurred as a result of an injury to an employee of the insured.
6.10	**Term**	Completed operations coverage shall be maintained for a minimum of seven (7) years after the completion of work. The extended reporting period on a claims made based policy does not fulfill this requirement. Pollution Liability insurance policies insuring a specific job shall have completed operations coverage for at least the duration of the work plus seven (7) years.

B.	**PROPERTY**	
1.0	**BUILDER'S RISK.** CM is to maintain "all risk" builder's risk at all times prior to acceptance of the Work by Owner.	
1.1	**Insureds**	Insureds shall include: Owner, Owner's parent corporation, and its subsidiaries and respective members, officers and directors, Contractor, Subcontractors, Sub-Subcontractors, and all Loss Payees and Mortgagees as Named Insureds.
1.2	**Amount**	Limits of coverage are to be the initial contract sum as increased by amount of subsequent modification of the contract sum. Coverage shall be provided in amount equal at all times to the full replacement value and cost of debris removal for any single occurrence.
1.3	**Form**	Coverage shall be at least as broad as an unmodified ISO Special Causes of Loss form and shall include coverage for theft, collapse, flood and earthquake. All exclusions must be pre-approved by Owner. This insurance is to be written on a Completed Value, non-reporting form basis and shall be primary to any other insurance coverage available to the named insureds, with that other insurance being excess, secondary and noncontributing. No coinsurance is permitted.
1.4	**Covered Property**	Such insurance shall cover: a. All structure(s) under construction, including retaining walls, paved surfaces and roadways, bridges, glass, foundation(s), footings, underground pipes and wiring, excavations, grading, backfilling or filling. b. All temporary structures (e.g., fencing, scaffolding, cribbing, false work, forms, site lighting, temporary utilities and buildings) located at the site. c. All property including materials and supplies on site for installation. d. All property including materials and supplies at other locations but intended for use at the site. e. All property including materials and supplies in transit to the site for installation by all means of transportation other than ocean transit. f. Other property for which an insured is liable in connection with the project.

1.5	**Prohibition**	No protective safeguard warranty is permitted.	
1.6	**Coverage and Minimum Sub-limits**	Coverage	Minimum Sublimit
		a. Additional expenses due to delay in completion of project (where applicable)	TBD
		b. Damage resulting from error, omission or deficiency in construction methods, design, specifications, workmanship or materials, including collapse and ensuing loss	Included without sublimit
		c. Debris removal additional limit	Included without sublimit
		d. Earthquake and Earthquake Sprinkler Leakage	$1,000,000
		e. Flood	$1,000,000
		f. Freezing	Included without sublimit
		g. Mechanical breakdown including hot & cold testing (where applicable)	Included without sublimit
		h. Occupancy pre-completion	Included without sublimit
		i. Ordinance or law	Included without sublimit
		j. Pollutant clean-up and removal	$1,000,000
		k. Preservation of property	Included without sublimit
		l. Replacement cost	Included without sublimit
		m. Theft	Included without sublimit

1.7	**Deductible(s)**	Deductibles shall not exceed:	
		All Risks of Direct Damage, Per Occurrence, except	$10,000
		a. Delayed Opening Waiting Period	5 days
		b. Earthquake and Earthquake Sprinkler Leakage, Per Occurrence	$50,000
		c. Flood, Per Occurrence, excess of maximum available through National Flood Insurance Program.	$50,000
1.8	**Occupancy**	The termination of coverage provision shall be endorsed to permit occupancy of the coverage property being constructed.	
1.9	**Term and Termination**	This insurance shall be maintained in effect, unless otherwise provided for in the Contract Documents, until the earliest of the following dates: a. The date on which all persons and organizations who are insureds under the policy agree that it shall be terminated; b. The date of final payment, as provided for in the Contract Documents; or c. The date on which the insurable interests in the Covered Property of all insureds other than CM have ceased.	
1.10	**Waiver of Right of Recovery and Subrogation**	CM waives all rights against (1) the Owner, (2) the Project, (3) any lender whose loan is secured by a lien against the Work, (4) Subcontractors of any tier, and (5) any other person or entity performing Work by, through or under CM, each of the other.	
1.11	**Notice of Cancellation**	This insurance shall be endorsed to provide a 30-day notice of cancellation to Owner.	

C.	BONDS
1.0	CM shall arrange and furnish, at CM's sole cost and expense, separate performance and payment bonds, with the Penal Sum to be in the full amount of Contract Sum of the Agreement, guaranteeing the faithful performance of all of the provision of this Agreement as well as payment to all persons for labor and material used in the performance of this Agreement. The bonds shall be executed by a surety company acceptable to Owner, on the form attached as **Exhibit "H"** , and shall become a part of this Agreement. Owner may withhold payments on account until such time as said bonds have been furnished and accepted. No change, alteration or modification in the terms and conditions of the Agreement, or in the terms or manner of payment shall in any way exonerate or release, in whole or in part, any surety on any bond furnished on behalf of CM. The cost of the bonds is included in the Contract Sum of the Agreement. Any additions to this Agreement occasioned by Change Orders will include at Owner's expense any additional bond premiums.

2. **General Insurance Requirements.**

.1 **Definitions. For purposes of the Agreement:**

a. "Agreement" means the Agreement to which this Exhibit is attached.

b. "ISO" means Insurance Services Office.

c. "Construction Manager" ("CM") shall include subconsultants and subcontractors of any tier and any other person or entity performing Work by, through or under Construction Manager.

d. "Owner" means (a) the entity defined in the Agreement as Owner ("Owner"), (b) the Project, (c) any lender whose loan is secured by a lien against the Work, (d) their parent corporations, subsidiaries, respective shareholders, members, partners, joint venturers, affiliates, subsidiaries, successors and assigns, (e) any directors, officers, employees, or agents of such persons or entities, and (f) others as required by the Construction Documents.

.2 **Limits.** "Limits" set out in these specifications are the minimum dollar amount of insured coverage for the risk, cause of loss or peril specified. If CM maintains greater limits, then these specifications shall not limit the amount of recovery available to Owner and the limits specified above as the minimum limits are increased to the greater limits.

.3 **Policies**. All policies held by CM and required herein must be written through insurance companies authorized to do business in the State in which the work is to be performed and rated no less than A-: VII in the most current edition of A. M. Best's Key Rating Guide at all times Work is to be performed.

.4 **Waiver.** A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, Contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

.5 **Deductibles and Retentions.** If CM elects to self-insure or to maintain insurance required herein subject to deductible and/or retentions exceeding $25,000, Owner and CM shall maintain all rights and obligations between themselves as if CM fully maintained the insurance required herein with a commercial insurer including but not limited to Additional Insured status, Primary and Non-Contributory Liability, Waivers of Rights of Recovery, Other Insurance Clauses and any other extensions of coverage required herein. CM shall pay from is assets the costs, damages, claims, losses and liabilities, including attorney's fees and necessary litigation expenses at least to the extent that an insurance company would have been obligated to pay those amounts if CM had maintained the insurance pursuant to this Exhibit without said deductible or self-insured retention. All deductibles and retentions shall be paid by, assumed by, for the account of, and at the sole risk of the CM. The CM shall not be reimbursed for same by Owner or other additional insureds.

.6 **Forms.** If the forms of policies, endorsements, certificates or evidence of insurance required by this Exhibit are superseded or discontinued, Owner will have the right to require other equivalent forms. Any policy or endorsement form other than a form specified in this Exhibit must be approved in advance by Owner.

.7 **Evidence of Insurance.** CM is to provide Owner with evidence of insurance prior to entry by CM on the property and thereafter is to provide Owner refreshed evidence of continued insurance after the expiration of the current policies prior to the expiration of the current policies. Insurance must be evidenced as follows:

a. ACORD Form 28 Evidence of Commercial Property Insurance for property coverages.

b. ACORD Form 25 Certificate of Liability Insurance for liability coverages which shall specify:

1) Owner as certificate holder at Owner's mailing address;
2) Insured's name, which must match that on the Agreement;
3) Insurance companies producing each coverage and the policy number and policy date of each coverage;
4) Producer of the certificate with correct address and phone number and have the signature of the authorized representative of the producer;
5) Additional Insured status in favor of Owner on forms required herein on General Liability, Auto Liability, Excess Liability and, when required herein, Pollution Liability;
6) Designated Construction Project(s) General Aggregate Limit on General Liability and Excess Liability;
7) Electronic Data Liability on General Liability and Excess Liability;
8) Personal Injury Contractual Liability on General Liability and Excess Liability;
9) Primary and non-contributory status on General Liability, Auto Liability and Excess Liability;
10) Pollution Liability when required herein;
11) Professional Liability when required herein;
12) Waivers of subrogation on all coverages;
13) Amount of any deductible or self-insured retention in excess of $25,000;
14) 30 Day Notice of Cancellation on all coverages, and
15) All exclusions and limitations added by endorsement to the General Liability coverage. This can be achieved by attachment of the Schedule of Forms and Endorsements page.

c. Copies of the following shall also be provided:

1) General Liability Additional Insured endorsement(s);
2) General Liability and Excess Liability Schedule of Forms and Endorsements pages; and
3) 30 Day Notice of Cancellation endorsement applicable to all required policies.

If requested in writing by Owner, CM will provide to Owner a certified copy of any or all insurance policies required herein including endorsements within ten (10) days of any such request.

Commencement of Work without provision of the required certificate of insurance, evidence of insurance and/or required endorsements, or without compliance with any other provision of the Agreement or this Exhibit, shall not constitute a waiver by any

Owner of any rights. The Owner shall have the right, but not the obligation, of prohibiting the CM or any subconsultant or subcontractor from performing any Work until such certificate of insurance, evidence of insurance and/or required endorsements are received and approved by the Owner.

.8 Insurance Requirements of CM's Subconsultants and Subcontractors

a. Insurance similar to that required of the CM shall be provided by all subconsultants and subcontractors (or provided by the CM on behalf of subconsultants and subcontractors) to cover operations performed under any subcontract agreement. The CM shall be held responsible for any modification in these insurance requirements as they apply to subconsultants and subcontractors. The CM shall maintain certificates of insurance from all subconsultants and subcontractors containing provisions similar to those listed herein (modified to recognize that the certificate is from subconsultants or subcontractor) enumerating, among other things, the waivers of subrogation, additional insured status, and primary liability as required herein, and make them available to the Owner upon request.

b. The CM is fully responsible for loss and damage to its property on the site, including tools and equipment, and shall take necessary precautions to prevent damage to or vandalism, theft, burglary, pilferage and unexplained disappearance of property. Any insurance covering the CM's or its subconsultant's or subcontractor's property shall be the CM's and its subconsultant's and subcontractor's sole and complete means or recovery for any such loss. To the extent any loss is not covered by said insurance or subject to any deductible or co-insurance, the CM and its subconsultants and subcontractors shall not be reimbursed for same. Should the CM or its subconsultants or subcontractors choose to self insure this risk, it is expressly agreed that the CM hereby waives, and shall cause its subconsultants and subcontractors to waive, any claim for damage or loss to said property in favor of the Owner.

3. **Miscellaneous**

.1 **Release and Waiver.** The CM hereby waives all rights of recovery and releases, and shall cause its subconsultants and subcontractors to release, the Owner from any and all claims or causes of action whatsoever which the CM and/or its subconsultants and subcontractors might otherwise now or hereafter possess resulting in or from or in any way connected with any loss covered by insurance, whether required herein or not, or which should have been covered by insurance required herein, including the deductible and/or uninsured portion thereof, maintained and/or required to be maintained by the CM and/or its subconsultants and subcontractors pursuant to the Agreement. **THE FOREGOING RELEASE AND WAIVER APPLY EVEN IF THE LOSS OR DAMAGE IS CAUSED IN WHOLE OR IN PART BY THE FAULT OR NEGLIGENCE OR STRICT LIABILITY OF THE OWNER.**

.2 **No Waiver.** Failure of any Owner to demand such certificate or other evidence of full compliance with these insurance requirements or failure of any Owner to identify a deficiency from evidence that is provided shall not be construed as a waiver of the CM's obligation to maintain such insurance.

.3 **Suspension.** Owner shall have the right, but not the obligation, of suspending CM's authority to perform Work, without an increase in the sum payable by Owner to CM due to such suspension, until such certificates or other evidence that the required insurance has been placed in compliance with these requirements is received and approved by Owner.

.4 **Post Completion Coverage.** With respect to the insurance to be maintained after final payment to CM, an additional certificate(s) evidencing such coverage shall be provided to Owner with final application for payment if prior certificate has expired, and thereafter upon renewal or replacement of such insurance until the expiration of the time period for which such insurance must be maintained.

.5 **Compliance With Laws.** If any insurance requirements are deemed to violate any law, statute or ordinance, the insurance requirements shall be reformed to provide the maximum amount of protection to Owner as allowed under the law.

.6 **Use of the Owners Equipment.** The CM, its agents, employees, subconsultants, subcontractors or suppliers shall use the Owners equipment only with express written permission of the Owners designated representative and in accordance with the Owners terms and condition for such use. If the CM or any of its agents, employees, subconsultants, subcontractors or suppliers utilize any of the Owners equipment for any purpose, including machinery, tools, scaffolding, hoists, lifts or similar items owned, leased or under the control of the Owner, the CM shall defend, indemnify and be liable to the Owner for any and all loss or damage which may arise from such use. **THE FOREGOING INDEMNITY APPLIES EVEN IF THE LOSS OR DAMAGE IS CAUSED IN WHOLE OR IN PART BY THE FAULT OR NEGLIGENCE OR STRICT LIABILITY OF THE OWNER.**

.7 **CM Insurance Representations to Owner.**

a. It is expressly understood and agreed that the insurance coverages required herein (a) represent Owner's minimum requirements and are not to be construed to void or limit the CM's indemnity obligations as contained in the Agreement nor represent in any manner a determination of the insurance coverages the CM should or should not maintain for its own protection; and (b) are being, or have been, obtained by the CM in support of the CM's liability and indemnity obligations under the Agreement. Irrespective of the requirements as to insurance to be carried as provided for herein, the insolvency, bankruptcy or failure of any insurance company carrying insurance of the CM, or the failure of any insurance company to pay claims accruing, shall not be held to affect, negate or waive any of the provisions of the Agreement.

b. Failure to obtain and maintain the required insurance shall constitute a material breach of, and default under, the Agreement. If the CM shall fail to remedy such breach within five (5) business days after notice by the Owner, the CM will be liable for any and all costs, liabilities, damages and penalties resulting to the Owner from such breach, unless a written waiver of the specific insurance requirement(s) is provided to the CM by the Owner. In the event of any failure by the CM to comply with the provisions of the Agreement, the Owner may, without in any way compromising or waiving any right or remedy at law or in equity, on notice to the CM, purchase such insurance, at the CM's expense, provided that the Owner shall have no obligation to do so and if the Owner shall do so, the CM shall not be relieved of or excused from the obligation to obtain and maintain such insurance amounts and coverages.

.8 **Survival.** This Exhibit is an independent contract provision and shall survive the completion of the Work or termination or expiration of the Construction Agreement.

AIA DOCUMENT A201™–2017
GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION
(AS MODIFIED BY OWNER)

(SEE ATTACHED)

AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
RFSQ 23-14 Public Utilities Field Operations Facility
City of Port Orange

THE OWNER:
City of Port Orange
1000 City Center Circle
Port Orange, Florida 32129

THE ARCHITECT:
Schenkel and Schultz, Inc.

200 East Robinson Street
Suite 300
Orlando, Florida 32801

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

All references to "Contractor" shall mean "Construction Manager in lieu thereof. The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if

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required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

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§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

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§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 (Intentionally omitted).

§ 2.3.4 The Owner shall furnish surveys to the extent available to the Owner describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

§ 2.4.1 If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3. The Owner shall incur no liability for delays occasioned by any stop-work order issued in accordance with this paragraph.

§ 2.4.2 If, after consultation with the Architect, suspension of the Work is warranted by reason of unforeseen conditions which may adversely affect the quality of the Work if such Work were continued, the Owner may suspend the Work by written notice to the Contractor. In such event, the Contract Time shall be adjusted accordingly, and the Contract Sum shall be adjusted to the extent, if any, that additional costs are incurred by reason of such suspension. If the Contractor, in its reasonable judgment, believes that a suspension is warranted by reason of unforeseen circumstances which may adversely affect the quality of the Work if the Work were continued, the Contractor shall immediately notify the Owner and the Architect of such belief and describe with particularity the reasons therefor.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, commence and continue to carry out the Work. The Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15. The right of Owner to stop the Work pursuant to this Section 2.5 shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

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§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention and in accordance with all local and Florida licensing requirements and Florida Building Code. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors. The Contractor agrees to remove from the Project any employee, Subcontractor, or Subcontractor employee that commits any breach of the Contract Documents or any breach of the Owner's written rules and regulations regarding jobsite conduct.

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§ 3.3.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them. The Contractor shall require all construction personnel to maintain a neat general appearance at all times. Shirts, trousers and proper shoes are required apparel. The display of vulgar words, signs or figures is prohibited. Sandals and flip-flops are prohibited on the Project site. The use of radios, tape players, CD players, boom boxes, sound producing devices and the like are prohibited on the Project site. The Contractor shall not be permitted to use restrooms or other sanitary facilities within the Owner's existing buildings or on-site facilities.

§ 3.3.4 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work. Neither the presence or absence of the Owner or Architect shall relieve the Contractor from any requirements of the Contract Documents.

§ 3.3.5 The Contractor will be responsible for all building grades, lines, levels, etc., required for layout of the Work.

§ 3.3.6 If required by Owner on a project where applicable, at the earliest possible time after the commencement of the Work on the Project site, the Contractor shall have all property corners and benchmarks verified or established by a state-licensed

land surveyor, shall locate the Project on the Project site, establishing necessary reference marks and axes from which the work accurately can progress, shall furnish Architect evidence of such verification and shall report at once any errors discovered during the process of such verification.

§ The Contractor will be responsible for all building grades, lines, levels, etc., required for layout of the Work **3.3.7** If any of the Work is required to be inspected or approved by any public authority, the Contractor shall cause such inspection or approval to be performed. No inspection performed or failed to be performed by the Owner hereunder shall be a waiver of any of the Contractor's obligations hereunder or be construed as an approval or acceptance of the Work or any part thereof.

§ 3.3.8 The Contractor acknowledges that it is the Contractor's responsibility to hire all personnel for the proper and diligent prosecution of the Work and the Contractor shall use its best efforts to maintain labor peace for the duration of the Project. In the event of a labor dispute of the Contractor, its subcontractors or suppliers, the Contractor shall not be entitled to any increase in the Contract Sum.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Equal Opportunity

§ 3.4.2.1 The Contractor shall maintain policies of employment as follows: (1) the Contractor and the Contractors Subcontractors shall not discriminate against any employer or applicant for employment because of race, gender, religion, national origin, ethnicity, sexual orientation, age, or disability (2) the Contractor and the Contractors Subcontractors shall, in all solicitations or advertisements for employers placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, gender, religion, national origin, ethnicity, sexual orientation, age, or disability.

§ 3.4.3 The Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order of other appropriate written directive by the Owner.

§ 3.4.4 Value Engineering Incentive

§ 3.4.4.1 Any proposal initiated and developed by the Contractor for variation from contractual requirements, which to be acceptable under the Contract would necessitate issuance of a contractual change and which reduces the cost of performing the Contract, without degrading operational functions: e.g., performance, reliability or maintainability of the item. Such proposals would be submitted by the Contractor to the Architect in the same form as prescribed for any

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other proposal, which would likewise necessitate a change in the contractual requirements but would include a statement that they are a proposed Value Engineering Change subject to the operation of this clause.

§ 3.4.4.2 The Architect will be the sole judge of acceptability, and no substitute will be ordered, installed, used or initiated without the Architect's prior written acceptance which will be evidenced by Change Order. However, any Value Engineering Change accepted by the Architect shall not result in any increase in the Contract Price or Contract Time.

§ 3.4.5 Owner Direct Purchase

§ 3.4.5.1 The Owner is tax exempt and may wish to exercise its right to purchase directly various construction materials, supplies and equipment that may be part of the Contract. The Owner will, via its purchase orders, purchase that material and the Contractor shall assist the Owner in the preparation of purchase orders. The Owner may direct the Contractor to prepare the purchase order on the Owner's form and make ready for verification and execution by the Owner. The materials shall be purchased from the vendors and or suppliers originally selected by the Contractor, for the price originally negotiated by the Contractor. Within thirty (30) days of the Notice to Proceed (NTP) the Contractor shall prepare a complete list of materials, supplies and equipment, including the cost of each item, for the Project and the Owner will advise the Contractor in writing which items from the list the Owner wishes to purchase directly.

§ 3.4.5.2 At a time deemed acceptable to the Owner, the Contract amount shall be reduced by the net, undiscounted amount of the purchase order, plus all sales taxes and surtax as levied. Issuance of the purchase orders by the Owner does not change any of the Contractor's responsibilities regarding material purchases, or installations, with the exception of the payments for the materials purchased. The Contractor remains responsible for coordination, correct quantities ordered, submittals, protection, storage, scheduling, shipping, security, expedition, receiving and unloading, certifying the accuracy of shipping tickets and invoices, installation, cleaning, all applicable warranties and that all materials purchased meet the requirements of the Contract Documents. The Contractor shall certify all invoices as accurate and acceptable and forward to the Owner the certified invoices for payment by the Owner.

§ 3.4.5.3 In the event that materials, supplies or equipment purchased under this option are defective or rejected for any reason whatsoever, and it becomes necessary in the opinion of the Contractor to initiate legal action against the responsible party, the Owner agrees to assign and subordinate to the Contractor any claims the Owner has against the responsible party resulting from the purchase order and to execute any legal documents necessary to accomplish the assignment, subordination or subrogation of such claims, and to cooperate with the Contractor in such legal action.

§ 3.4.5.4 The Contractor agrees to execute the Owner's document "Contractor's Direct Material Purchase Affidavit" and to submit the affidavit to the Owner along with the above described list of materials, supplies and equipment, as agreed to between the Owner and Contractor. Tax savings will be returned to the Owner via Change Order.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

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§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work. Contractor shall comply with all applicable federal, state, and city statutes, safety regulations, codes, ordinances and orders, including the Occupational Safety and Health Administration Act of 1970 (OSHA), as amended from time to time.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions (Excluding Claims for Unsuitable Soils)

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons if either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15. At any event the contractor will only proceed with the approval of the third party inspector, the Engineer of Record, Architect and the Owner. Once approved by all parties, only then the contractor will proceed with the said work and will track the changes to provide to the owner for any contract adjustment.

§ 3.7.6 **Claims for Unsuitable Soils** "Unsuitable soil" does not include soil with high or low moisture content or soil adversely affected by weather conditions and no claim for additional cost will be accepted based solely on the moisture content of excavated material. If the excavated material is unsatisfactoly for the specified use on the project solely because of either high or low moisture content or the soil is adversely affected by weather conditions, the Contractor may, in its discretion, either (1) process the material to adjust the moisture content to the specified condition or an acceptable condition if not specified, or (2) remove the material and replace it with satisfactory material. Contractor's election of either option will be at Contractor's expense with no additional cost to the Owner.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

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.1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

.3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during all performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communication shall be similarly confirmed on written request in each case. The superintendent shall be satisfactory to the Owner in all respects, and Owner shall have the right with reasonable evidence to require Contractor to dismiss from the Project any superintendent whose performance is not satisfactory to Owner, and to replace such superintendent with a superintendent satisfactory to the Owner. The Contractor shall not replace the superintendent without the written consent of the Owner, which shall not be unreasonably withheld. The Owner shall respond in a timely manner to approve the request and avoid any delay to the project.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.9.4 The list of all supervisory personnel, including the project manager and superintendent, that the Contractor intends to use on the Project and a chain-of-command organizational chart shall be submitted to the Owner for approval. The Contractor shall not engage supervisory personnel or utilize an organization and chain-of-command other than as approved by Owner in writing, and shall not change such personnel or form of organization without the written approval of the Owner.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 Within thirty (30) days of Notice to Proceed (NTP), the Contractor shall prepare, for the Architect's approval and thereafter keep current, a schedule of submittals which is coordinated with the Contractor's construction schedule and allows the Architect reasonable time to review submittals. No payment shall be due until this schedule is submitted and approved.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

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§ 3.10.4 If the Contractor submits a schedule indicating an intention to achieve completion of the Work prior to contractually required dates, including milestones, no liability of the Owner to the Contractor for any failure of the Contractor to complete early shall be created, whether or not the Owner approve such schedule.

§ 3.10.5 At the Owner's option, the Contractor shall provide a schedule utilizing critical path techniques to measure the progress of the Work. Such schedules shall be subject to the Owner's and Architect's written approval.

§ 3.10.6 Float or slack is not for the exclusive use or benefit of either the Owner or the Contractor. Extensions of time for performance will be granted only to the extent that the equitable time adjustments for the activity or activities affected exceed the total float along the activity chain involved at the time the change was ordered or the delay occurred. Notwithstanding the above, the Contractor shall only be entitled to an extension of the time for an excusable delay to the critical path of the Work that delays completion of the Project beyond the completion date stated in the Agreement.

§ 3.10.7 The Contractor acknowledges that the Owner may retain the services of a scheduling consultant at the Owner's expense. The Contractor shall cooperate with any such scheduling consultant at the Owner's direction, including, without limitation, with regard to the preparation of the Project schedule.

§ 3.11 As Built Drawings and Documents and Samples at the Site

§ 3.11.1 As Built drawings shall be updated monthly, which shall be a condition precedent to all Progress Payments, and shall provide as much accuracy as possible. Complete as-built drawings shall be submitted to and accepted by the Architect and are a condition precedent to Final Payment. Completed as-built drawings shall be submitted as paper documents and in PDF format (scan document file acceptable) for approval by the Owner.

§ 3.11.2 The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.11.3 The Contractor shall maintain all approved permit drawings in a manner so as to make them accessible to governmental inspectors and other authorized agencies. All approved drawings shall be wrapped, marked with appropriate identification and delivered to the Owner within sixty (60) days of final completion of the Work.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in

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accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment. The Contractor shall be responsible for the permitting, erection. maintaining and removal of all construction signage. The Contractor must submit all sign copy for approval prior to erecting or displaying. The Contractor and Owner shall meet promptly after execution of the Agreement to determine

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reasonable requirements for ingress and egress from the site. Reasonable locations for staging, parking and a single construction entrance shall be designated by the Contractor, subject to the Owner's approval.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. The Contractor shall prevent paint, mortar and concrete splatter on concrete sidewalks and stair tower floors. Any such splatter shall be immediately removed so no evidence of splatter remains. All construction debris shall be removed in a timely manner. Surrounding graded and grassed areas shall be regularly magnetically scanned to collect miscellaneous nails and other sharp objects; the Contractor shall remove such objects from the construction site. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.15.3 Immediately prior to the Architect's inspection for Substantial Completion, the Contractor shall completely clean the premises utilizing a licensed cleaning service. Concrete and ceramic surfaces shall be cleaned and washed. Woodwork and resilient shall be dusted and cleaned. Sash, fixtures and equipment shall be thoroughly cleaned. Stains, spots, dust, marks and smears shall be removed from all surfaces. Hardware and metal surfaces shall be cleaned and polished. Glass and plastic surfaces shall be thoroughly cleaned by professional window cleaners. All damaged, broken or scratched glass or plastic shall be replaced by the Contractor at the Contractor's expense.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

(Paragraph deleted)

§ 3.18.1 For one hundred dollars ($100.00), which is included in the contract price, the other good and valuable considerations, receipt of which is hereby acknowledged by the Contractor as consideration for the indemnity herein; said Contractor hereby agrees to indemnify the Owner, their officers and their employees, from and against all claims, damages, losses and expenses, including but not limited to reasonable attorney's fees, to the extent caused by the performance of Work, provided that any such claim, damage, loss or expense is (1) attributed to bodily injury, sickness, disease or death, or to injury to, or destruction of tangible property, other than the Work itself, including the loss of use resulting therefrom, and (2) caused in whole or in part by any act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless or not it is caused

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in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge or otherwise reduce any other right or obligation of indemnity which otherwise exist as to any part or person described in this Article.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

§ 3.18.3 (Intentionally omitted).

§ 3.18.4 Notwithstanding the above and without monetary limitation, the Contractor hereby indemnifies and holds harmless the Owner, their officers and employees, from liabilities, damages, losses and costs, including, but not limited to, reasonable attorney's fees, to the extent caused by the negligence, recklessness, or intentional wrongful misconduct of the Contractor and persons employed or utilized by the Contractor in the performance of the construction Contract.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until final payment is due and with the Owner's authorization, from time to time during the one-year period for correction of Work described in Section 12.2. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified in writing in accordance with other provisions of the Contract.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

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§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

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ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.2.5 The Contractor shall disclose the existence and extent of any financial interest, whether direct or indirect, it has in any subcontractors or material suppliers which it proposes for the Project.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 or Termination for Convenience by the Owner pursuant to Paragraph 14.4 and only for

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those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract subsequent to the date of acceptance of the assignment; however, in no event shall the Owner's acceptance of such an assignment release the Contractor from its obligations under the subcontract agreement or this Agreement. Subcontracts between the Contractor and its Subcontractors shall provide for the assignment of those subcontracts from the Contractor to the Owner at election of the Owner upon termination of the Contractor.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in direct cost resulting from the suspension beyond the thirty (30) days.

(Paragraph deleted)

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be

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responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents. Agreement on and execution of any Change Order shall constitute a final settlement and a full accord and satisfaction of all matters relating to the change and to the impact of the change on unchanged Work, including all direct and indirect costs of whatever nature, and all adjustments to the Contract Schedule.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, or order for a minor change in the Work. A change in Contract Sum or Contract Time shall be accomplished only by Change Order. No course of conduct, verbal discussions or dealings between the parties shall be the basis of claims by the Contractor to any change in the Contract Sum or Contract Time.

§ 7.1.4 If the Architect determines that a change or changes in the Work might be or are necessary or desirable, the Architect shall issue a proposal request to the Contractor in which the Architect describes the proposed change or changes in the Work. The Contractor shall respond to each such proposal request in writing within a reasonable time, but in no event more the fourteen (14) days after receipt, such response to contain (1) the amount of any increase or decrease in the Contract Price or Guaranteed Maximum Price for effecting the proposed change or changes in the Work (2) a written comprehensive and itemized cost breakdown of the estimated reasonable additional or reduced costs to the Contractor of all labor, materials and equipment required by such proposal requests and (3) the length of any extension or reduction of the Contract Time for effecting the proposed change or changes in the Work.

§ 7.1.5 If any Change Order, signed by the Owner and the Contractor, results in or contains an adjustment to the Contract Price, the amount of such adjustment shall be conclusively deemed and held to include the Contractor's applicable profit, Fee and costs of and for all applicable taxes, bond premiums, insurance premiums, supervision, overhead, profit, labor, labor impact and materials related to the Change Order and the additional Work required and/or contemplated thereby, and the Contractor shall be conclusively deemed and held to have waived any claim for any additional sum or time extension for delays, disruption, acceleration, loss of productivity, ripple effect, inefficiency or any other matter arising out of or in any way related to such Change Order and the additional Work contemplated thereby.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

.1 The change in the Work;
.2 The amount of the adjustment, if any, in the Contract Sum; and
.3 The extent of the adjustment, if any, in the Contract Time.

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(Paragraphs deleted)

§ 7.2.2 If the Change Order provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 Mutual acceptance of a lump sum properly itemized and supp011ed by sufficient substantiating data to permit evaluation;

.2 Unit prices stated in the Contract Documents or subsequently agreed upon;

.3 Cost to be determined in a manner agreed upon by the patties and a mutually acceptable fixed or percentage fee; or

.4 As provided in Section 7.2.3.

§ 7.2.3 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.2.2, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.2.3 shall be limited to the following:

.1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;

.2 Costs of materials, supplies, and equipment, including cost of transpo11ation, whether incorporated or consumed;

.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and

.5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.2.4 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15

§ 7.2.5 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.2.6 In subparagraph 7.2.3 above, the reasonable allowance for overhead and profit, including the Contractor's Fee, if any, included in the total cost to the Owner, shall be based on the following schedule, which shall be full compensation for all overhead and profit of whatever nature associated with the Change:

.1 For the Contractor, for any Work performed by the Contractor's own forces, ten percent (10%) of the cost.

.2 For the Contractor, for Work performed by its Subcontractor, five percent (5%) Overhead and 5% profit of the amount due the Subcontractor.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

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ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day including weekends and legal holidays unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 When alterations or additions on the critical path are made to the Work, and such alterations or additions increase the overall completion date, the Contractor shall submit to the Architect in writing any resultant claim for an extension in the Contract Time, and shall deliver such claims to the Architect within ten (10) days after the occurrence of the event giving rise to the claim. The recommendation of the Architect regarding extension of Contract Time shall be submitted to the Owner for approval.

(Paragraph deleted)

§ 8.3.2.1 Any approved changes in Contract Time shall be incorporated in a Change Order. No changes in Contract Time shall be made for any alterations or additions to the Work which are not demonstrated to affect the overall completion of the job. The provision of this Article 8 shall in no way alter, change or invalidate the provisions of the Contract Documents with respect to liquidated damages. The Contractor shall not be entitled to any delay damages or other compensation solely on account of an increase in Contract Time except in accordance with Section 8.3.3 below.

§ 8.3.3. Notwithstanding Subparagraph 8.3.1, if the Work is delayed due to the fault or neglect of the Owner, and such delays have a cumulative total impact of more than fifteen (15) calendar days to the critical path, the Contractor may make claim pursuant to Article 4 for its actual and direct costs arising out of the delay. The Contract Sum shall be adjusted for such actual and direct costs, but in no event shall indirect, impact, inefficiency, offsite or home office overhead, loss of productivity, consequential damages, legal or consulting costs be paid on account of such delays.

§ 8.3.4 In the event the Contractor accelerates its Work, without written authorization of the Owner, the Owner shall pay no overtime inefficiencies to the Contractor for such acceleration and the Contractor hereby expressly waives its right to recover such overtime inefficiencies.

§ 8.3.5 The Contractor's written claims for extension of Contract Time shall be accompanied by detailed dates, correspondence, notices and any other data which provides proof of the events which are the basis for the claim, including a network analysis justifying the time extension. Said network analysis shall specifically detail the extension

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of the critical path of the Project caused by the events, which underlie the time extension request. Any claim not including said data and network analysis shall be deemed waived.

§ 8.3.6 Should the Contractor be obstructed or delayed in the commencement, prosecution or completion of any part of the Work by any act or delay of the Owner; or by any acts or neglect by any separate contractor employed by the Owner; material or appurtenances for the Work; or by riot, insurrection, war (excluding wars involving the United States in the Mid-Eastern portion of the World), pestilence, fire, earthquakes, cyclones, floods, epidemics; or through any act, default or delay of other parties under contract with the Owner; then the Contract Time for the Work so delayed shall be extended for a period equivalent to the time lost. Such allowance shall not be made unless a claim for extension of time is made by the Contractor to the Owner and Architect in writing within ten (10) days from the time when the alleged cause for delay occurs.

§ 8.3.7 It is further expressly agreed that the Contractor shall not be entitled to any damages or compensation from the Owner on account of any delays resulting from any of the causes specified above except those circumstances where delays are caused by the Owner or by parties under contract with the Owner, in which circumstances the Contractor shall be entitled to compensation (1) for Contractor's actual costs of increased direct jobsite wages resulting from the extended completion date caused by Owner; and (2) for extra premiums on bonds actually paid by the Contractor on account of the additional time required to complete all Work hereunder. Any change in the Contract Time resulting from any claims for delays shall be incorporated in a signed Change Order upon approval of the change by the Owner.

§ 8.3.8 Except for weather events listed in Section 8.3.6 above, Contractor expressly assumes the risk for all weather delays of every kind and nature.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. The schedule of values shall be prepared in such manner that each major item of the Work and each subcontracted item of the Work is shown as a separate line item on AIA Document G703, Application and Certificate for Payment, Continuation Sheet, or other form acceptable to the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment. The Contractor shall not make changes in the Schedule of Values without prior approval of the Architect and Owner. The form for the Application for Payment shall be AIA Document G702, supported by AIA Document G703, or other Owner approved form. The Schedule of Values shall be prepared in such a manner that each major item of Work and each subcontracted item of Work is shown as a single item on AIA Document G703 Application and Certificate for Payment Continuation Sheet, or other Owner approved form.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

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§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing and bonded or insured as required by the Owner. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site. The Contractor shall submit, within 30 days after the date of commencement of the Work and thereafter as the Owner requires, schedules of materials and equipment for each category or subcontract for which application for payment under this Section 9.3.2 will be made, which schedules shall include items, quantities, value of unit prices with extensions and the month in which Application for Payment with respect thereto is expected to occur. Schedules shall be updated on a monthly basis and submitted as an attachment to the Contractor's Application for Payment.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently

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discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

.1 defective Work not remedied;
.2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
.3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
.5 damage to the Owner or a Separate Contractor;
.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
.7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.3 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.5.4 If the Contractor disputes any determination by the Architect and/or Owner with respect to any Certificate of Payment, the Contractor nevertheless expeditiously shall continue to complete the Work and may submit a Claim in accordance with Article 15.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary

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liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven (7) days after the date established in the Contract Documents, the amount certified by the Architect, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount not in dispute has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable direct costs of shutdown and start-up, plus interest as provided for in the Contract Documents. Notwithstanding the preceding sentence, the Contractor shall not stop the Work during the pendency of a bona fide dispute between the Owner and the Contractor, provided all sums not in dispute claimed by the Contractor are paid.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. For the Work or any designated portion thereof to be "Substantially Complete," the Work must also satisfy all of the following conditions, except to the extent the same shall be specifically waived or modified in writing by the Owner:

.1 the Work has been completed in accordance with the Contract Documents, except for Punch List Work, to the extent required for the Owner to obtain an occupancy permit and such permit(s) shall have been granted by the appropriate authorities for all of the Work; and

.2 all HVAC, plumbing and electrical systems included in the Work are functioning substantially in accordance with the Contract Documents; and

.3 all life safety systems included in the Work are functioning in accordance with the Contract Documents; and

.4 a Certificate of Substantial Completion has been issued by the Architect as required under Paragraph 9.8; and

.5 all elevators, if any, included in the Work are functioning in accordance with the Contract Documents; and

.6 all offices, rooms and public areas are ready to receive, or have received if required for issuance of a Certificate of Occupancy, furniture, fixtures and equipment supplied by the Owner.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the

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Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.8.6 The Owner shall have the right to take possession of and use any completed or partially completed portions of the Work, notwithstanding that the time for completing the entire Work or such portions of the Work may not yet have expired. However, such action on the part of the Owner shall not be deemed to be an acceptance of any Work not completed in accordance with the Contract Documents. Likewise, absent the issuance of a Certificate of Substantial Completion by the Project Architect, no portion of the Work shall be subject to the running of the Contractor's bonded one (1) year guarantee on workmanship and materials, despite the fact that the building may be partially utilized. Where mechanical equipment is used prior to final inspection, the Owner shall perform routine maintenance and furnish those supplies that normally wear out in use, such as seals, packings, lubricants, etc. However, any major failure or breakdown of equipment not attributable to lack of maintenance or improper use or abuse of the equipment by Owner shall be made good by the Contractor under terms of its contract warranty, guarantee, bonds, etc.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work. A reasonable sum may be withheld until the Contractor delivers to the Owner record Drawings, Specifications, Addenda, Change Orders and other Modifications maintained at the site; the warranties, instructions and maintenance manuals required to be furnished; and a final statement of the cost of the Work allocated in accordance with the budget and in a form approved by Owner's lender.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

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§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) Contractor's Final Payment Affidavit, Contractor's Affidavit of Outstanding Accounts, Final Waiver and Release of Lien from Contractor and Final Waivers and Releases of Liens form Contractor's Subcontractors, Sub-subcontractors, suppliers and materialmen or any party with lien rights, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees. As a condition precedent to Final Payment, and as part of the Application for Payment, the Contractor shall deliver to the Owner all warranties, guarantees and other close out documents required under the Contract Documents. Copies of the required ***Contractor's Final Payment Affidavit, Contractor's Affidavit of Outstanding Accounts, Final Waiver and Release of Lien from Contractor and Final Waivers and Releases of Liens from Contractor's Subcontractors, Sub-subcontractors, suppliers and materialmen or any party with lien rights*** shall be set forth in an exhibit to be incorporated in the Contract Documents.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

.1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
.2 failure of the Work to comply with the requirements of the Contract Documents;
.3 terms of special warranties required by the Contract Documents; or
.4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

§ 9.10.6 After execution of the Certificate of Substantial Completion, and prior to the submittal of the Final Certificate and Application for Payment, the Contractor shall submit to the Architect, along with the affidavits and other documents set forth in Section 9.10.2 above:

.1 Validated warranties and notarized copies of all guarantees for equipment and materials as required by the Construction Documents, and as referred to in the Supplementary Conditions;

.2 Copies of all approved Shop Drawings or installation diagrams and three (3) copies of all brochures, manuals, etc. of all equipment as offered by the manufacturers;

.3 List of subcontractors and major material suppliers (shall include address, telephone

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number and name of individual to contact regarding this Project);

.4 As-built drawings of the completed Project. The Contractor shall provide to the Owner two (2) copies of all electronic drawing files of all as-built drawings in a format compatible with the AutoCAD release version designated by Owner. This shall include an organized, rational file/drawing nami1 1g system that would refer directly to the actual hard copy drawings. For example, drawings shall be named A-1.dwg, A-2.dwg, M-1.dwg, M-2.dwg etc. Each drawing file shall be processed through AutoCad's XREF Manager utilizing the "bind process" prior to submittal to the Owner to combine the files and eliminate the need for attached files. Text documents such as specification books shall be presented in Microsoft Word or pdf format. Such electronic files shall be delivered to the Owner within ten (I 0) days after requested by the Owner or, if not specifically requested, prior to final payment from Owner; and

.5 The Contractor shall obtain an electronic version of the Site Master Survey from the Owner and insert an as-built survey of the project into the Site Master Survey via the addition of another CADD layer added to the file in a format compatible with the AutoCAD release version designated by Owner. The CADD layer shall include an organized, rational file/drawing naming system that refers specifically to the precise name of the project constructed. The Contractor will establish permanent control monuments (hub set in concrete, iron pin in ground, etc.), or use existing monuments when approved by the Owner, to tie the location of the project to the overall facility Site Master Survey. The permanent control monument(s) shall be identified in the CADD layer such that the Owner will be able to utilize the monument for future design and development projects. Such electronic files shall be delivered to the Owner within ten (10) clays after requested by the Owner or, if not specifically requested, prior to final payment from Owner

§ 9.10.6.6 These items shall be packaged in a suitable metal file box, supplied for the Project as approved by the Architect, and shall be properly indexed. Individual submission of these items will not be acceptable.

§ 9.10.7 Prior to submission of the Final Certificate and Application for Payment, Contractor and manufacturer's representatives shall provide free instruction in the proper use of installed equipment to representatives of the Owner as designated by the Architect. Instruction shall be given in presence of the Architect.

§ 9.10.7.1 Instruction of the Owner's designated Maintenance Supervisor in the proper methods of cleaning and maintaining all of the finished surfaces and the proper methods of replacement of the consumable items such as filters, light bulbs, washers, etc. shall be the responsibility of the Contractor.

§ 9.10.8 Prior to submission of the Final Certificate and Application for Payment, the Contractor shall start up, test, adjust, balance and otherwise place in a satisfactory working condition all items of mechanical and electrical systems and shall fully instruct representatives of the Owner in the care and operation of such systems

§ 9.10.8.1 Contractor shall submit to the Architect, along with final requisition for payment, three (3) copies of a manual for the Project, assembled and bound, presenting for the Owner's guidance full details for care and maintenance of equipment included in the Contract

§ 9.10.8.2 Contractor shall, for this manual, obtain from subcontractors literature of manufacturers relating to equipment, including motors; also furnish cuts, wiring diagrams, instruction sheets and other information pertaining to same in overall operation and maintenance.

§ 9.10.9 During a valid warranty period, if the Contractor is unable or unwilling to respond immediately to make emergency repairs under conditions which the Owner may determine to be an emergency situation, the Owner .

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reserves the right to make such emergency repairs and then to bill the Contractor for a fair and reasonable amount in the reimbursement for such repair

§ 9.10.10 At closeout, Contractor shall complete the *Contract Completion Checklist,* a copy of which is to be incorporated as an exhibit to the Contract Documents, and shall provide to the Owner all items required thereon as a condition precedent to final payment being due from the Owner.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

.1 employees on the Work and other persons who may be affected thereby;

.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss. Contractor shall comply with all applicable federal, state and county, and city statutes, safety regulations, codes, ordinances and orders, including the Occupational Safety and Health Administration Act of 1970 (OSHA).

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

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§ 10.2.8 Injury or Damage to Person or Property
If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.2.9 Contractor shall protect adjoining private or municipal property and shall provide barricades, temporary fences, and covered walkways required to protect the safety of passers-by, as required by prudent construction practices, local building codes, ordinances or other laws, or the Contract Documents

§ 10.2.10 Contractor shall maintain Work, materials and apparatus free from injury or damage from rain, wind, storms, frost or heat. If adverse weather makes it impossible to continue operations safely in spite of weather precautions, the Contractor shall cease Work and notify the Owner and the Architect of such cessation. The Contractor shall not permit open fires on the Project site.

§ 10.2.11 In addition to its other obligations pursuant to this Article 10, the Contractor shall, at its sole cost and expense, promptly repair any damage or disturbance to walls, utilities, sidewalks, curbs and the property of third parties (including municipalities) resulting from the performance of the Work, whether by it, or by its Subcontractors at any tier. The Contractor shall maintain streets in good repair and traversable condition.

§ 10.3 Hazardous Materials and Substances
§ 10.3.1 The Owner has on file the following information: (I) Asbestos Management Plan, and (2) Asbestos Survey Report. These documents are available for the Contractor's review at the above locations. The Contractor shall determine if the information contained therein is relevant to the Project. The Contractor shall execute the Owner's "Contractor Acknowledgement Form" of these documents.

§ 10.3.1.1 If during the construction of the Project any known hazardous material, or friable asbestos is suspected or encountered, Work in that area shall be suspended and the Owner's Representative shall be notified immediately.

§ 10.3.1.2 The Owner shall be responsible for investigation, removal and disposition of any such material in accordance with applicable laws and regulations. The Contractor will be directed by the Owner on further procedures concerning the project as a result of investigation, removal and disposition of such material.

§ 10.3.2 In the event the Contractor encounters on the site material reasonably believed to be asbestos or polychlorinated biphenyl (PCB) which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner's Representative in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner and Contractor if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos or polychlorinated biphenyl (PCB), or when it has been rendered harmless, by written agreement of the Owner and Contractor, or in accordance with final determination by the Architect. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 The Contractor shall not be required, pursuant to Article 13, perform without consent any Work relating to asbestos or polychlorinated biphenyl (PCB).

§ 10.3.4 To the fullest extent permitted by law, the Owner shall defend and indemnify and hold harmless the Contractor and its agents and employees from and against claims, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from performance of the Work in the affected area if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, other than the Work itself, including loss of use resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the Owner, anyone directly or indirectly employed by the Owner, or anyone for whose acts the Owner may be liable.

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§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS – See Exhibits "B" and "B-1"

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 (Intentionally omitted.)

§ 11.1.3 (Intentionally omitted.)

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 (Intentionally omitted.)

§ 11.2.2 Failure to Purchase Required Property Insurance.(Intentionally omitted.)

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. (Intentionally omitted.)

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

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§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may require the Contractor to purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. Except for losses caused by Contractor or resulting from Contractor's negligence, the Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Contractor as fiduciary and made payable to the Contractor as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Contractor shall pay the Architect and Owner their just shares of insurance proceeds, if any, received by the Contractor, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Contractor shall notify the Owner of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Owner shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Owner does not object, the Contractor shall settle the loss and the Owner shall be bound by the settlement and allocation. Upon receipt, the Contractor shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Owner timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Contractor may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect for failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it

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promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work nor to Owner's right to make claim with respect to latent defects.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.1.2 Historical lack of enforcement of any local law shall not constitute a waiver of Contractor's responsibility for compliance with such law in a manner consistent with the Contract Documents unless and until the Contractor has received written consent for the waiver of such compliance from the Owner and the agency responsible for the local law enforcement.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. If Contractor attempts to make such an assignment, it shall never the less remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

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§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.1.1 During construction, periodic building code compliance inspections are required and will be performed by the Owner's building department inspectors when requested by the Contractor. It is the responsibility of the Contractor to properly request such code inspections and no Work shall be covered until such Work has been inspected for code compliance.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.2.1 The Owner reserves the right to perform additional tests of materials, work and equipment provided under this Contract and will pay all costs involved in such additional tests. In the event one or more test results indicate a failure of materials, work and/or equipment to meet the requirements of the Contract Documents, the Contractor agrees to correct all identified deficiencies, arrange for and pay the cost of all re-testing and repeat the process until re-test reports indicate all deficiencies have been corrected. In all cases, re-tests shall be performed by the same testing agency who performed the initial test.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense, including the cost of retesting for verification of compliance if necessary, until the Architect certifies that the Work in question does comply with the requirements of the Contract Documents, and all such costs shall not be included in computing the Contract Sum.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

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§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

§ 13.6 Time Limits on Claims

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law.

§ 13.7 Financial Disclosures

§ 13.7.1 During the term of this Contract, Contractor covenants and agrees that it will keep adequate books and records of accounts in accordance with Generally Accepted Accounting Principles (GAAP). Contractor further covenants and agrees that, upon request from Owner, Contractor shall provide to Owner financial statements of Contractor, including current income and expense statements of Contactor, consolidated balance sheets signed by a financial officer of Contractor, and audited reports provided to Contractor's Surety, audited financial statements certified by a Certified Public Accountant concerning the financial affairs of Contractor and all affiliates of Contractor, and such other financial information requested by Owner. All such financial information shall comply with GAAP.

§ 13.7.2 In the event that Contractor becomes insolvent and/or fails to pay its current obligations when they become due, Contractor shall so advise Owner of such situation. Contractor hereby authorizes its sureties, lenders, financial institutions and other third parties to release to Owner financial information requested by Owner, including, but not limited to, the financial information described in the preceding Section 13.7.1.

§ 13.8 Waiver of Jury Trail

All parties hereby waive any and all right to any trial by jury in any action or proceeding arising directly or indirectly hereunder.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 45 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;

.2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped; or

.3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or

.4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions

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of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

.1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

.2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;

.3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority;

.4 otherwise is guilty of substantial breach of a provision of the Contract Documents; or

.5 is adjudged a bankrupt or insolvent, or if it makes a general assignment for the benefit of its creditors, or if a trustee or receiver is appointed for the Contractor or for any of its property, or if it files a petition to take advantage of any debtor's loss, or to reorganize under the bankruptcy or similar laws.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 Accept assignment of subcontracts pursuant to Section 5.4; and

.3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

.1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

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.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; along with reasonable overhead and profit on the Work performed to date, but in no event shall the Contractor be entitled to anticipated profits on unperformed Work.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

Any statutes of limitations shall commence to run, and all causes of action shall be deemed to have accrued, in accordance with applicable Florida law.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either party must be made within 21 days after occurrence of the event giving rise to such Claim or within 21 clays after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Claims must be made by written notice to the Architect and the other party. Claims must specifically detail all facts and issues substantiating the Claim, including all costs and expenses incurred. Contractor Claims must be made in writing and timely filed in accordance with the specific requirements of the Contract Documents and under no circumstances whatsoever be based upon actual or verbal notice or lack of prejudice to the other party. An additional Contractor Claim after the initial Claim has been implemented by Change Order will not be considered unless submitted in a timely manner.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.5.1 If the Contractor believes additional cost is involved for reasons including but not limited to (I) a written interpretation from the Architect, (2) an order by the Owner to stop the Work where the Contractor was not at fault,
(3) a written order for a minor change in the Work issued by the Architect, (4) failure of payment by the Owner, (5) termination of the Contract by the Owner, (6) Owner's suspension or (7) other reasonable grounds, Claim shall be filed in accordance with this Section 15.1.

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§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Decision of the Architect. Claims, including those alleging an error or omission by the Architect but excluding those arising under Section 10.3 shall be referred initially to the Architect for decision. An initial decision by the Architect shall be required as a condition precedent to mediation or litigation of all Claims between the Contractor and Owner arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Architect with no decision having been rendered by the Architect. The Architect will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Architect will approve or reject Claims by written decision, which shall state the reasons therefore and which shall notify the parties of any change in the Contract Sum or Contract Time or both. The approval or rejection of a Claim by the Architect shall be final and binding on the parties but subject to mediation and litigation.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

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§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 Claims, disputes or other matters in question between the parties to this Agreement shall be first subject to pre-suite mediation prior to the filing of any legal claims or litigation. Completion of pre-suite mediation is a condition precedent to litigation. The obligation to mediate is a material and essential provision of the Agreement.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 Unless otherwise agreed in writing, the Contractor shall carry on the Work and maintain its progress during any mediation or litigation, and the Owner shall continue to make payments to the Contractor in accordance with the Contract Documents.

§ 15.3.5 Either party may initiate a mediation preceding by a request in writing to the other party within a reasonable time after the claim, dispute or other matter in question has arisen or as provided in subparagraph 15.3.1, but in no event after the expiration of the applicable statute of limitations.

§ 15.3.6 The parties shall endeavor in good faith to mutually agree upon an acceptable mediator. In the event the parties have not agreed upon a mediator within thirty (30) days of the request for mediation, the Orlando office of the American Arbitration Association, upon the written request of either party, shall appoint a mediator from its pool of approved mediators.

§ 15.3.7 Unless otherwise mutually agreed, the mediation shall be held in accordance with the Construction Indusrty Mediation Rules of the American Arbitration Association currently in effect, each party to bear its own fees, costs and expenses.

§ 15.3.8 In the event that pre-suit mediation is unsuccessful, all claims, disputes or other matters in question shall be resolved in the Circuit Courts of Volusia County Florida. The Parties, including the Contractor's Surety, waive Venue and Jurisdiction of any Federal Court and expressly waive Trial by Jury.

§ 15.3.9 All references to Arbitration in the Contract Documents are deleted.

§ 15.4 Arbitration – NOT APPLICABLE

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PRECONSTRUCTION PHASE – SCOPE OF SERVICES

(SEE ATTACHED)

Wharton-Smith, Inc.
CONSTRUCTION GROUP

May 28, 2024

Mr. Junos Reed, P.E.
City Engineer
City of Port Orange
1395 Dunlawton Avenue
Port Orange, FL 32129

Subject: RFSQ #23-14
City of Port Orange Public Utilities Operations Facility – Field Services
Phase 1 CMAR Preconstruction Services Proposal

Dear Mr. Reed:

Wharton-Smith, Inc. offers our proposal to provide CMAR preconstruction services for the City of Port Orange Public Utilities Operations Facility – Field Services project. The general summary for the scope of work includes the following:

- Preconstruction Management, Coordination, and Meetings
- Preliminary Cost Estimates
- Design and Constructability Review
- Value Engineering
- Schedule Development
- Bidding, Procurement, and GMP Development

Our proposed lump sum fee for the preconstruction services: $116,932. Additional back-up and detail are provided in the attachments to this letter.

We appreciate the opportunity to provide our services and look forward to working with the City of Port Orange on a successful project.

If you have any questions or comments, please contact me directly.

Regards,

James Del La Rosa
Project Executive
Wharton-Smith, Inc.

PRECONSTRUCTION PHASE PROPOSAL

CITY OF PORT ORANGE
PUBLIC UTILITIES FIELD OPERATIONS FACILITY – PHASE 1 PRECONSTRUCTION

PHASE 1: PRECONSTRUCTION SCOPE OF SERVICES

The following narrative is to provide detail to Phase 1 Preconstruction Services for the Public Utilities Field Operations Facility.

The duration of Phase 1 is assumed to be approximately 4 months for design and GMP development which is inclusive of preconstruction services provided by Wharton-Smith, and 2 months for production and negotiation of the final Guaranteed Maximum Price (GMP). Please note that the 2 months allotted for the GMP does not include the time required for the City's approval and contract amendment.

Generally:

Attend general progress review and coordination meetings with Owner and the project team.

Attend periodic design meetings to provide consultation on aspects of the design and construction that will impact the budget, schedule, and quality of the completed Work.

1. CMAR will work with Owner to develop the optimum scope and quality of Work to meet Owner's budget. Such work will consist of considering options and alternates with scope and quality adjustments as determined by Owner. CMAR will assess cost and schedule impact of these options and alternates.

2. Consult with Owner regarding site use and improvements, and the selection of materials, building systems, and equipment.

3. Provide recommendations on construction feasibility; actions designed to minimize adverse effects of labor or material shortages; time requirements for procurement, installation and construction completion; and factors related to construction cost including estimates of alternative designs or materials, preliminary budgets and possible opportunities for savings.

4. Provide recommendations on construction schedule for opportunities for time savings.

Provide input to the Owner regarding current construction market, bidding climate, status of key Subcontractor and Supplier markets, and other local economic conditions. Develop Subcontractor and Supplier interest in the Work, consistent with Legal Requirements. Furnish Owner a list of suggested Subcontractors and Suppliers, from whom bids will be requested for each principal portion of the Work. Submission of this list is for information and discussion purposes only and not for prequalification.

In conjunction with the Owner, identify the appropriate early work packages including procurement of long-lead time items and equipment and other Work required to meet the schedule for the Owner.

In conjunction with the Owner, identify the appropriate Work packages from the Contract Documents for distribution to prospective bidders for providing all elements of Work not included in the General Conditions. Appropriate Work packages shall mean scopes of work that will maximize the competition for those Work packages. Work packages will also be identified with appropriate scopes of work should the Owner have any goals for involvement of the local and/or small contracting communities.

The following breakdown lists the anticipated tasks and expectations considered when producing the preconstruction proposal. Any work outside of this scope of work that is requested of Wharton-Smith by the Owner, shall be submitted in the form of a 'Request for Quotation' for review and approval prior to such work taking place.

Task 1 Project Coordination

1.1 Project Management & Administration – Wharton-Smith provides overall project management for the preconstruction phase. This includes budget control, schedule control, quality planning, safety planning, subcontractor management, and coordination with the City and the design consultant.

1.2 Project Kickoff Meeting / Team Chartering Workshop – Wharton-Smith staff will attend one (1) project kickoff meeting (Team Chartering Workshop) with City of Port Orange (Owner) and Schenkel Shultz (Engineer).

1.3 Design Review Workshops – Wharton-Smith staff will attend one (1) design review workshops with City of Port Orange and Schenkel Shultz. These meetings will be workshop style meetings to review drawings and specifications at the 100% design submittals.

1.4 Interim Design Progress Meetings – Wharton-Smith staff will attend progress meetings with City of Port Orange and Schenkel Shultz as necessary to review design progress, action items, and other outstanding items.

1.5 Cost Estimate and VE Workshops – Wharton-Smith will conduct cost estimate workshops at each design phase to review the current cost model and maintain project budget. This may be handled in a conference call, or may be in person, depending on the status of the project.

1.6 Value Engineering Workshops – Wharton-Smith will conduct value engineering workshops at each design phase to provide input on potential cost savings and to review the overall design and O&M impact of those decisions. This may be handled in a conference call, or may be in person, depending on the status of the project.

1.7 Site Visits & Investigation – Wharton-Smith will perform site visits to investigate existing conditions, review spatial constraints, evaluate structure placement, develop ingress & egress

plan during construction, and analyze site conditions for development of site-specific safety and quality plans. Wharton-Smith will provide final reports of encountered conditions to the City.

1.8 Bidding Workshop – In conjunction with the design engineer, Wharton-Smith staff will coordinate a meeting will all applicable City Stakeholders to review the bidders lists, outline the bidding process, and understand all requirements to remain compliant with Local, State, Federal, and Funding source requirements.

1.9 GMP Review Workshop – Upon completion of the bidding phase, but prior to commission approval, Wharton-Smith will meet with the City to present a final GMP, reviewing all project specific clarifications and to present all final costs. Contingencies and allowances will be reviewed, comparing to the presented risk register.

Task 2 Preliminary Cost Estimates

2.1 60% Cost Estimate – Wharton-Smith preconstruction staff will perform detailed takeoffs (based on drawing concepts) on all construction trades such as site work, concrete, utilities, mechanical, building, finishes, etc. A full cost estimate book will be provided showing all material, labor, and equipment take-offs and any subcontractor cost estimates.

Task 3 Design Review and Value Engineering

3.1 100% Submittal Constructability Review & Value Engineering (VE) – Wharton-Smith will perform detailed design and constructability review to identify changes, conflicts, constructability concerns, spatial concerns, general questions, and overall consistency of the design disciplines (structural, civil, mechanical, etc.). Value engineering options are provided during this phase and throughout the life cycle of the project.

3.2 Issued for Construction/Conformed Documents Review – These costs are for the same items outlined in Task 3.1 but include final review of all documents to ensure that they are conformed and ready for construction.

CMAR shall review in-progress design documents, including at a minimum the documents generally described above in 3.1 through 3.2 and provide input and advice to Owner on constructability, materials and equipment selections, and availability. Provide timely suggestions for modifications to improve:

- Constructability, including sequencing or coordination issues, to enable Work to be completed with a minimum of RFI's and change orders.
- Recommend potential vendors and manufacturers for incorporation into the design.
- Adequacy of details for construction.
- Potential conflicts during construction.
- Ability to coordinate among Subcontractors and Suppliers.
- Coordination between Contract Documents.
- Operability.
- Ability to minimize disruptions to existing operations.

- Ability to complete construction connections to existing facilities or utilities.
- Modifications to facilitative commissioning and start-up and/or performance testing.
- Ability of Owner to operate/maintain the Work in a safe, time and cost-efficient manner when completed.

Task 4 CPM Master Schedule

4.1 Schedule Development and Phasing – At the 100% design phase, Wharton-Smith will develop a baseline Critical Path Method (CPM) schedule using Primavera P6 software based on available information (and providing reasonable allowances for Owner review time and time for permits and approvals from governmental agencies). The schedule will be broken down by phase (design/permitting, procurement, construction, and closeout) and by structure. A detailed schedule sequence will be provided for each structure. All portions of the project will be interrelated by schedule logic so that a true "critical path" is easily identifiable. This schedule will be updated as the project progresses.

4.2 Final Schedule Update at GMP – The schedule developed in Task 4.1 is modified based on the GMP design documents and final construction sequencing is determined. This schedule shall serve as the basis for General Condition's costs in the GMP as well as the contract time required for the duration of construction.

Task 5 Bidding, Procurement, and GMP

5.1 Owner Direct Purchase Plan – In conjunction with City of Port Orange, Wharton-Smith staff will identify and assist City of Port Orange in direct purchase of major equipment and materials for savings on sales tax.

5.2 GMP Bid Package Development – Wharton-Smith will identify and assemble appropriate work packages from GMP design documents to solicit prospective subcontractor and supplier proposals for providing all elements of Work not included in the General Conditions. Work packages will be assembled with appropriate scopes of work should the Owner have any goals for involvement of the local and/or small contracting community. A selected bidders list will be developed and evaluated with the City prior to the bidding phase. Wharton-Smith preconstruction staff will perform detailed takeoffs (based on the GMP design documents) for all self-perform work and facilitate all bidding efforts. A full cost estimate book will be provided showing all material, labor, and equipment take-offs and any subcontractor/supplier cost proposals. This estimate will be submitted as the GMP Proposal for the work.

5.3 Pre-Bid Site Visits – Wharton-Smith will host, coordinate, and manage a pre-bid site visit for all potential bidders for the subcontract and purchase order work packages. Wharton-Smith will take notes and answer questions. Clarifications/addenda will be issued to bidding parties as needed based on the formal bid questions that are received.

5.4 Receive Bids – Wharton-Smith will receive bids throughout the course of an entire day. The bid times may be staggered to ensure our ability to answer questions or provide direction up to the last minute.

5.5 Review Bids and Recommend Award – All of the subcontractor and purchase order work package bids are reviewed for completeness, responsiveness, exceptions, clarifications, and deviations from the contract documents. Value engineering ideas and schedule commitments will also be evaluated. Wharton-Smith will provide a bid tabulation worksheet and make a recommendation for package award based on the best interest of the City. Final decision is made by Owner.

5.6 Final GMP Assembly – All documents that comprise the GMP are assembled into a single tabbed and searchable binder/pdf document. This includes all schedules, bid documents, subcontractor and supplier bids, other backup quotes, general conditions breakdowns, value engineering logs, contingencies and allowances, and other GMP relevant documents that were considered in creation of the GMP.

Task 6 Miscellaneous

6.2 No Services Anticipated or Included

Task 7 Subcontractor Services

7.2 No Services Anticipated or Included

Task 8 Allowances

8.1 No Services Anticipated or Included

Fee Summary: See attached fee summary.

OWNER: City of Port Orange
ENGINEER: Schwab/Stubbs
PROJECT: Public Utilities Field Operations
BUDGET: $6.5M
CURRENT DESIGN STATUS: 100%

Item	TASK	QTY	UNIT	Executive Management $186.00 HR	Executive Management $186.00 $	Project Director $161.00 HR	Project Director $161.00 $	General Superintendent $183.00 HR	General Superintendent $183.00 $	Senior Preconstruction Manager Rate	Senior Preconstruction Manager $161.00 HR	Senior Preconstruction Manager $161.00 $	Director of Estimating Rate	Director of Estimating $159.00 HR	Director of Estimating $159.00 $	Senior Project Manager Rate	Senior Project Manager $151.00 HR	Senior Project Manager $151.00 $	Specialty Estimator Rate	Specialty Estimator $130.00 HR	Specialty Estimator $130.00 $	Administrative Assistant Rate	Administrative Assistant 383.00 HR	Administrative Assistant 383.00 $	QualityManager Rate	QualityManager $161.00 HR	QualityManager $161.00 $	Safety Manager Rate	Safety Manager $118.00 HR	Safety Manager $118.00 $	Risk Coordinator Rate	Risk Coordinator $113.00 HR	Risk Coordinator $113.00 $	Document Specialist Rate	Document Specialist $83.00 HR	Document Specialist $83.00 $	Project Accountant Rate	Project Accountant $100.00 HR	Project Accountant $100.00 $	WHARTON-SMITH PERSONNEL HRs	WHARTON-SMITH PERSONNEL LABOR COSTS	WHARTON-SMITH PERSONNEL MISC. COSTS (PRORATED)	WHARTON-SMITH PERSONNEL SUBTOTAL	SUBCONTRACTOR SUB	SUBCONTRACTOR COST	$ TOTALS
TASK 1	MEETINGS & SITE INVESTIGATION																																											
1.1	PROJECT MANAGEMENT & ADMINISTRATION	1	EA	6	0	2	322		0	11	1771	2	318	2	302		0	12	1812		0		0		0	8	904	6	498	12	1360	69	7,036	171	7,207		-	7,207
1.2	PROJECT KICK-OFF MEETING	3	EA	6	0	2	322		0	4	644	1	159	2	302		0	2	302		0		0		0		0		0		0	11	1,067	31	1,098		-	1,098
1.3	ATTEND REVIEW DESIGN MILESTONE MEETINGS	1	EA		0		0		0	4	644	2	318	4	604		0	2	302		0		0		0		0		0		0	12	2,068	46	2,114		-	2,114
1.4	ATTEND INTERIM DESIGN PROGRESS MEETINGS	2	EA		0		0		0	8	1288	4	636	4	604		0	4	604		0		0		0		0		0		0	20	2,528	67	2,577		-	2,577
1.5	COST ESTIMATE AND VE WORKSHOPS	1	EA		0		0		0	8	1288	4	636	4	604		0	2	302		0		0		0		0		0		0	18	2,829	46	2,875		-	2,875
1.6	VALUE ENGINEERING REVIEW MEETINGS	1	EA		0		0		0	4	644	4	636	2	302		0	2	302		0		0		0		0		0		0	14	2,050	46	2,096		-	2,096
1.7	SITE VISITS & INVESTIGATION	1	EA		0		0	8	878	8	1288		0		0		0	1	151		0		0		0		0		0		0	15	2,317	54	2,371		-	2,371
1.8	BIDDING WORKSHOP	1	LS		0		0		0	4	644	2	318	4	604		0	4	604		0		0		0		0		0		0	18	2,170	55	2,225		-	2,225
1.9	GMP REVIEW WORKSHOP	1	LS		0	2	322		0	6	966		0	4	604		0	4	332		0		0		0		0		0		0	16	2,180	48	2,228		-	2,228
	SUBTOTALS			6	0	8	966	8	878	64	9864	19	3211	30	4830	0	0	31	5572	0	0	0	0	0	0	8	904	6	498	12	1360	182	24,284	619	28,103		-	28,103
TASK 2	PRELIMINARY COST ESTIMATES																																											
2.1	100% DESIGN COST ESTIMATE	1	EA	0	0	2	322	2	328	12	1812	24	4066	8	1208	72	9360	12	906		0		0	2	238	4	332		0	138	18,936	393	19,031		-	19,031
	SUBTOTALS			0	0	2	322	2	328	12	1812	24	4066	8	1208	72	9360	12	906	0	0	0	0	2	238	4	332	0	0	138	18,936	393	19,031		-	19,031
TASK 3	DESIGN REVIEW AND VALUE ENGINEERING																																											
3.1	100% SUBMITTAL CONFORMED DOCUMENTS REVIEW	1	EA		0		0	4	652	8	1288	2	318	8	604		0	4	332	2	302	2	238	0	0	2	166	0	0	30	4,108	86	4,226		-	4,226
3.2	IFC DOCUMENTS REVIEW	1	EA		0		0	4	652	8	1288	2	318	8	604	0	0	2	166	2	302	2	238	0	0	2	166	0	0	28	3,874	80	4,054		-	4,054
	SUBTOTALS			0	0	0	0	8	1304	16	2416	4	678	16	1812	0	0	6	498	4	604	4	472	0	0	4	332	0	0	58	8,114	165	8,279		-	8,279
TASK 4	CPM MASTER SCHEDULE																																											
4.1	SCHEDULE DEVELOPMENT	1	EA		0	1	161	4	652	16	2416		0	8	1208		0	2	166		0		0		0		0		0		0	31	4,603	88	4,691		-	4,691
4.2	FINAL SCHEDULE UPDATE AT GMP DETERMINES GCSI	1	EA		0		0		0		0		0		0		0		0		0		0		0		0		0		0	0	-	-	-		-	-
	SUBTOTALS			0	0	1	161	4	652	16	2416	0	0	8	1208	0	0	2	166	0	0	0	0	0	0	0	0	0	0	0	0	31	4,603	88	4,691		-	4,691
TASK 5	BIDDING, PROCUREMENT, AND GMP																																											
5.1	OWNER DIRECT PURCHASE PLAN	1	LS		0		0		0	16	2416		0	8	1208		0	40	3320		0		0		0		0	4	420	68	7,364	194	7,558		-	7,558
5.2	CMP BID PACKAGES	1	LS		0	2	322		0	40	6040	4	636	40	6040		0	8	664		0		0	4	452	16	1328		0	112	15,522	325	15,847		-	15,847
5.3	PRE-BID SITE VISITS	1	LS		0		0		0	8	1288		0	8	1208		0	4	332		0		0		0		0		0		0	20	2,748	57	2,805		-	2,805
5.4	RECEIVE BIDS (SINGLE BID DAY)	1	EA		0	2	322		0	8	1288		0	8	1208		0	4	664		0		0		0		0		0		0	26	3,482	74	3,556		-	3,556
5.5	REVIEW BIDS AND RECOMMEND AWARD	1	LS		0		0		0	40	6040	4	636	40	6040		0	4	332		0		0		0		0		0		0	88	13,088	251	13,339		-	13,339
5.6	ASSEMBLE AND APPROVE FINAL GMP	1	EA	8	0	4	644		0	16	2416	2	318	16	2416		0	4	332		0		0	4	332		0		0		0	40	6,478	111	6,589		-	6,589
	SUBTOTALS			0	0	8	1288	0	0	128	19326	10	1590	120	18120	0	0	68	5644	0	0	0	0	4	452	20	1680	4	420	382	48,902	1,032	49,934		-	49,934
TASK 6	MISCELLANEOUS																																											
6.1	TEMPORARY FACILITIES PLAN	0	EA																																									
6.2	VENDOR OUTREACH PROGRAM	0	EA																																								
6.3	ENVIRONMENTAL PLAN (SWPPP)	0	EA																																								
6.4	SITE UTILIZATION PLAN	0	EA																																								
6.5	CONTINGENCY	0	EA		0		0		0		0		0		0		0		0		0		0		0		0		0		0	0	-	-	-		-	-
	SUBTOTALS			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-		-	-
TASK 7	SUBCONTRACTOR SERVICES																																											
7.1	SUBSURFACE UTILITY EXPLORATION (SUE)	0	EA																																								
7.2	PUBLIC OUTREACH	0	EA																																								
7.3	DESIGN SERVICES	0	EA		0		0		0		0		0		0		0		0		0		0		0		0		0		0	0	-	-	-		-	-
	SUBTOTALS			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-		-	-
TASK 8	ALLOWANCES																																											
8.1	ALLOWANCE - ELECTRICAL DESIGN REVIEW & COST ESTIMAT	0	EA		0		0		0		0		0		0		0		0		0		0		0		0		0		0	0	-	-	-		-	-
	SUBTOTALS			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-		-	-
	TOTAL PRECONSTRUCTION SERVICES			0		17		20		238		57		178		72		119		4		4		14		34		16		771	104,541	2,197	106,738		TOTAL	106,738

MARKUP (8.5%)	9,073
INSURANCE (1.05%)	1,121
Grand Total	116,932

WAIVER AND PARTIAL RELEASES
FINAL WAIVERS AND RELEASES OF LIENS
CONSTRUCTION MANAGER'S AFFIDAVIT OF OUTSTANDING ACCOUNTS
CONSTRUCTION MANAGER'S FINAL AFFIDAVIT

(SEE ATTACHED)

WAIVER AND RELEASE OF LIEN
UPON PROGRESS PAYMENT
(FLORIDA)

The undersigned lienor, in consideration of the sum of $ _____, hereby waives and releases its lien and payment bond claims and right to claim a lien for labor, services, and/or materials furnished through _____, 20_____, to _____ *[customer]* on the job of _____ *[owner]* to the following property:

This waiver and release does not cover any retention or labor, services or materials furnished after the date specified.

DATED on _____, 20_____.

Witnesses:

_____
Print: _____

_____
Print: _____

Lienor:

By: _____
Print: _____
Address: _____
_____

STATE OF FLORIDA
COUNTY OF _____

Sworn to and subscribed before me, by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20___, by _____, ☐ who is personally known to be the person described in or ☐ has produced a Florida driver license or ☐ _____ as identification.

_____
Notary Public, State of Florida
Type or Print Name:
My Commission Expires:
Commission Number:

WAIVER AND PARTIAL RELEASE OF LIEN
UPON PROGRESS PAYMENT
(FLORIDA)

The undersigned lienor, in consideration of the sum of $ _____, hereby waives and releases its lien and payment bond claims and right to claim a lien for labor, services, and/or materials furnished through _____, 20_____, to _____ *[customer]* on the job of _____ *[owner]* to the following property:

This waiver and release does not cover any retention or labor, services, or materials furnished after the date specified.

DATED on _____, 20_____.

Witnesses:

_____
Print: _____

_____
Print: _____

Lienor:

By: _____
Print: _____
Address: _____
_____

STATE OF FLORIDA
COUNTY OF _____

Sworn to and subscribed before me, by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20___, by _____, ☐ who is personally known to be the person described in or ☐ has produced a Florida driver license or ☐ _____ as identification.

_____
Notary Public, State of Florida
Type or Print Name:
My Commission Expires:
Commission Number:

WAIVER AND RELEASE OF LIEN
UPON FINAL PAYMENT
(FLORIDA)

The undersigned lienor, in consideration of the final payment in the amount of $_____, hereby waives and releases its lien and payment bond claims and right to claim a lien for labor, services, or materials furnished to _____ *[customer]* on the job of _____ *[owner]* to the following described property:

DATED on _____, 20____.

Witnesses:

_____
Print: _____

_____
Print: _____

Lienor:

By: _____
Print: _____
Address: _____
_____

STATE OF FLORIDA
COUNTY OF _____

Sworn to and subscribed before me, by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20___, by _____, ☐ who is personally known to be the person described in or ☐ has produced a Florida driver license or ☐ _____ as identification.

_____
Notary Public, State of Florida
Type or Print Name:
My Commission Expires:
Commission Number:

PROJECT: _____

CONSTRUCTION MANAGER'S AFFIDAVIT OF OUTSTANDING ACCOUNTS

To the best of my knowledge and belief, we hereby certify that all estimates of work shown on the application for payment Number ___ dated _____ are true and correct, that all work has been performed and material supplied in full accordance with the terms and conditions of the Agreement with Owner and all authorized changes thereto, that the following is a true and correct statement of the contract account up to and including the last day of the period covered by this estimate and that no part of the Payment Due This Estimate has been received.

	(Must match Pay Requisition)	(Owner Use Only)
ORIGINAL CONTRACT AMOUNT:	$_____	$_____
APPROVED CHANGE ORDERS:	$_____	$_____
ADJUSTED CONTRACT AMOUNT:	$_____	$_____
WORK COMPLETED TO DATE: (on contract)	$_____	$_____
Net Change (add/deduct)	$_____	$_____
Total Work Completed to Date	$_____	$_____
Less Retainage	$_____	$_____
Total Owed to Date	$_____	$_____
Less Prior Billings	$_____	$_____
PAYMENT DUE THIS ESTIMATE:	$_____	$_____

AFFIDAVIT OF OUTSTANDING ACCOUNTS

We hereby certify that all outstanding claims for labor, insurance, unemployment benefits, taxes, union benefits, subcontract materials, expendable equipment, and any and all other obligations incurred in the performance of said agreement have been paid in full in accordance with the requirements of said agreement except such outstanding claims as are listed below, which statement contains all claims against Construction Manager which are not yet paid. (All amounts owed, even if under extended periods of credit, must be included in this statement.) We also certify that these due and payable accounts will be paid as shown below out of funds to be received from the Owner for this period and signed Releases of Lien will be presented to Owner for each of the below listed Suppliers/Subcontractors.

Subcontractor/ Supplier Name	Type of Material or Labor Furnished	Contract Price (if applicable)	Amount Previously Paid	Amount to be Paid by Construction Manager to Subcontractor/ Supplier out of this Payment	Balance Owing Subcontractor/ Supplier After this Payment

The undersigned Construction Manager, having heretofore entered into a Contract with Owner to perform work in connection with the above project, and having made Affidavit of Outstanding Accounts in connection with request for payment in order to induce Owner to make a payment at this time in the amount indicated above, agrees as follows:

- That said payment is in strict compliance with the terms and conditions of said contract.
- That said payment shall be received as a trust fund and applied by the undersigned for the discharge of his obligations for labor, subcontract work, materials, equipment, supplies, services, etc. in connection with this project.
- That said payment will not be deposited with any depository to whom the Construction Manager has given any evidence of an indebted which gives to the depository any legal rights to such funds or any part thereof.
- That the person executing this Certificate on behalf of the Construction Manager is an authorized officer of the Construction Manager, having knowledge of all the matters hereinabove set forth and is duly authorized to execute this Certificate and bind the Construction Manager.

Dated this _____ day of _____, 20_____.

STATE OF _____
COUNTY OF _____

Subscribed and sworn to before me this
_____ day of _____, 20___.

Notary Public
My Commission Expires: _____

_____
(CONSTRUCTION MANAGER)

By:_____
(undersigned)
Title:_____

CONSTRUCTION MANAGER'S FINAL PAYMENT AFFIDAVIT
(FLORIDA)

STATE OF FLORIDA
COUNTY OF _____

BEFORE ME, the undersigned authority, duly authorized to administer oaths and take acknowledgments, personally appeared _____, who being duly sworn, deposes and says:

1. He is the _____ of _____ ("Construction Manager").

2. This Affidavit is made pursuant to Chapter 713, Florida Statutes, in connection with labor, services and materials supplied for improvement of the following described real property under the direct contract between _____ ("Owner") and Construction Manager:

3. All lienors under the direct contract have been paid in full for labor, services and/or materials, except as follows:

Lienor's Name and Address	Amount Due or to Become Due

DATED on _____, 20____.

CONSTRUCTION MANAGER:

By: _____
Print: _____

STATE OF FLORIDA
COUNTY OF _____

Sworn to and subscribed before me, by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20___, by _____, ☐ who is personally known to be the person described in or ☐ has produced a Florida driver license or ☐ _____ as identification.

_____
Notary Public, State of Florida
Type or Print Name:
My Commission Expires:
Commission Number:

CONTRACT COMPLETION CHECKLIST

(SEE ATTACHED)

Contract Completion Checklist

C.I.P.# / PROJECT DESCRIPTION: _____

CONTRACTOR: _____

Original Contract Sum _____
Change Orders _____
Final Contract Sum _____

		Approved:	Date:
1. Scope Summary	Contractor Architect/Engineer Owner	_____ _____ _____	_____ _____ _____
2. Substantial Completion Certificate	Contractor Architect/Engineer Owner	_____ _____ _____	_____ _____ _____
3. Punch List	Contractor Architect/Engineer Owner	_____ _____ _____	_____ _____ _____
4. Approved Revised Drawings and As Built Drawings a. One complete set on CD in Autocad. (Autocad format to be confirmed with Owner) b. Two complete sets in Hard Copy format – Full Size	Contractor Architect/Engineer Owner	_____ _____ _____	_____ _____ _____
5. Certificate of Occupancy	Contractor Architect/Engineer Owner	_____ _____ _____	_____ _____ _____
6. Operation, Maintenance & Training Manuals	Contractor Architect/Engineer Owner	_____ _____ _____	_____ _____ _____
7. Warranties & Guarantees a. 2 Complete Sets of all Warranty/Guarantee Documents	Contractor Architect/Engineer Owner	_____ _____ _____	_____ _____ _____
8. Delivery of all Attic Stock	Contractor Architect/Engineer Owner	_____ _____ _____	_____ _____ _____
9. Consent of Surety	Contractor Architect/Engineer Owner	_____ _____ _____	_____ _____ _____
10. Affidavits & Final Lien Waivers of Contractor	Contractor Architect/Engineer Owner	_____ _____ _____	_____ _____ _____
11. Final Lien Waivers from Subcontractors and others with Lien Rights	Contractor Architect/Engineer Owner	_____ _____ _____	_____ _____ _____

APPLICATION FOR PAYMENT

(SEE ATTACHED)

AIA® Document G702™ – 1992

Application and Certificate for Payment

TO OWNER:	PROJECT:	APPLICATION NO:	Distribution to:
		PERIOD TO:	OWNER: ☐
FROM CONTRACTOR:	VIA ARCHITECT:	CONTRACT FOR:	ARCHITECT: ☐
		CONTRACT DATE:	CONTRACTOR: ☐
		PROJECT NOS: / /	FIELD: ☐
			OTHER: ☐

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract.
Continuation Sheet, AIA Document G703, is attached.

1. ORIGINAL CONTRACT SUM ..... $ _____
2. Net change by Change Orders ..... $ _____
3. CONTRACT SUM TO DATE (Line 1 ± 2) ..... $ _____
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703) ..... $ _____
5. RETAINAGE:
   a. _____% of Completed Work (Column D + E on G703) $ _____
   b. _____% of Stored Material (Column F on G703) $ _____
   Total Retainage (Lines 5a + 5b or Total in Column I of G703) ..... $ _____
6. TOTAL EARNED LESS RETAINAGE ..... $ _____
   (Line 4 Less Line 5 Total)
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT ..... $ _____
   (Line 6 from prior Certificate)
8. CURRENT PAYMENT DUE ..... $
9. BALANCE TO FINISH, INCLUDING RETAINAGE
   (Line 3 less Line 6) $ _____

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	$	$
Total approved this Month	$	$
TOTALS	$	$
NET CHANGES by Change Order	$	

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:

By: _____ Date: _____

State of:

County of:

Subscribed and sworn to before me this day of

Notary Public:

My Commission expires:

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED ..... $ _____

(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

ARCHITECT:

By: _____ Date: _____

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract

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User Notes:
(4187600211)

PAYMENT AND PERFORMANCE BOND

(SEE ATTACHED)

FRONT PAGE FOR BOND REQUIRED BY SECTION 255.05, F.S.

PAYMENT AND PERFORMANCE BOND

(Public Works)

Notice and Time Limitations Must Be In Accordance
With Section 255.05(2), (8) and (10), Florida Statutes

BOND NO. _____

PRINCIPAL:
Developer or Contractor: _____
Principal Business Address: _____
_____
Contact Person: _____
Phone Number: _____

SURETY: _____
Address: _____
_____
Contact Person: _____
Phone Number: _____

OWNER: City of Port Orange, Florida, a chartered municipal corporation
1000 City Center Circle
Port Orange, Florida 32129-4144
Contact Person: City Manager
Phone Number: (386) 506-5501

Amount: $_____ **City Case/Project No.** _____

Description of Work: _____

Project Location: _____
Port Orange, Volusia County, Florida

Legal Description: _____

Front Page

All other pages are subsequent to this page regardless of any numbers that may be printed thereon.

[MTR/sal 2015-02-10]

City Project No._____
Bond No._____

COMBINATION PAYMENT AND PERFORMANCE BOND
FOR
PUBLIC CONSTRUCTION

per Section 255.05, Florida Statutes
Guaranty for Construction of Public Improvements

BY THIS BOND, We, _____ as Principal, and _____, a corporation, as Surety, are bound to **CITY OF PORT ORANGE, FLORIDA**, a Florida municipal corporation, herein called "Owner" or sometimes referred to as "City," in the sum of _____**DOLLARS** ($_____), for payment of which we bind ourselves, our heirs, personal representatives, successors, and assigns, jointly and severally.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs the terms of that certain _____ having an effective date of _____, entered into by and between the Principal and the City, for _____, hereinafter referred to as the "Contract," being made a part of this bond by reference, at the times and in the manner prescribed in the Contract; and

2. Promptly makes payments to all claimants, as defined in Section 255.05(1), Florida Statutes, supplying Principal with labor, materials, or supplies, used directly or indirectly by Principal in the prosecution of the work provided for in the Contract (the "Work"); and

3. Pays Owner all losses, damages, delay damages (including contractually authorized liquidated damages), expenses, costs, and attorney's fees, including appellate proceedings, that Owner sustains because of a breach or material breach by Principal under the Contract documents; and

4. Performs the guarantee of all work and materials furnished under the Contract for the time specified in the Contract, then this bond is void; otherwise it remains in full force.

Notice of Nonpayment and Time Limitations

Any action instituted by a claimant under this bond for payment must be in accordance with the notice and time limitation provisions in Sections 255.02(2), (8) and (10), Florida Statutes.

Any changes in or under the contract documents and compliance or noncompliance with any formalities connected with the contract or the changes does not affect Surety's obligation under this bond.

IN WITNESS WHEREOF, this performance and payment bond is executed in duplicate originals, each of which shall be deemed an original, this _____, day of _____, 20__.

Attest:

_____
(Name of Principal)

_____
(As to Corporate Principal) Secretary

By:_____
Name/Title:_____

_____
(Witness to Principal)

(Corporate Seal)

_____
(Surety)

_____
(Witness to Surety)

By:_____
Name:_____
(Attorney-in-Fact)

(Corporate Seal)

NOTE: ***Date of BOND must not be prior to date of Contract.*** *If Developer/Principal is Partnership, all partners should execute BOND. All BONDS signed by an agent must be accompanied by a certified copy of the authority to act.*

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State of Florida.

Additions and Deletions Report for

AIA® Document A133® – 2019

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

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PAGE 1

AGREEMENT made as of the 6 day of November in the year 2024 *(In words, indicate day, month, and year.)*

...

City of Port Orange
1000 City Center Circle
Port Orange, FL 32129

...

Wharton-Smith, Inc.
750 Monroe Road
Sanford, FL 32771

...

Public Utilities Field Operations Facility
City of Port Orange

...

Schenkel Schultz, Inc.
200 East Robinson Street, Suite 300
Orlando, FL 32801

PAGE 2

EXHIBITS

~~EXHIBIT~~ A GUARANTEED MAXIMUM PRICE AMENDMENT

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~~EXHIBIT B INSURANCE AND BONDS~~B INSURANCE AND BONDS

B-1 OWNER'S INSURANCE AND BOND REQUIREMENTS FOR CONSTRUCTION MANAGER

C AIA DOCUMENT A201™–2017, GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION (AS MODIFIED BY OWNER)

D PRECONSTRUCTION PHASE – SCOPE OF SERVICES

E WAIVER AND PARTIAL RELEASES, FINAL WAIVERS AND RELEASES OF LIEN, CONSTRUCTION MANAGER'S AFFIDAVIT OF OUTSTANDING ACCOUNTS, CONSTRUCTION MANAGER'S FINAL AFFIDAVIT

F CONTRACTOR'S COMPLETION CHECKLIST

G APPLICATION FOR PAYMENT

H PAYMENT AND PERFORMANCE BOND

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Provide services described in the Preconstruction Phase Scope of Services attached hereto as Exhibit "D" related to the construction of the City of Port Orange Public Utilities Field Operations Facility that will consist of a 11,500 SF Administration Building, a 12,300 SF Warehouse, and all associated site improvements.

...

See § 1.1 above.

...

To be determined.

...

Pre-Construction Services Start Date: The Date of this Agreement

Construction Drawings shall be completed by: Four (4) months from the date hereof

Pre-Construction Services End Date: Four (4) months from the date hereof

.2 Construction commencement date: The date of execution of the Guaranteed Maximum Price Amendment by both Parties (attached hereto as Exhibit "A").

.3 Substantial Completion date or dates: To be provided and agreed upon by both Parties in the Guaranteed Maximum Price Amendment (attached hereto as Exhibit "A").

~~.4 Other milestone dates:~~

.4 Other milestone dates: To be provided and agreed upon by both Parties in the Guaranteed Maximum Price Amendment (attached hereto as Exhibit "A").

...

NOT APPLICABLE

...

NOT APPLICABLE

§ 1.1.6.1 ~~If the Owner identifies a Sustainable Objective, the Owner and Construction Manager shall complete and incorporate AIA Document E234™ 2019, Sustainable Projects Exhibit, Construction Manager as Constructor Edition, into this Agreement to define the terms, conditions and services related to the Owner's Sustainable Objective. If E234 2019 is incorporated into this agreement, the Owner and Construction Manager shall incorporate the completed E234 2019 into the agreements with the consultants and contractors performing services or Work in any way associated with the Sustainable Objective.~~(Intentionally omitted.)

NOT APPLICABLE

...

Junos Reed, City Engineer

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City of Port Orange
1000 City Center Circle
Port Orange, FL 32129
Phone: 386-506-5757
Email: jureed@port-orange.org

...

NOT APPLICABLE

§ 1.1.10 The Owner ~~shall retain the following consultants and contractors:~~may retain consultants and contractors for each Project.

...

NOT APPLICABLE

...

NOT APPLICABLE

...

NOT APPLICABLE

...

Gay Geiger
Schenkel Schultz, Inc.
200 East Robinson Street, Suite 300
Orlando, FL 32801
Phone: 407-872-3322
Email: ggeiger@schenkelshultz.com

...

James De LaRosa, Project Executive
Wharton-Smith, Inc.
750 Monroe Road
Sanford, FL 32771
Phone: 689-267-8629
Email: jdelarosa@whartonsmith.com
PAGE 5

NOT APPLICABLE

...

The Construction Manager shall seek to develop subcontractor interest in the Project and shall furnish to the Owner and Architect for their information a list of possible subcontractors, including suppliers who are to furnish materials or equipment fabricated to a special design, from whom proposals will be requested for each principal portion of the Work. The Architect will promptly reply in writing to the Construction Manager if the Architect or Owner know of any objection to such subcontractor or supplier. The receipt of such list shall not require the Owner or Architect to investigate the qualifications of proposed subcontractors or suppliers, nor shall it waive the right of the Owner or Architect to object to or reject any proposed subcontractor or supplier within (5) business days of receipt of Construction Manager's list of possible subcontractors. Provided, however, if Owner or Architect object to a subcontractor or supplier, Owner shall be responsible to compensate Construction Manager should there be additional

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cost associated with utilizing Owner or Architect's preferred subcontractor or supplier. Further, Owner or Architect shall not object to a subcontractor or supplier due to the price of the work.

...

See Preconstruction Phase – Scope of Services attached hereto as Exhibit "D".

...

The Contract Documents consist of this Agreement, ~~Conditions of the Contract (General, Supplementary and other~~ the Guaranteed Maximum Price Amendment(s) (attached hereto as Exhibit "A"), the Insurance and Bonds (attached hereto as Exhibit "B" and Exhibit "B-1"), AIA Document A201-2017 General Conditions (as modified by Owner and attached hereto as Exhibit "C") Conditions of the Contract (General Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in § 15.2 of this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract and are as fully a part of the Contract as if attached to this Agreement or repeated herein. Upon the Owner's acceptance of the Construction Manager's Guaranteed Maximum Price proposal, the Contract Documents will also include the documents described in Section 3.2.3 and identified in the Guaranteed Maximum Price Amendment and revisions prepared by the Architect and furnished by the Owner as described in Section 3.2.8. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. If anything in the other Contract Documents, other than a Modification, is inconsistent with this Agreement, this Agreement shall govern. An enumeration of the Contract Documents, other than a Modification, appears in Article 15.
PAGE 6

§ 2.3.1 For the Preconstruction Phase, AIA Document A201™–2017, General Conditions of the Contract for ~~Construction,~~ Construction as modified by Owner (hereinafter "A201-2017"), shall apply as follows: Section 1.5, Ownership and Use of Documents; Section 1.7, Digital Data Use and Transmission; Section 1.8, Building Information Model Use and Reliance; Section 2.2.4, Confidential Information; Section 3.12.10, Professional Services; Section 10.3, Hazardous Materials; Section 13.1, Governing Law. The term "Contractor" as used in A201–2017 shall mean the Construction Manager.

...

The Construction Manager's Preconstruction Phase responsibilities are set forth in Sections 3.1 and 3.2, and in the applicable provisions of A201-2017 referenced in Section 2.3.1. The Construction Manager's Construction Phase responsibilities are set forth in Section 3.3. The Owner and Construction Manager may agree, in consultation with the Architect, for the Construction Phase to commence prior to completion of the Preconstruction Phase, in which case, both phases will proceed concurrently. The Construction Manager shall identify a representative authorized to act on behalf of the Construction Manager with respect to the Project. The standard of care for the professional services performed by the Construction Manager and its Sub-Consultants pursuant to this Agreement shall be the care and skill ordinarily used by members of the same profession practicing under similar conditions at the same time and locality of the Project.

...

The Construction Manager shall exercise reasonable care in performing its Preconstruction Services. The Owner and Architect shall be entitled to rely on, and shall not be responsible for, the accuracy, completeness, and timeliness of services and information furnished by the Construction Manager. The Construction Manager, however, does not warrant or guarantee estimates and schedules except as may be included as part of the Guaranteed Maximum Price. The recommendations and advice of the Construction Manager concerning design alternatives shall be subject to the review and approval of the Owner. The Construction Manager is not required to ascertain that the Drawings and Specifications are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Construction Manager shall promptly report to the Architect and Owner any nonconformity discovered by or made known to the Construction Manager as a request for information in such form as the Architect may require.

...

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§ 3.1.3.3 ~~The Construction Manager shall assist the Owner and Architect in establishing written protocols for the development, use, transmission, reliance, and exchange of digital data, including building information models for the Project.~~(Intentionally omitted.)
PAGE 7

The Construction ~~Manager, in consultation with the Architect, shall provide recommendations with regard to accelerated or fast-track scheduling, procurement, and sequencing for phased construction.~~ Manager shall make recommendations to the Owner and Architect regarding the phased construction of the Work, if such phased construction is appropriate for the Project. The Construction Manager shall take into consideration cost reductions, cost information, constructability, provisions for temporary facilities, and procurement and construction scheduling issues.

...

§ 3.1.6.2 As the Architect progresses with the preparation of the Schematic Design, Design Development and Construction Documents, the Construction Manager shall prepare and ~~update, at~~ updateat appropriate intervals agreed to by the Owner, Construction Manager and Architect, an estimate of the Cost of the Work with increasing detail and refinement. The Construction Manager shall include in the estimate those costs to allow for the further development of the design, price escalation, and market conditions, until such time as the Owner and Construction Manager agree on a Guaranteed Maximum Price for the Work. The estimate shall be provided for the Architect's review and the Owner's approval. The Construction Manager shall inform the Owner and Architect in the event that the estimate of the Cost of the Work exceeds the latest approved Project budget, and make recommendations for corrective action.

§ 3.1.6.3 If the Architect is providing cost estimating services ~~as a Supplemental Service,~~ and a discrepancy exists between the Construction Manager's cost estimates and the Architect's cost estimates, the Construction Manager and the Architect shall work together to reconcile the cost estimates.

...

§ 3.1.9 The Construction Manager shall provide a staffing plan for Preconstruction Phase services at the Owner's request for the Owner's review and approval.

§ 3.1.10 ~~If the Owner identified a Sustainable Objective in Article 1, the Construction Manager shall fulfill its Preconstruction Phase responsibilities as required in AIA Document E234™ 2019, Sustainable Projects Exhibit, Construction Manager as Constructor Edition, attached to this Agreement.~~

...

The Construction Manager shall prepare, for the Architect's review and the Owner's acceptance, a procurement schedule for items that must be ordered in advance of construction. The Construction Manager shall expedite and coordinate the ordering and delivery of materials that must be ordered in advance of construction. If the Owner agrees to procure any items prior to the establishment of the Guaranteed Maximum Price, the Owner shall procure the items on terms and conditions ~~acceptable to the Construction Manager. Upon the establishment of the Guaranteed Maximum Price, the Owner shall assign all contracts for these items to the Construction Manager and the Construction Manager shall thereafter accept responsibility for them.~~as set forth in Section 3.4.5 of the A201-2017 General Conditions.
PAGE 8

NOT APPLICABLE

...

§ 3.2.1 At a time to be mutually agreed upon by the Owner and the Construction Manager, the Construction Manager shall prepare a Guaranteed Maximum Price proposal for the Owner's and Architect's review, and the Owner's acceptance. The Guaranteed Maximum Price in the proposal shall be the sum of the Construction Manager's estimate of the Cost of the Work, the Construction Manager's contingency described in Section 3.2.4, and the Construction

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Manager's Fee described in Section 6.1.2. If the Owner does not accept the Construction Manager's Guaranteed Maximum Price proposal (Exhibit "A") then the Construction Manager shall have no obligation or right to proceed with construction. Owner retains the right to proceed with construction with another construction manager or contractor.

...

.2 A list of allowances and a statement of their basis;

.3 A list of the clarifications and assumptions made by the Construction Manager in the preparation of the Guaranteed Maximum Price proposal, including assumptions under Section 3.2.2;

~~.3~~ .4 A statement of the proposed Guaranteed Maximum Price, including a statement of the estimated Cost of the Work organized by trade categories or systems, including allowances; the Construction Manager's contingency set forth in Section 3.2.4; and the Construction Manager's Fee; and

~~.4~~ .5 The anticipated date of Substantial Completion upon which the proposed Guaranteed Maximum Price is ~~based; and~~based

...

§ 3.2.4 ~~In preparing the Construction Manager's Guaranteed Maximum Price proposal, the Construction Manager shall include a contingency for the Construction Manager's exclusive use to cover those costs that are included in the Guaranteed Maximum Price but not otherwise allocated to another line item or included in a Change Order.~~Contingency

§ 3.2.4.1 Construction Manager's Contingency

The estimated Cost of Work shall include the Construction Manager's Contingency, an amount mutually agreeable between the Construction Manager and Owner, to cover costs arising under Subparagraph 3.2.2, and other costs which are properly reimbursable as Costs of Work, but not the basis for a Change Order. The Construction Manager's Contingency is for the exclusive use of the Construction Manager while executing the construction Work to address unexpected circumstances, force majeure impacts, and to correct unanticipated circumstances which are not otherwise reimbursable and do not constitute a change in the Work, as defined in this Agreement. The Construction Manager's Contingency shall only be adjusted by a written Change Order; and it shall be clearly noted on the Change Order that costs are allocated against the Construction Manager's Contingency. The Construction Manager shall maintain a Contingency tracking log updated each time Construction Manager's contingency funds are used.

§ 3.2.4.2 Buyout Contingency

It is expected that some cost savings between the Construction Manager's Guaranteed Maximum Price (GMP) and the actual Cost of Work may be generated as a result of the final bidding and negotiations of subcontracts. Any cost savings generated as a result of the final bidding or negotiation of subcontracts, and actual expenses by the Construction Manager, which are less than was estimated in establishing the GMP shall be retained by the Owner as the Buyout Contingency. The negotiated fee and general conditions will not be adjusted as result of these savings. The Buyout Contingency shall only be adjusted by means of the Owner issuing a written Change Order and it shall be clearly noted on the Change Order that costs are allocated against the Buyout Contingency. The Construction Manager shall maintain a Buyout Contingency tracking log updated each time Buyout contingency funds are used. The Buyout Contingency remains in the Project until final completion where remaining funds shall be returned to the Owner.

§ 3.2.6 ~~If the Owner notifies the Construction Manager that the Owner has accepted the Guaranteed Maximum Price proposal in writing before the date specified in the Guaranteed Maximum Price proposal, the Guaranteed Maximum Price proposal shall be deemed effective without further acceptance from the Construction Manager.~~ Following acceptance of a Guaranteed Maximum Price, the Owner and Construction Manager shall execute the Guaranteed Maximum Price ~~Amendment~~ Amendment(s) amending this Agreement, a copy of which the Owner shall provide to the Architect. The Guaranteed Maximum Price ~~Amendment~~ Amendment(s) shall set forth the agreed upon Guaranteed Maximum Price with the information and assumptions upon which it is based. The Guaranteed Maximum Price shall be subject to additions and deductions by a change in the Work as provided in the Contract Documents, and the Date of Substantial Completion shall be subject to adjustment as provided in the Contract Documents.

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§ 3.2.7 The Construction Manager shall not incur any cost to be reimbursed as part of the Cost of the Work prior to the execution of the Guaranteed Maximum Price ~~Amendment,~~ Amendment(s), unless the Owner provides prior written authorization for such costs.

§ 3.2.8 The Owner shall authorize ~~preparation of~~ written revisions to the Contract Documents that incorporate the agreed-upon assumptions and clarifications contained in the Guaranteed Maximum Price ~~Amendment.~~ Amendment(s). The Owner shall ~~promptly~~ furnish such revised Contract Documents to the Construction Manager. The Construction Manager shall notify the Owner and Architect of any inconsistencies between the agreed-upon assumptions and clarifications contained in the Guaranteed Maximum Price ~~Amendment and the revised Contract Documents.~~Amendment(s) and the revised Contract Documents and any increase in the Guaranteed Maximum Price, if any.

...

§ 3.3.1.2 The Construction Phase shall commence ~~upon the Owner's execution of the Guaranteed Maximum Price Amendment or, prior to acceptance of the Guaranteed Maximum Price proposal, by written agreement of the parties.~~ as mutually agreed to by the Owner and Construction Manager . The written agreement shall set forth a description of the Work to be performed by the Construction Manager, and any insurance and bond requirements for Work performed prior to execution of the Guaranteed Maximum Price ~~Amendment.~~Amendment(s).
PAGE 10

The Construction Manager shall develop a system of cost control for the Work, including regular monitoring of actual costs for activities in progress and estimates for uncompleted tasks and proposed changes. The Construction Manager shall identify variances between actual and estimated costs and report the variances to the Owner and Architect, and shall provide this information in its monthly ~~reports to the Owner and Architect,~~ reports, and payment applications to the Owner and Architect and make access available via Procore, in accordance with Section 3.3.2.3 above.

§ 3.4 CONSTRUCTION MANAGER'S KEY PERSONNEL
The Construction Manager shall provide accounting of Construction Manager's Consultants, Design Professionals, and Suppliers as set forth in Article A.5 Construction Manager's Key Personnel, of the Guaranteed Maximum Price Amendment(s), Exhibit "A" via the Certificates of Payment Application.

...

§ 4.1.2 ~~Prior to the execution of the Guaranteed Maximum Price Amendment, the Construction Manager may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. After execution of the Guaranteed Maximum Price Amendment, the Construction Manager may request such information as set forth in A201-2017 Section 2.2.~~(Intentionally omitted.)

§ 4.1.3 The Owner shall establish and may periodically update the Owner's budget for the Project, including (1) the budget for the Cost of the Work as defined in Article 7, (2) the Owner's other costs, and (3) reasonable contingencies related to all of these costs. If the Owner significantly increases or decreases the Owner's budget for the Cost of the Work, the Owner shall notify the Construction Manager and Architect. The Owner and the Architect, in consultation with the Construction Manager, shall thereafter agree to a corresponding change in the Project's scope and quality.

...

§ 4.1.4.1 The Owner shall furnish tests, inspections, and reports, required by law and as otherwise agreed to by the parties, such as structural, mechanical, and chemical tests, tests for air and water pollution, and tests for hazardous ~~materials.~~materials with reasonable promptness.

§ 4.1.4.2 The Owner shall furnish surveys with reasonable promptness describing physical characteristics, legal limitations and utility locations for the site of the Project, and a written legal description of the site. The surveys and legal information shall include, as applicable, grades and lines of streets, alleys, pavements and adjoining property and structures; designated wetlands; adjacent drainage; rights-of-way, restrictions, easements, encroachments, zoning, deed restrictions, boundaries and contours of the site; locations, dimensions and other necessary data with respect to existing buildings, other improvements and trees; and information concerning available utility services and lines, both

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public and private, above and below grade, including inverts and depths. All the information on the survey shall be referenced to a Project benchmark.

§ 4.1.4.3 The ~~Owner, when such services are requested, shall~~ Owner may furnish services of geotechnical engineers, which may include test borings, test pits, determinations of soil bearing values, percolation tests, evaluations of hazardous materials, seismic evaluation, ground corrosion tests and resistivity tests, including necessary operations for anticipating subsoil conditions, with written reports and appropriate recommendations.
PAGE 11

§ 4.1.6 ~~If the Owner identified a Sustainable Objective in Article 1, the Owner shall fulfill its responsibilities as required in AIA Document E234™ 2019, Sustainable Projects Exhibit, Construction Manager as Constructor Edition, attached to this Agreement.~~

...

The ~~Owner shall identify a representative authorized to act on behalf of the Owner with respect to the Project. The Owner's representative shall render decisions promptly and furnish information expeditiously, so as to avoid unreasonable delay in the services or Work of the Construction Manager. Except as otherwise provided in Section 4.2.1 of A201–2017, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.~~Owner's Representative is named in § 1.1.8 or designee. The Owner's Representative is authorized to act on Owner's behalf as provided herein and in applicable law, regulation, or ordinance. The Owner's Representative has the authority to reject unsatisfactory work and to stop the work, if necessary, to insure its proper execution. Failure of the Owner's Representative, in any one or more instances, to insist on strict performance of any of the terms of this Contract or to exercise any option herein conferred shall not be construed as a waiver or relinquishment for the future insistence of any such terms or options.

...

The Owner shall retain an Architect to provide services, duties and responsibilities as described in AIA ~~Document B133™–2019,~~ Standard Form of Agreement Between Owner and ~~Architect, Construction Manager as Constructor Edition, including any additional services requested by the Construction Manager that are necessary for the Preconstruction and Construction Phase services under this Agreement. The Owner shall provide the Construction Manager with a copy of the scope of services in the executed agreement between the Owner and the Architect, and any further modifications to the Architect's scope of services in the agreement.~~Architect.

...

Preconstruction Services will be set at a stipulated sum of One Hundred Sixteen Thousand Nine Hundred Thirty-Two Dollars and Zero Cents ($116,932.00).

...

WSI Wage Rate - 2024

~~Individual or Position~~ ~~Rate~~

Position	Name of Person Filing Role	Total Rate
Project Director	To Be Determined	$161.00
CMAR Manager	To Be Determined	$169.00
Executive Management	James De La Rosa	$169.00
Senior Project Manager	Keri Strawder	$151.00
Project Manager	To Be Determined	$130.00
Assistant Project Manager	To Be Determined	$112.00
Project Engineer	To Be Determined	$84.00
Project Engineer – Intern	To Be Determined	$51.00
General Superintendent	Tim Moore	$163.00
Senior Superintendent	To Be Determined	$152.00

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Superintendent	To Be Determined	$131.00
Assistant Superintendent	To Be Determined	$118.00
Field Engineer	To Be Determined	$89.00
Administrative Assistant	Jennifer Butcher	$83.00
Safety Manager	Travis Chaput	$118.00
Project Accountant	To Be Determined	$105.00

§ 5.1.3 ~~If the Preconstruction Phase services covered by this Agreement have not been completed within ( ) months of the date of this Agreement, through no fault of the Construction Manager, the Construction Manager's compensation for Preconstruction Phase services shall be equitably adjusted.~~Compensation for Preconstruction Phase Services shall be equitably adjusted if such services extend beyond one hundred twenty (120) calendar days from the date of this Agreement or if the originally contemplated scope of services is significantly modified.

...

§ 5.2.2 Payments are due and payable thirty (30) days upon presentation of the Construction Manager's invoice. ~~Amounts unpaid ( ) days after the invoice date shall bear interest at the rate entered below, or in the absence thereof at the legal rate prevailing from time to time at the principal place of business of the Construction Manager.~~

- Proposed Start Date: Pre-Construction Services: August 7, 2024

~~(Insert rate of monthly or annual interest agreed upon.)~~

- Proposed End Date : Pre-Construction Services: October 2024 (estimated)

~~%~~

...

§ 6.1.1 ~~The~~ If the Owner accepts the Construction Manager's Contract Sum for construction and executes Exhibit "A", then the Owner shall pay the Construction Manager the Contract Sum in current funds for the Construction Manager's performance of the Contract after execution of the Guaranteed Maximum Price ~~Amendment.~~ Amendment(s). The Contract Sum is the Cost of the Work as defined in Article 7 plus the Construction Manager's Fee.

...

Eight and a half percent (8.5%) of the Cost of the Work.

...

In the event of Owner directed changes, the Construction Manager's Fee shall be eight and a half percent (8.5%) of the increase in the Cost of Work for the changes.

...

Subcontractors increased costs of work for Owner directed changes shall include five percent (5%) overhead and five percent (5%) profit.

§ 6.1.5 Rental rates for Construction Manager-owned equipment shall not exceed ~~percent (%) of~~ the standard rental rate paid at the place of the Project.

...

The Owner and Construction Manager acknowledge and agree that it would be difficult to determine, with any reasonable degree of certainty, the amount of damages which the Owner would sustain in the event that the Construction Manager fails to attain Substantial Completion of the Work on or before the date established. The Construction Manager acknowledges and understands that failure to fully complete the Work within the aforesaid time periods will result in substantial loss and damages suffered by the Owner. Therefore, if the Construction Manager shall neglect, fail, or refuse to complete the Work within the Contract Time, or any proper extension thereof granted by the Owner in a properly executed Change Order, the Construction Manager agrees to pay the Owner liquidated damages

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in the amount(s) of $500 for each and every calendar day that the Construction Manager shall be in default for untimely completion after expiration of the Contract Time for Substantial Completion. However, liquidated damages shall be limited to and not exceed the fee earned by the Construction Manager in order for the liquidated damages to not be deemed a penalty. Such payments shall constitute liquidated damages, not a penalty, and shall be cumulative, it being understood and agreed by the Construction Manager that the Owner's actual damages in the event of a delay in Substantial Completion would be difficult, if not impossible, to determine. Time is of the essence of this Agreement. Any such liquidated damages may, at the option of the Owner, be withheld and deducted from any unpaid portion of the Guaranteed Maximum Price. Liquidated damages shall be the sole and exclusive remedy for delay.
PAGE 13

NOT APPLICABLE

...

The Construction Manager guarantees that the Contract Sum shall not exceed the Guaranteed Maximum Price set forth in the Guaranteed Maximum Price ~~Amendment,~~ Amendment(s), subject to additions and deductions by Change Order as provided in the Contract Documents. Costs which would cause the Guaranteed Maximum Price to be exceeded shall be paid by the Construction Manager without reimbursement by the Owner.

...

§ 6.3.1 The Owner may, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions. The Owner shall issue such changes in writing. The Construction Manager may be entitled to an equitable adjustment in the Contract Time and/or Guaranteed Maximum Price as a result of changes in the Work.
PAGE 14

§ 7.2.2 ~~Wages or salaries of the Construction Manager's supervisory and administrative personnel when stationed at the site and performing Work, with the Owner's prior approval.~~ (Intentionally omitted.)

§ 7.2.2.1 ~~Wages or salaries of the Construction Manager's supervisory and administrative personnel when performing Work and stationed at a location other than the site, but only for that portion of time required for the Work, and limited to the personnel and activities listed below:~~
~~*(Identify the personnel, type of activity and, if applicable, any agreed upon percentage of time to be devoted to the Work.)*~~

(Intentionally Omitted.)
PAGE 15

§ 7.5.5 Costs of materials and equipment suitably stored off the site at a mutually acceptable location, subject to the Owner's prior approval. Off-site storage shall be in a bonded and insured facility approved by the Owner.

...

§ 7.6.1.1 Costs for self-insurance, for either full or partial amounts of the coverages required by the Contract Documents, with the Owner's prior approval. Coverages and costs must be disclosed in the Guaranteed Maximum Price Proposal and accepted by the Owner in the Guaranteed Maximum Price Amendment(s).

...

§ 7.6.5.1 The cost of defending suits or claims for infringement of patent rights arising from requirements of the Contract Documents, payments made in accordance with legal judgments against the Construction Manager resulting from such suits or claims, and payments of settlements made with the Owner's ~~consent, unless the Construction Manager had reason to believe that the required design, process, or product was an infringement of a copyright or a patent, and the Construction Manager failed to promptly furnish such information to the Architect as required by Article 3 of AIA Document A201–2017.~~ consent. The costs of legal defenses, judgments, and settlements shall not be

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included in the Cost of the Work used to calculate the Construction Manager's Fee or subject to the Guaranteed Maximum Price.

...

§ 7.6.8 ~~Deposits lost for causes other than the Construction Manager's negligence or failure to fulfill a specific responsibility in the Contract Documents.~~(Intentionally omitted.)

§ 7.6.9 ~~Legal, mediation and arbitration costs, including attorneys' fees, other than those arising from disputes between the Owner and Construction Manager, reasonably incurred by the Construction Manager after the execution of this Agreement in the performance of the Work and with the Owner's prior approval, which shall not be unreasonably withheld.~~(Intentionally omitted.)

§ 7.6.10 ~~Expenses incurred in accordance with the Construction Manager's standard written personnel policy for relocation and temporary living allowances of the Construction Manager's personnel required for the Work, with the Owner's prior approval.~~(Intentionally omitted.)

§ 7.6.11 That portion of the reasonable expenses of the Construction Manager's supervisory or administrative personnel incurred while traveling outside the Sanford area in discharge of duties connected with the Work.

PAGE 16

§ 7.7.3 ~~Costs of repairing or correcting damaged or nonconforming Work executed by the Construction Manager, Subcontractors, or suppliers, provided that such damaged or nonconforming Work was not caused by the negligence of, or failure to fulfill a specific responsibility by, the Construction Manager, and only to the extent that the cost of repair or correction is not recovered by the Construction Manager from insurance, sureties, Subcontractors, suppliers, or others.~~Notwithstanding anything herein to the contrary, no costs shall be paid by the Owner to the Construction Manager for any expenses made necessary to correct defective workmanship or to correct any Work not in conformance with the Contract Documents or to correct any deficiency or damage caused by negligent acts by the Construction Manager as determined by the Architect.

...

.8 Costs, other than costs included in Change Orders approved by the Owner, that would cause the Guaranteed Maximum Price to be exceeded; ~~and~~

.9 Costs for services incurred during the Preconstruction ~~Phase.~~Phase;

.10 Rental costs of machinery and equipment, except as specifically provided in Section 7.5.2.; and

.11 Legal costs of whatever nature.

PAGE 17

§ 9.1 The Construction Manager shall obtain bids on all of the Work, including obtaining third party bids on any work the Construction Manager desires to self-perform. Those portions of the Work that the Construction Manager does not customarily perform with the Construction Manager's own personnel shall be performed under subcontracts or other appropriate agreements with the Construction Manager. The Owner may designate specific persons from whom, or entities from which, the Construction Manager shall obtain bids. The Construction Manager shall obtain bids from Subcontractors, and from suppliers of materials or equipment fabricated especially for the Work, who are qualified to perform that portion of the Work in accordance with the requirements of the Contract Documents. ~~The~~ Upon request by Owner, Construction Manager shall deliver such bids ~~to the Architect and Owner with an indication as to which bids the Construction Manager intends to accept.~~ and bid tabulations to the Architect and Owner within a reasonable period of time. The Owner then has the right to review the Construction Manager's list of proposed subcontractors and suppliers in consultation with the Architect and, subject to Section 9.1.1, to object to any subcontractor or ~~supplier.~~ supplier within (5) five business days. Any advice of the Architect, or approval or objection by the Owner, shall not relieve the Construction Manager of its responsibility to perform the Work in accordance with the Contract Documents. The Construction Manager shall not be required to contract with anyone to whom the Construction Manager has reasonable objection. Copies of executed contracts, subcontracts and supplier contracts shall be provided by the Construction Manager to the Owner within a reasonable time period.

...

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§ 11.1.1 Based upon Applications for Payment submitted to the Architect by the Construction Manager, and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum, to the Construction Manager, as provided below and elsewhere in the Contract ~~Documents.~~Documents, and in conformance with Florida's Prompt Payment Statutes.

§ 11.1.2 ~~The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:~~

(Intentionally omitted.)

§ 11.1.3 Provided that an Application for Payment is received by the Architect not later than the 25th day of a month, the Owner shall make payment of the amount certified to the Construction Manager not later than the 25th day of the following month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than ~~(—)~~ thirty (30) days after the Architect receives the Application for Payment.

PAGE 18

§ 11.1.4 With each Application for Payment, the Construction Manager shall submit ~~payrolls, petty cash accounts,~~ receipted invoices or invoices with check vouchers attached, each subcontractor's application for payment and or invoice, affidavits, lien waivers and such other documents required by Article 9 of A201-2017 and any other evidence required by the Owner or Architect to demonstrate that payments already made by the Construction Manager on account of the Cost of the Work equal or exceed progress payments already received by the Construction ~~Manager, plus payrolls for the period covered by the present Application for Payment,~~ Manager less that portion of the progress payments attributable to the Construction Manager's Fee.

...

§ 11.1.5.1 The schedule of values shall be prepared in such form and supported by such data to substantiate its accuracy as the Architect and the Owner may require. Submission of the schedule of values shall be a representation by the Construction Manager that the values scheduled therein are accurate and for subcontracted work, match the applicable subcontract amounts. Any inaccuracies shall be corrected immediately by the Construction Manager so as to maintain the accuracy of the schedule of values. The schedule of values shall be used as a basis for reviewing and processing the Construction Manager's Applications for Payment.

...

.2 That portion of the Guaranteed Maximum Price properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction or, if approved in writing in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and

.3 ~~That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified; and~~

~~.4~~ The Construction Manager's Fee, computed upon the Cost of the Work described in the preceding Sections 11.1.7.1.1 and 11.1.7.1.2 at the rate stated in Section 6.1.2 or, if the Construction Manager's Fee is stated as a fixed sum in that Section, an amount that bears the same ratio to that fixed-sum fee as the Cost of the Work included in Sections 11.1.7.1.1 and 11.1.7.1.2 bears to a reasonable estimate of the probable Cost of the Work upon its completion.

PAGE 19

Five percent (5%)

...

Insurance, bonds, and general conditions.

...

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See § 11.1.8.1 above.

...

§ 11.1.11 The Owner and the Construction Manager shall agree upon a mutually acceptable procedure for review and approval of payments to ~~Subcontractors, and the percentage of retainage held on Subcontracts, and the Construction Manager shall execute subcontracts in accordance with those agreements.~~Subcontractors.

PAGE 20

.1 the Construction Manager has fully performed the Contract, except for the Construction Manager's responsibility to correct Work reported on the Owner provided Certificate of Substantial Completion, and as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment;

.2 the Construction Manager has submitted a final accounting for the Cost of the Work and a final Application for Payment;

.3 the Construction Manager's application for Final Payment has been certified by the Architect and submitted to the Owner with all warranties, guarantees, close out documents including Consent of Surety to Final Payment (, and receipt by Owner of Contractor's Final Payment Affidavit, Conditional Final Release of Lien upon receipt of final payment Construction Manager shall submit Unconditional Final Release of Lien, manufacturers' manuals of operation and any other items required under the Contract Documents. Complete as-built drawings in paper document and digital PDF format (scan document file acceptable) submitted to and accepted by the Architect for production of the final Project record documents; and

~~.3~~ .4 a final Certificate for Payment has been issued by the Architect in accordance with Section ~~11.2.2.2.~~11.2.2.2; and

.5 in accordance with applicable Florida Prompt Payment Statutes

...

§ 11.2.2.4 The amount of the final payment shall be calculated as follows:

.1 Take the sum of the Cost of the Work substantiated by the Construction Manager's final accounting and the Construction Manager's Fee, but not more than the Guaranteed Maximum Price.

.2 Subtract amounts, if any, for which the Architect withholds, in whole or in part, a final Certificate for Payment as provided in Section 9.5.1 of A201-2017 or other provisions of the Contract Documents.

.3 Subtract the aggregate of previous payments made by the Owner.

.4 If the aggregate of previous payments made by the Owner exceeds the amount due the Construction Manager, the Construction Manager shall reimburse the difference to the Owner.

PAGE 21

§ 11.2.4 If, subsequent to final payment, and at the Owner's request, the Construction Manager incurs costs, described in Sections 7.1 through 7.7, and not excluded by Section 7.9, ~~to correct defective or nonconforming Work,~~ the Owner shall reimburse the Construction Manager for such ~~costs, and the Construction Manager's Fee~~ costs applicable thereto, on the same basis as if such costs had been incurred prior to final payment, but not in excess of the Guaranteed Maximum Price. ~~If adjustments to the Contract Sum are provided for in Section 6.1.7, the amount of those adjustments shall be recalculated, taking into account any reimbursements made pursuant to this Section 11.2.4 in determining the net amount to be paid by the Owner to the Construction Manager.~~

...

~~%~~ 4.5% annually

...

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The parties expressly agree to opt out of the provisions of Section 558.05, Florida Statutes. The provisions of Chapter 558, Florida Statutes shall not apply to this Agreement.

...

§ 12.1.2 The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017 for Claims arising from or relating to the Construction Manager's Construction Phase ~~services, unless the parties appoint below another individual, not a party to the Agreement, to serve as the Initial Decision Maker.~~services.

...

For any Claim subject to, but not resolved by mediation pursuant to and set forth in Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:

...

~~[ ] Arbitration pursuant to Article 15 of AIA Document A201–2017~~

[X] Litigation in a court of competent jurisdiction

~~[ ] Other: *(Specify)*~~

If the Owner and Construction Manager do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

§ 12.2.1 The Parties expressly waive any and all right to trial by jury in any action filed by either Party or parties.
PAGE 22

§ 13.1.6.1 If the Owner accepts assignment of subcontracts, purchase orders or rental agreements as described above, the Owner will reimburse or indemnify the Construction Manager for all costs arising under the subcontract, purchase order or rental agreement, if those costs would have been reimbursable as Cost of the Work if the contract had not been terminated. If the Owner chooses not to accept assignment of any subcontract, purchase order or rental agreement that would have constituted a Cost of the Work had this agreement not been terminated, the Construction Manager will terminate the subcontract, purchase order or rental agreement and the Owner will pay the Construction Manager the costs necessarily incurred by the Construction Manager because of such ~~termination.~~termination not including attorneys' fees.

§ 13.1.6.2 In no event shall the Owner be liable to Construction Manager for anticipated fee or profit for Work not performed.
PAGE 23

The amount of Construction Manager's fee earned as of the date of termination, the cost of the Work completed up to date of completion, and reasonable termination expenses but not overhead or profit on uncompleted work.

...

The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017; in such case, the Guaranteed Maximum Price and Contract ~~Time~~ Time, if established, shall be increased as provided in Article 14 of AIA Document A201–2017, except that the term "profit" shall be understood to mean the Construction Manager's Fee as described in Sections 6.1 and 6.3.5 of this Agreement.

...

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§ 14.2.1 The Owner and Construction Manager, respectively, bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 14.2.2 of this Agreement, and in Section 13.2.2 of A201–2017, neither party to the Contract shall assign the Contract as a whole or in part without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

...

§ 14.3.1.1 Commercial General Liability with policy limits of not less than three million dollars and zero cents ($ 3,000,000.00) for each occurrence and five million dollars and zero cents ($ 5,000,000.00) in the aggregate for bodily injury and property damage.

§ 14.3.1.2 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Construction Manager with policy limits of not less than three million dollars and zero cents ($ 3,000,000.00) per accident for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles, along with any other statutorily required automobile coverage.

§ 14.3.1.4 Workers' Compensation at statutory limits as required by Chapter 440 F.S., and Employers Liability with policy limits not less than one million dollars and zero cents ($ 1,000,000.00) each accident, one million dollars and zero cents ($ 1,000,000.00) each employee, and one million dollars and zero cents ($ 1,000,000.00) policy limit.

§ 14.3.1.5 Professional Liability covering negligent acts, errors and omissions in the performance of professional services, with policy limits of not less than three million dollars and zero cents ($ 3,000,000.00) per claim and three million dollars and zero cents ($ 3,000,000.00) in the aggregate.

...

See Exhibits "B" and "B-1".

§ 14.3.1.7 Additional Insured Obligations. To the fullest extent permitted by law, the Construction Manager shall cause the primary and excess or umbrella ~~policies~~ polices for Commercial General Liability and Automobile Liability to include the Owner as an additional insured for claims caused in whole or in part by the Construction Manager's negligent acts or omissions. The additional insured coverage shall be primary and non-contributory to any of the Owner's insurance policies and shall apply to both ongoing and completed operations.

...

After execution of the Guaranteed Maximum Price Amendment, the Owner and the Construction Manager shall purchase and maintain insurance as set forth in ~~AIA Document A133™–2019, Standard Form of Agreement Between Owner and Construction Manager as Constructor where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price, Exhibit B,~~ Exhibit "B", Insurance and Bonds, and elsewhere in the Contract Documents.

~~§ 14.3.2.1 The Construction Manager shall provide bonds as set forth in AIA Document A133™–2019 Exhibit B, and elsewhere in the Contract Documents.~~

§ 14.4 ~~Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with a building information modeling exhibit, if completed, or as otherwise set forth below:~~
~~*(If other than in accordance with a building information modeling exhibit, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)*~~

During the Construction Phase, Construction Manager shall provide insurance as required in Exhibit "B" and Exhibit "B-1".

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...

CHAPTER 558 NOTICE OF CLAIM

CHAPTER 558, FLORIDA STATUTES, CONTAINS IMPORTANT REQUIREMENTS YOU MUST FOLLOW BEFORE YOU MAY BRING ANY LEGAL ACTION FOR AN ALLEGED CONSTRUCTION DEFECT. SIXTY DAYS BEFORE YOU BRING ANY LEGAL ACTION, YOU MUST DELIVER TO THE OTHER PARTY TO THIS CONTRACT A WRITTEN NOTICE, REFERRING TO CHAPTER 558, OF ANY CONSTRUCTION CONDITIONS YOU ALLEGE ARE DEFECTIVE AND PROVIDE SUCH PERSON THE OPPORTUNITY TO INSPECT THE ALLEGED CONSTRUCTION DEFECTS AND TO CONSIDER MAKING AN OFFER TO REPAIR OR PAY FOR THE ALLEGED CONSTRUCTION DEFECTS. YOU ARE NOT OBLIGATED TO ACCEPT ANY OFFER WHICH MAY BE MADE. THERE ARE STRICT DEADLINES AND PROCEDURES UNDER THIS FLORIDA LAW WHICH MUST BE MET AND FOLLOWED TO PROTECT YOUR INTERESTS.

No person or entity shall be deemed to be a third party beneficiary of any provisions of the Contract, nor shall any provisions thereof be interpreted to create a right of action or otherwise permit anyone not a signatory party to the Contract to maintain an action for personal injury or property damage.

.1 AIA Document ~~A133™–2019,~~ A133™–2019 (as modified by Owner), Standard Form of Agreement Between Owner and Construction Manager as Constructor where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price

...

.4 AIA Document A201™–2017, General Conditions of the Contract for Construction (as modified by Owner), Exhibit "C"

.5 ~~Building Information Modeling Exhibit, if completed:~~

~~.6 Other Exhibits:~~
~~*(Check all boxes that apply.)*~~

~~[ ] AIA Document E234™–2019, Sustainable Projects Exhibit, Construction Manager as Constructor Edition, dated as indicated below:~~
~~*(Insert the date of the E234-2019 incorporated into this Agreement.)*~~

~~_____~~

~~[ ] Supplementary and other Conditions of the Contract:~~

~~Document~~	~~Title~~	~~Date~~	~~Pages~~

~~.7 Other~~ documents, if any, listed below:

...

Exhibit "A" AIA Document A133™-2019, Exhibit A, Guaranteed Maximum Price Amendment, if executed by the Parties

Exhibit "B" AIA Document A133™–2019, Exhibit B, Insurance and Bonds

Exhibit "B-1" Owner's Insurance and Bond Requirements for Construction Manager

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Exhibit "C"	AIA Document A201™–2017, General Conditions of the Contract for Construction (as modified by Owner)
Exhibit "D"	Preconstruction Phase – Scope of Services
Exhibit "E"	Waiver and Partial Releases, Final Waivers and Releases of Lien, Construction Manager's Affidavit of Outstanding Accounts, Construction Manager's Final Affidavit
Exhibit "F"	Contractor's Completion Checklist
Exhibit "G"	Application for Payment
Exhibit "H"	Payment and Performance Bond

SIGNATURES

This Agreement may be executed in counterparts, each of which shall constitute an original and all of which shall constitute one and the same instrument. In the event the Parties hereto execute and deliver this Agreement by signing and delivery using facsimile or e-mail transmission, such signing and delivery of facsimile signatures shall be effective and shall have the same effect as if original signatures were delivered. The Parties each stipulate and agree that for the purposes of validity, enforceability, and admissibility, this Agreement may be signed electronically and that a photocopy, facsimile, scanned Portable Document Format ("PDF") image or image generated through the electronic DocuSign© program shall have the same force and effect as an original signature. If both Parties are unable to sign electronically, each Party shall execute at least two (2) originals in blue ink, of which one is to be delivered to the Architect and the remainder to the Owner.

CITY OF PORT ORANGE **WHARTON-SMITH, INC.**

...

WITNESS *(Signature)*

(Printed name and title)

WITNESS *(Signature)*

(Printed name and title)

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Additions and Deletions Report for

AIA® Document A133® – 2019 Exhibit A

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To be completed by Construction Manager after completion of Construction Drawings and submitted to Owner for Approval.

This **Exhibit "A" Guaranteed Maximum Price Amendment dated the _____day of _____in the year _____,** is incorporated into the accompanying **AIA Document A133™–2019, Standard Form of Agreement Between Owner and Construction Manager as Constructor** where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price **dated the _____day of _____in the year** ~~(the "Agreement")~~ _____(the "Agreement").

...

Public Utilities Field Operations Facility
City of Port Orange

...

City of Port Orange
1000 City Center Circle
Port Orange, FL 32129

...

Wharton-Smith, Inc.
750 Monroe Road
Sanford, FL 32771

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A.4 INSURANCE AND BONDS

A.5 CONSTRUCTION MANAGER'S CONSULTANTS, CONTRACTORS, DESIGN PROFESSIONALS, AND SUPPLIERS
A.6 POTENTIALLY TIME AND PRICE IMPACTED MATERIAL

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Pursuant to Section 3.2.6 of the Agreement, the Owner and Construction ~~Manager~~ Manager, for the Project referenced above, hereby amend the Agreement to establish a Guaranteed Maximum Price. As agreed by the Owner and Construction Manager, the Guaranteed Maximum Price is an amount that the Contract Sum shall not exceed. The Contract Sum consists of the Construction Manager's Fee plus the Cost of the Work, as that term is defined in Article 6 of the Agreement.

§ A.1.1.1 The Contract Sum is guaranteed by the Construction Manager not to exceed ($), subject to additions and deductions by Change Order as provided in the Contract ~~Documents.~~Documents, and subject to Article A.6 below.

...

§ A.1.1.5.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this **Exhibit** ~~A.~~ "A". Upon acceptance, the Owner shall issue a Modification to the Agreement.

...

[X] Established as follows:

...

The Construction Manager shall commence construction of the Project within ten (10) days of the written Notice to Proceed from the Architect. All Work shall be properly completed in accordance with the terms of the A133 - 2019 Standard Form of Agreement as modified by Owner, A201 – 2017 General Conditions as modified by Owner, and this Guaranteed Maximum Price Amendment and shall be completed within the Contract Time. Except as modified herein, the A133 - 2019 Standard Form of Agreement and A201 – 2017 General Conditions as modified by Owner shall remain in full force and effect.

PAGE 4

(Check ~~one of~~ the following boxes and complete the necessary information.)

...

[X] By the following date:

...

...

§ A.2.3.4 The Owner and Construction Manager acknowledge and agree that it would be difficult to determine, with any reasonable degree of certainty, the amount of damages which the Owner would sustain in the event that the Construction Manager fails to attain Substantial Completion of the Work on or before the date established. The Construction Manager acknowledges and understands that failure to fully complete the Work within the aforesaid time periods will result in substantial loss and damages suffered by the Owner. Therefore, if the Construction Manager shall neglect, fail, or refuse to complete the Work within the Contract Time, or any proper extension thereof granted by the Owner in a properly executed Change Order, the Construction Manager agrees to pay the Owner liquidated damages in the amount of $500 for each and every calendar day that the Construction Manager shall be in default for untimely completion after expiration of the Contract Time for Substantial Completion. Such payments shall constitute liquidated damages, not a penalty, and shall be cumulative, it being understood and agreed by the Construction Manager that the Owner's actual damages in the event of a delay in Substantial Completion would be difficult, if not

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impossible, to determine. Time is of the essence of this Agreement. Any such liquidated damages may, at the option of the Owner, be withheld and deducted from any unpaid portion of the Guaranteed Maximum Price.

PAGE 5

~~Other identifying information:~~

...

§ A.3.1.7 The Guaranteed Maximum Price is based upon the following ~~other documents and information:~~Construction Manager's Project Schedule:

...

~~ARTICLE A.4 CONSTRUCTION MANAGER'S CONSULTANTS, CONTRACTORS, DESIGN PROFESSIONALS, AND SUPPLIERS~~

ARTICLE A.4 INSURANCE AND BONDS

§ A.4.1 The Construction Manager shall ~~retain the consultants, contractors, design professionals, and suppliers, identified below:~~purchase and maintain insurance and bonds as set forth in **Exhibit "B"** and **Exhibit "B-1"**, made part of this Guaranteed Maximum Price Amendment, and elsewhere in the Contract Documents. Payment and Performance Bonds shall be in the amount of the Contract Sum and shall be in the form attached hereto as **Exhibit "H"** to the Agreement.

ARTICLE A.5 CONSTRUCTION MANAGER'S CONSULTANTS, CONTRACTORS, DESIGN PROFESSIONALS, AND SUPPLIERS

§ A.5.1 The Construction Manager shall disclose all consultants, contractors, design professionals, and suppliers to the Owner throughout the Project as services are retained.
(List name, discipline, address, and other information.)

ARTICLE A.6 POTENTIALLY TIME AND PRICE IMPACTED MATERIAL

As of the date of this Agreement, certain markets providing essential materials to the Project are experiencing or are expected to experience significant, industry-wide economic fluctuation during the performance of this Agreement that may impact price, availability and delivery time frames ("Potentially Time Impacted Material").

§ A.6.1 DIRECT COST PRICE AND TIME: Owner and Construction Manager shall agree upon a method for establishing the market price as of the date of this Agreement ("Direct Cost Price") and the method for calculating an adjustment in the pricing for Potentially Time and Price Impacted Materials.

§ A.6.2 ADJUSTMENT IN DIRECT COST PRICE: If during the course of the Project a Potentially Time and Price Impacted Material item experiences an increase or decrease in its Direct Cost Price, not to exceed nine percent (9%) of the Direct Cost Price, either Party may notify the other in writing for an equitable adjustment to the Contract Price, not to exceed nine percent (9%) of the Direct Cost Price, arises and shall provide appropriate documentation substantiating such adjustment. An adjustment in the pricing for a Potentially Time and Price Impacted Material shall not include any amount for overhead and profit.

§ A.6.2.1 In the event of a decrease in a Direct Cost Price, the Contract Price shall be equitably adjusted to reflect such decrease, but only for those Potentially Time and Price Impacted Materials delivered on or after the date on which written notice of the adjusted Direct Cost Price is given.

§ A.6.2.2 In the event of an increase in a Direct Cost Price, the Contract Price shall be equitably adjusted to reflect such increase, but only for those Potentially Time and Price Impacted Materials delivered on or after the date on which written notice of the adjustment in Direct Cost Price. Such increase in the Guaranteed Maximum Price shall not

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exceed none percent (9%). Potentially Time and Price Impacted Materials shall not be delivered to the site prior to written acceptance of increase.

§ A.6.2.3 No adjustment shall be made for any quantities of Potentially Time and Price Impacted Materials scheduled for delivery under the terms of this Agreement prior to the date on which written notice of the adjustment in the Direct Cost Price is given, unless the failure to deliver such quantities before that date is beyond the control of and without the fault of the Contractor, its Subcontractors and Material Suppliers.

§ A.6.2.4 Payment, if any, for an adjustment shall be made in accordance with the change order terms of the Agreement.

§ A.6.3 TIME IMPACT AND AVAILABILITY: If the Construction Manager is delayed at any time in the commencement or progress of the Work due to delay in the delivery of, or unavailability of, a Potentially Time and Price Impacted Material, beyond the control of and without fault of the Construction Manager, its Subcontractors and Material Suppliers, the Construction Manager shall be entitled to an equitable extension of the Contract Time and an equitable adjustment to the Contract Price, not to exceed nine (9%) of the Guaranteed Maximum Price. Owner and Construction Manager shall undertake reasonable steps to mitigate the effects of such delays.

SIGNATURES

This Agreement may be executed in counterparts, each of which shall constitute an original and all of which shall constitute one and the same instrument. In the event the Parties hereto execute and deliver this Agreement by signing and delivery using facsimile or e-mail transmission, such signing and delivery of facsimile signatures shall be effective and shall have the same effect as if original signatures were delivered. The Parties each stipulate and agree that for the purposes of validity, enforceability, and admissibility, this Agreement may be signed electronically and that a photocopy, facsimile, scanned Portable Document Format ("PDF") image or image generated through the electronic DocuSign© program shall have the same force and effect as an original signature. If both Parties are unable to sign electronically, each Party shall execute at least two (2) originals in blue ink, of which one is to be delivered to the Architect and the remainder to the Owner.

This Amendment to the Agreement entered into as of the day and year first written above.

CITY OF PORT ORANGE **WHARTON-SMITH, INC.**

WITNESS *(Signature)*

(Printed name and title)

WITNESS *(Signature)*

(Printed name and title)

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(Insurance and Bonds Requirements are also stated in Exhibit "B-1")

This Insurance and Bonds Exhibit is part of the Agreement, between the Owner and the Construction Manager, dated the _____day of _____in the year _____. *(In words, indicate day, month and year.)*

...

Public Utilities Field Operations Facility
City of Port Orange

...

(Name, legal status, and address)

City of Port Orange
1000 City Center Circle
Port Orange, FL 32129

...

Wharton-Smith, Inc.
750 Monroe Road
Sanford, FL 32771

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B.2 ~~OWNER'S INSURANCE~~(INTENTIONALLY OMITTED.)

...

The Owner and Construction Manager shall purchase and maintain insurance, and provide bonds, as set forth in this ~~Exhibit.~~ Exhibit "B" and "B-1". In the event of all conflict between this Exhibit "B" and Exhibit "B-1", the provisions of Exhibit "B" shall control.. As used in this Exhibit, the term General Conditions refers to AIA Document A201™–2017, General Conditions of the Contract for Construction.

~~ARTICLE B.2 OWNER'S INSURANCE~~

~~§ B.2.1 General~~

~~Prior to commencement of the Work, the Owner shall secure the insurance, and provide evidence of the coverage, required under this Article B.2 and, upon the Construction Manager's request, provide a copy of the property insurance policy or policies required by Section B.2.3. The copy of the policy or policies provided shall contain all applicable conditions, definitions, exclusions, and endorsements.~~

~~§ B.2.2 Liability Insurance~~

~~The Owner shall be responsible for purchasing and maintaining the Owner's usual general liability insurance.~~

~~§ B.2.3 Required Property Insurance~~

~~§ B.2.3.1 Unless this obligation is placed on the Construction Manager pursuant to Section B.3.3.2.1, the Owner shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, property insurance written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis. The Owner's property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed and materials or equipment supplied by others. The property insurance shall be maintained until Substantial Completion and thereafter as provided in Section B.2.3.1.3, unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this Agreement. This insurance shall include the interests of the Owner, Construction Manager, Subcontractors, and Sub-subcontractors in the Project as insureds. This insurance shall include the interests of mortgagees as loss payees.~~

~~§ B.2.3.1.1 Causes of Loss. The insurance required by this Section B.2.3.1 shall provide coverage for direct physical loss or damage, and shall not exclude the risks of fire, explosion, theft, vandalism, malicious mischief, collapse, earthquake, flood, or windstorm. The insurance shall also provide coverage for ensuing loss or resulting damage from error, omission, or deficiency in construction methods, design, specifications, workmanship, or materials. Sub-limits, if any, are as follows:~~

~~*(Indicate below the cause of loss and any applicable sub-limit.)*~~

ARTICLE B.2 (INTENTIONALLY OMITTED.)

~~Cause of Loss~~	~~Sub-Limit~~

~~§ B.2.3.1.2 Specific Required Coverages. The insurance required by this Section B.2.3.1 shall provide coverage for loss or damage to falsework and other temporary structures, and to building systems from testing and startup. The insurance shall also cover debris removal, including demolition occasioned by enforcement of any applicable legal requirements, and reasonable compensation for the Architect's and Construction Manager's services and expenses required as a result of such insured loss, including claim preparation expenses. Sub-limits, if any, are as follows:~~
~~*(Indicate below type of coverage and any applicable sub-limit for specific required coverages.)*~~

~~Coverage~~	~~Sub-Limit~~

~~§ B.2.3.1.3 Unless the parties agree otherwise, upon Substantial Completion, the Owner shall continue the insurance required by Section B.2.3.1 or, if necessary, replace the insurance policy required under Section B.2.3.1 with property insurance written for the total value of the Project that shall remain in effect until expiration of the period for correction of the Work set forth in Section 12.2.2 of the General Conditions.~~

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§ B.2.3.1.4 Deductibles and Self-Insured Retentions. If the insurance required by this Section B.2.3 is subject to deductibles or self-insured retentions, the Owner shall be responsible for all loss not covered because of such deductibles or retentions.

§ B.2.3.2 Occupancy or Use Prior to Substantial Completion. The Owner's occupancy or use of any completed or partially completed portion of the Work prior to Substantial Completion shall not commence until the insurance company or companies providing the insurance under Section B.2.3.1 have consented in writing to the continuance of coverage. The Owner and the Construction Manager shall take no action with respect to partial occupancy or use that would cause cancellation, lapse, or reduction of insurance, unless they agree otherwise in writing.

§ B.2.3.3 Insurance for Existing Structures

If the Work involves remodeling an existing structure or constructing an addition to an existing structure, the Owner shall purchase and maintain, until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, "all-risks" property insurance, on a replacement cost basis, protecting the existing structure against direct physical loss or damage from the causes of loss identified in Section B.2.3.1, notwithstanding the undertaking of the Work. The Owner shall be responsible for all co-insurance penalties.

§ B.2.4 Optional Extended Property Insurance.

The Owner shall purchase and maintain the insurance selected and described below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. For each type of insurance selected, indicate applicable limits of coverage or other conditions in the fill-point below the selected item.)

[–] § B.2.4.1 Loss of Use, Business Interruption, and Delay in Completion Insurance, to reimburse the Owner for loss of use of the Owner's property, or the inability to conduct normal operations due to a covered cause of loss.

[–] § B.2.4.2 Ordinance or Law Insurance, for the reasonable and necessary costs to satisfy the minimum requirements of the enforcement of any law or ordinance regulating the demolition, construction, repair, replacement or use of the Project.

[–] § B.2.4.3 Expediting Cost Insurance, for the reasonable and necessary costs for the temporary repair of damage to insured property, and to expedite the permanent repair or replacement of the damaged property.

[–] § B.2.4.4 Extra Expense Insurance, to provide reimbursement of the reasonable and necessary excess costs incurred during the period of restoration or repair of the damaged property that are over and above the total costs that would normally have been incurred during the same period of time had no loss or damage occurred.

[–] § B.2.4.5 Civil Authority Insurance, for losses or costs arising from an order of a civil authority prohibiting access to the Project, provided such order is the direct result of physical damage covered under the required property insurance.

[–] § B.2.4.6 Ingress/Egress Insurance, for loss due to the necessary interruption of the insured's business due to physical prevention of ingress to, or egress from, the Project as a direct result of physical damage.

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[ ] § B.2.4.7 Soft Costs Insurance, to reimburse the Owner for costs due to the delay of completion of the Work, arising out of physical loss or damage covered by the required property insurance: including construction loan fees; leasing and marketing expenses; additional fees, including those of architects, engineers, consultants, attorneys and accountants, needed for the completion of the construction, repairs, or reconstruction; and carrying costs such as property taxes, building permits, additional interest on loans, realty taxes, and insurance premiums over and above normal expenses.

§ B.2.5 Other Optional Insurance.
The Owner shall purchase and maintain the insurance selected below.
(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance.)

[ ] § B.2.5.1 Cyber Security Insurance for loss to the Owner due to data security and privacy breach, including costs of investigating a potential or actual breach of confidential or private information. *(Indicate applicable limits of coverage or other conditions in the fill point below.)*

[ ] § B.2.5.2 Other Insurance
(List below any other insurance coverage to be provided by the Owner and any applicable limits.)

Coverage	Limits

...

§ B.3.1.1 Certificates of Insurance. The Construction Manager shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Article B.3 and Exhibit "B-1" at the following times: (1) prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the periods required by Section B.3.2.1 and Section B.3.3.1. The certificates will show the Owner as an additional insured on the Construction Manager's Commercial General Liability and excess or umbrella liability policy or policies.

...

§ B.3.1.3 Additional Insured Obligations. To the fullest extent permitted by law, the Construction Manager shall cause the commercial general liability coverage to include (1) the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Construction Manager's negligent acts or omissions during the Construction Manager's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Construction Manager's negligent acts or omissions for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. To the extent commercially available, the additional insured coverage shall be no less than that provided by the most current Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's consultants, CG 20 32 07 04.

...

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§ B.3.2.2.1 Commercial General Liability insurance for the Project as required by Exhibit "B-1" written on an occurrence form with policy limits of not less than ~~($) each occurrence, ($) general aggregate, and ($)~~ the amount stated in Exhibit "B-1" for each occurrence, general aggregate, and aggregate for products-completed operations hazard, providing coverage for claims including
PAGE 4

§ B.3.2.3 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Construction Manager, with policy limits of not less than ~~($)~~ the amount stated in Exhibit "B-1" per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage.

...

§ B.3.2.5 Workers' Compensation ~~at statutory limits.~~as stated in Exhibit "B-1".

§ B.3.2.6 Employers' Liability with policy limits not less than ~~($) each accident, ($) each employee, and ($)~~ the amount stated in Exhibit "B-1" for each accident, each employee, and policy limit.

...

§ B.3.2.8 If the Construction Manager is required to furnish professional services as part of the Work, the Construction Manager shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than ~~($)~~ the amount stated in Exhibit "B-1" per claim and ~~($)~~ in the aggregate.

§ B.3.2.9 If the Work involves the transport, dissemination, use, or release of pollutants, the Construction Manager shall procure Pollution Liability insurance, with policy limits of not less than ~~($)~~ the amount stated in Exhibit "B-1" per claim and ~~($)~~ in the aggregate.

§ B.3.2.10 Coverage under Sections B.3.2.8 and B.3.2.9 may be procured through a Combined Professional Liability and Pollution Liability insurance policy, with combined policy limits of not less than ~~($)~~ the amount stated in Exhibit "B-1" per claim and ~~($)~~ in the aggregate.

§ B.3.2.11 Insurance for maritime liability risks associated with the operation of a vessel, if the Work requires such activities, with policy limits of not less than ~~($)~~ the amount stated in Exhibit "B-1" per claim and ~~($)~~ in the aggregate.

§ B.3.2.12 Insurance for the use or operation of manned or unmanned aircraft, if the Work requires such activities, with policy limits of not less than ~~($)~~ the amount stated in Exhibit "B-1" per claim and ~~($)~~ in the aggregate.

§ B.3.3 ~~Construction Manager's Other Insurance Coverage~~(Intentionally omitted.)
~~§ B.3.3.1 Insurance selected and described in this Section B.3.3 shall be purchased from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Construction Manager shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:~~
~~*(If the Construction Manager is required to maintain any of the types of insurance selected below for a duration other than the expiration of the period for correction of Work, state the duration.)*~~

~~§ B.3.3.2 The Construction Manager shall purchase and maintain the following types and limits of insurance in accordance with Section B.3.3.1.~~
~~*(Select the types of insurance the Construction Manager is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. Where policy limits are provided, include the policy limit in the appropriate fill point.)*~~

~~[ ] § B.3.3.2.1 Property insurance of the same type and scope satisfying the requirements identified in Section B.2.3, which, if selected in this Section B.3.3.2.1, relieves the Owner of the responsibility to~~

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purchase and maintain such insurance except insurance required by Section B.2.3.1.3 and Section B.2.3.3. The Construction Manager shall comply with all obligations of the Owner under Section B.2.3 except to the extent provided below. The Construction Manager shall disclose to the Owner the amount of any deductible, and the Owner shall be responsible for losses within the deductible. Upon request, the Construction Manager shall provide the Owner with a copy of the property insurance policy or policies required. The Owner shall adjust and settle the loss with the insurer and be the trustee of the proceeds of the property insurance in accordance with Article 11 of the General Conditions unless otherwise set forth below:

(Where the Construction Manager's obligation to provide property insurance differs from the Owner's obligations as described under Section B.2.3, indicate such differences in the space below. Additionally, if a party other than the Owner will be responsible for adjusting and settling a loss with the insurer and acting as the trustee of the proceeds of property insurance in accordance with Article 11 of the General Conditions, indicate the responsible party below.)

[ ] § B.3.3.2.2 Railroad Protective Liability Insurance, with policy limits of not less than ($) per claim and ($) in the aggregate, for Work within fifty (50) feet of railroad property.

[ ] § B.3.3.2.3 Asbestos Abatement Liability Insurance, with policy limits of not less than ($) per claim and ($) in the aggregate, for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of asbestos-containing materials.

[ ] § B.3.3.2.4 Insurance for physical damage to property while it is in storage and in transit to the construction site on an "all-risks" completed value form.

[ ] § B.3.3.2.5 Property insurance on an "all-risks" completed value form, covering property owned by the Construction Manager and used on the Project, including scaffolding and other equipment.

[ ] § B.3.3.2.6 Other Insurance

(List below any other insurance coverage to be provided by the Construction Manager and any applicable limits.)

Coverage	Limits

§ B.3.4 Performance Bond and Payment Bond

The Construction Manager shall provide surety bonds, from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located, as follows:

(Specify type and penal sum of bonds.)

§ B.3.4 (Intentionally omitted.)

§ B.3.5 Additional Insurance Requirements

Coverages and other insurance requirements are described in Exhibit "B-1" Insurance and Bonds and such requirements in Exhibit "B-1" shall control in the event of a conflict between this Exhibit "B" and Exhibit "B-1".

Type	Penal Sum ($0.00)
Payment Bond	
Performance Bond	

Payment and Performance Bonds shall be AIA Document A312™, Payment Bond and Performance Bond, or contain provisions identical to AIA Document A312™, current as of the date of this Agreement.

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See Exhibit "B-1" which modifies this Exhibit "B" if any provisions of this Exhibit are inconsistent with Exhibit "B-1".

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Additions and Deletions Report for

AIA® Document A201® – 2017

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PAGE 1

~~*(Name and location or address)*~~**RFSQ 23-14 Public Utilities Field Operations Facility**
City of Port Orange

...

~~*(Name, legal status and address)*~~**City of Port Orange**
1000 City Center Circle
Port Orange, Florida 32129

...

~~*(Name, legal status and address)*~~**Schenkel and Schultz, Inc.**

200 East Robinson Street
Suite 300
Orlando, Florida 32801
PAGE 9

All references to "Contractor" shall mean "Construction Manager in lieu thereof. The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.
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The parties shall agree upon ~~written~~ protocols governing the transmission and use ~~of, and reliance on,~~ of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.
PAGE 11

Any use of, or reliance on, all or a portion of a building information model without agreement to ~~written~~ protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

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§ 2.3.3 ~~If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.~~(Intentionally omitted).

§ 2.3.4 The Owner shall furnish surveys to the extent available to the Owner describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

...

~~If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.~~§ 2.4.1 If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3. The Owner shall incur no liability for delays occasioned by any stop-work order issued in accordance with this paragraph.

§ 2.4.2 If, after consultation with the Architect, suspension of the Work is warranted by reason of unforeseen conditions which may adversely affect the quality of the Work if such Work were continued, the Owner may suspend the Work by written notice to the Contractor. In such event, the Contract Time shall be adjusted accordingly, and the Contract Sum shall be adjusted to the extent, if any, that additional costs are incurred by reason of such suspension. If the Contractor, in its reasonable judgment, believes that a suspension is warranted by reason of unforeseen circumstances which may adversely affect the quality of the Work if the Work were continued, the Contractor shall immediately notify the Owner and the Architect of such belief and describe with particularity the reasons therefor.

...

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, ~~correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect~~ commence and continue to carry out the Work. The Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15. The right of Owner to stop the Work pursuant to this Section 2.5 shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

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§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and ~~attention.~~ attention and in accordance with all local and Florida licensing requirements and Florida Building Code. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques,

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sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors. The Contractor agrees to remove from the Project any employee, Subcontractor, or Subcontractor employee that commits any breach of the Contract Documents or any breach of the Owner's written rules and regulations regarding jobsite conduct.

§ 3.3.3 The Contractor shall ~~be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.~~enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them. The Contractor shall require all construction personnel to maintain a neat general appearance at all times. Shirts, trousers and proper shoes are required apparel. The display of vulgar words, signs or figures is prohibited. Sandals and flip-flops are prohibited on the Project site. The use of radios, tape players, CD players, boom boxes, sound producing devices and the like are prohibited on the Project site. The Contractor shall not be permitted to use restrooms or other sanitary facilities within the Owner's existing buildings or on-site facilities.

§ 3.3.4 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work. Neither the presence or absence of the Owner or Architect shall relieve the Contractor from any requirements of the Contract Documents.

§ 3.3.5 The Contractor will be responsible for all building grades, lines, levels, etc., required for layout of the Work.

§ 3.3.6 If required by Owner on a project where applicable, at the earliest possible time after the commencement of the Work on the Project site, the Contractor shall have all property corners and benchmarks verified or established by a state-licensed

land surveyor, shall locate the Project on the Project site, establishing necessary reference marks and axes from which the work accurately can progress, shall furnish Architect evidence of such verification and shall report at once any errors discovered during the process of such verification.

§ The Contractor will be responsible for all building grades, lines, levels, etc., required for layout of the Work 3.3.7 If any of the Work is required to be inspected or approved by any public authority, the Contractor shall cause such inspection or approval to be performed. No inspection performed or failed to be performed by the Owner hereunder shall be a waiver of any of the Contractor's obligations hereunder or be construed as an approval or acceptance of the Work or any part thereof.

§ 3.3.8 The Contractor acknowledges that it is the Contractor's responsibility to hire all personnel for the proper and diligent prosecution of the Work and the Contractor shall use its best efforts to maintain labor peace for the duration of the Project. In the event of a labor dispute of the Contractor, its subcontractors or suppliers, the Contractor shall not be entitled to any increase in the Contract Sum.

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§ 3.4.2 ~~Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.~~

Equal Opportunity

§ 3.4.2.1 The Contractor shall maintain policies of employment as follows: (1) the Contractor and the Contractors Subcontractors shall not discriminate against any employer or applicant for employment because of race, gender, religion, national origin, ethnicity, sexual orientation, age, or disability (2) the Contractor and the Contractors Subcontractors shall, in all solicitations or advertisements for employers placed by them or on their behalf, state that

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all qualified applicants will receive consideration for employment without regard to race, gender, religion, national origin, ethnicity, sexual orientation, age, or disability.

§ 3.4.3 The Contractor ~~shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.~~may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order of other appropriate written directive by the Owner.

§ 3.4.4 Value Engineering Incentive

§ 3.4.4.1 Any proposal initiated and developed by the Contractor for variation from contractual requirements, which to be acceptable under the Contract would necessitate issuance of a contractual change and which reduces the cost of performing the Contract, without degrading operational functions: e.g., performance, reliability or maintainability of the item. Such proposals would be submitted by the Contractor to the Architect in the same form as prescribed for any other proposal, which would likewise necessitate a change in the contractual requirements but would include a statement that they are a proposed Value Engineering Change subject to the operation of this clause.

§ 3.4.4.2 The Architect will be the sole judge of acceptability, and no substitute will be ordered, installed, used or initiated without the Architect's prior written acceptance which will be evidenced by Change Order. However, any Value Engineering Change accepted by the Architect shall not result in any increase in the Contract Price or Contract Time.

§ 3.4.5 Owner Direct Purchase

§ 3.4.5.1 The Owner is tax exempt and may wish to exercise its right to purchase directly various construction materials, supplies and equipment that may be part of the Contract. The Owner will, via its purchase orders, purchase that material and the Contractor shall assist the Owner in the preparation of purchase orders. The Owner may direct the Contractor to prepare the purchase order on the Owner's form and make ready for verification and execution by the Owner. The materials shall be purchased from the vendors and or suppliers originally selected by the Contractor, for the price originally negotiated by the Contractor. Within thirty (30) days of the Notice to Proceed (NTP) the Contractor shall prepare a complete list of materials, supplies and equipment, including the cost of each item, for the Project and the Owner will advise the Contractor in writing which items from the list the Owner wishes to purchase directly.

§ 3.4.5.2 At a time deemed acceptable to the Owner, the Contract amount shall be reduced by the net, undiscounted amount of the purchase order, plus all sales taxes and surtax as levied. Issuance of the purchase orders by the Owner does not change any of the Contractor's responsibilities regarding material purchases, or installations, with the exception of the payments for the materials purchased. The Contractor remains responsible for coordination, correct quantities ordered, submittals, protection, storage, scheduling, shipping, security, expedition, receiving and unloading, certifying the accuracy of shipping tickets and invoices, installation, cleaning, all applicable warranties and that all materials purchased meet the requirements of the Contract Documents. The Contractor shall certify all invoices as accurate and acceptable and forward to the Owner the certified invoices for payment by the Owner.

§ 3.4.5.3 In the event that materials, supplies or equipment purchased under this option are defective or rejected for any reason whatsoever, and it becomes necessary in the opinion of the Contractor to initiate legal action against the responsible party, the Owner agrees to assign and subordinate to the Contractor any claims the Owner has against the responsible party resulting from the purchase order and to execute any legal documents necessary to accomplish the assignment, subordination or subrogation of such claims, and to cooperate with the Contractor in such legal action.

§ 3.4.5.4 The Contractor agrees to execute the Owner's document "Contractor's Direct Material Purchase Affidavit" and to submit the affidavit to the Owner along with the above described list of materials, supplies and equipment, as agreed to between the Owner and Contractor. Tax savings will be returned to the Owner via Change Order.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work. Contractor shall

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comply with all applicable federal, state, and city statutes, safety regulations, codes, ordinances and orders, including the Occupational Safety and Health Administration Act of 1970 (OSHA), as amended from time to time.

...

§ 3.7.4 Concealed or Unknown Conditions (Excluding Claims for Unsuitable Soils)
If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the ~~reasons. If~~ reasons if either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15. At any event the contractor will only proceed with the approval of the third party inspector, the Engineer of Record, Architect and the Owner. Once approved by all parties, only then the contractor will proceed with the said work and will track the changes to provide to the owner for any contract adjustment.
§ 3.7.6 **Claims for Unsuitable Soils** "Unsuitable soil" does not include soil with high or low moisture content or soil adversely affected by weather conditions and no claim for additional cost will be accepted based solely on the moisture content of excavated material. If the excavated material is unsatisfactoly for the specified use on the project solely because of either high or low moisture content or the soil is adversely affected by weather conditions, the Contractor may, in its discretion, either (1) process the material to adjust the moisture content to the specified condition or an acceptable condition if not specified, or (2) remove the material and replace it with satisfactory material. Contractor's election of either option will be at Contractor's expense with no additional cost to the Owner.
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§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during all performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communication shall be similarly confirmed on written request in each case. The superintendent shall be satisfactory to the Owner in all respects, and Owner shall have the right with reasonable evidence to require Contractor to dismiss from the Project any superintendent whose performance is not satisfactory to Owner, and to replace such superintendent with a superintendent satisfactory to the Owner. The Contractor shall not replace the superintendent without the written consent of the Owner, which shall not be unreasonably withheld. The Owner shall respond in a timely manner to approve the request and avoid any delay to the project.

...

§ 3.9.4 The list of all supervisory personnel, including the project manager and superintendent, that the Contractor intends to use on the Project and a chain-of-command organizational chart shall be submitted to the Owner for approval. The Contractor shall not engage supervisory personnel or utilize an organization and chain-of-command other than as approved by Owner in writing, and shall not change such personnel or form of organization without the written approval of the Owner.

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...

§ 3.10.2 ~~The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow~~ Within thirty (30) days of Notice to Proceed (NTP), the Contractor shall prepare, for the Architect's approval and thereafter keep current, a schedule of submittals which is coordinated with the Contractor's construction schedule and allows the Architect reasonable time to review submittals. ~~If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.~~No payment shall be due until this schedule is submitted and approved.
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§ 3.10.4 If the Contractor submits a schedule indicating an intention to achieve completion of the Work prior to contractually required dates, including milestones, no liability of the Owner to the Contractor for any failure of the Contractor to complete early shall be created, whether or not the Owner approve such schedule.

§ 3.10.5 At the Owner's option, the Contractor shall provide a schedule utilizing critical path techniques to measure the progress of the Work. Such schedules shall be subject to the Owner's and Architect's written approval.

§ 3.10.6 Float or slack is not for the exclusive use or benefit of either the Owner or the Contractor. Extensions of time for performance will be granted only to the extent that the equitable time adjustments for the activity or activities affected exceed the total float along the activity chain involved at the time the change was ordered or the delay occurred. Notwithstanding the above, the Contractor shall only be entitled to an extension of the time for an excusable delay to the critical path of the Work that delays completion of the Project beyond the completion date stated in the Agreement.

§ 3.10.7 The Contractor acknowledges that the Owner may retain the services of a scheduling consultant at the Owner's expense. The Contractor shall cooperate with any such scheduling consultant at the Owner's direction, including, without limitation, with regard to the preparation of the Project schedule.

§ 3.11 As Built Drawings and Documents and Samples at the Site

~~The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.~~§ 3.11.1 As Built drawings shall be updated monthly, which shall be a condition precedent to all Progress Payments, and shall provide as much accuracy as possible. Complete as-built drawings shall be submitted to and accepted by the Architect and are a condition precedent to Final Payment. Completed as-built drawings shall be submitted as paper documents and in PDF format (scan document file acceptable) for approval by the Owner.

§ 3.11.2 The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.11.3 The Contractor shall maintain all approved permit drawings in a manner so as to make them accessible to governmental inspectors and other authorized agencies. All approved drawings shall be wrapped, marked with appropriate identification and delivered to the Owner within sixty (60) days of final completion of the Work.
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The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment. The Contractor shall be responsible for the permitting, erection, maintaining and removal of all construction signage. The Contractor must submit all sign copy for approval prior to erecting or displaying. The Contractor and Owner shall meet promptly after execution of the Agreement to determine reasonable requirements for ingress and egress from the site. Reasonable locations for staging, parking and a single construction entrance shall be designated by the Contractor, subject to the Owner's approval.
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§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. The Contractor shall prevent paint, mortar and concrete splatter on concrete sidewalks and stair tower floors. Any such splatter shall be immediately removed so no evidence of splatter remains. All construction debris shall be removed in a timely manner. Surrounding graded and grassed areas shall be regularly magnetically scanned to collect miscellaneous nails and other sharp objects; the Contractor shall remove such objects from the construction site. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

...

§ 3.15.3 Immediately prior to the Architect's inspection for Substantial Completion, the Contractor shall completely clean the premises utilizing a licensed cleaning service. Concrete and ceramic surfaces shall be cleaned and washed. Woodwork and resilient shall be dusted and cleaned. Sash, fixtures and equipment shall be thoroughly cleaned. Stains, spots, dust, marks and smears shall be removed from all surfaces. Hardware and metal surfaces shall be cleaned and polished. Glass and plastic surfaces shall be thoroughly cleaned by professional window cleaners. All damaged, broken or scratched glass or plastic shall be replaced by the Contractor at the Contractor's expense.

...

~~§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.~~

§ 3.18.1For one hundred dollars ($100.00), which is included in the contract price, the other good and valuable considerations, receipt of which is hereby acknowledged by the Contractor as consideration for the indemnity herein; said Contractor hereby agrees to indemnify the Owner, their officers and their employees, from and against all claims, damages, losses and expenses, including but not limited to reasonable attorney's fees, to the extent caused by the performance of Work, provided that any such claim, damage, loss or expense is (1) attributed to bodily injury, sickness, disease or death, or to injury to, or destruction of tangible property, other than the Work itself, including the loss of use resulting therefrom, and (2) caused in whole or in part by any act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless or not it is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge or otherwise reduce any other right or obligation of indemnity which otherwise exist as to any part or person described in this Article.

§ 3.18.3 (Intentionally omitted).

§ 3.18.4 Notwithstanding the above and without monetary limitation, the Contractor hereby indemnifies and holds harmless the Owner, their officers and employees, from liabilities, damages, losses and costs, including, but not limited to, reasonable attorney's fees, to the extent caused by the negligence, recklessness, or intentional wrongful misconduct of the Contractor and persons employed or utilized by the Contractor in the performance of the construction Contract.

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§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until ~~the date the Architect issues the final Certificate for Payment.~~ final payment is due and with the Owner's authorization, from time to time during the one-year period for correction of Work described in Section 12.2. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract ~~Documents.~~Documents, unless otherwise modified in writing in accordance with other provisions of the Contract.

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§ 5.2.5 The Contractor shall disclose the existence and extent of any financial interest, whether direct or indirect, it has in any subcontractors or material suppliers which it proposes for the Project.

...

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 or Termination for Convenience by the Owner pursuant to Paragraph 14.4 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and

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When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and ~~obligations under the subcontract.~~obligations under the subcontract subsequent to the date of acceptance of the assignment; however, in no event shall the Owner's acceptance of such an assignment release the Contractor from its obligations under the subcontract agreement or this Agreement. Subcontracts between the Contractor and its Subcontractors shall provide for the assignment of those subcontracts from the Contractor to the Owner at election of the Owner upon termination of the Contractor.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in ~~cost resulting from the suspension.~~direct cost resulting from the suspension beyond the thirty (30) days.

~~§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.~~

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§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, ~~Construction Change Directive~~ or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents. Agreement on and execution of any Change Order shall constitute a final settlement and a full accord and satisfaction of all matters relating to the change and to the impact of the change on unchanged Work, including all direct and indirect costs of whatever nature, and all adjustments to the Contract Schedule.

...

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, ~~Construction Change Directive,~~ or order for a minor change in the Work. A change in Contract Sum or Contract Time shall be accomplished only by Change Order. No course of conduct, verbal discussions or dealings between the parties shall be the basis of claims by the Contractor to any change in the Contract Sum or Contract Time.

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§ 7.1.4 If the Architect determines that a change or changes in the Work might be or are necessary or desirable, the Architect shall issue a proposal request to the Contractor in which the Architect describes the proposed change or changes in the Work. The Contractor shall respond to each such proposal request in writing within a reasonable time, but in no event more the foutleen (14) days after receipt, such response to contain (1) the amount of any increase or decrease in the Contract Price or Guaranteed Maximum Price for effecting the proposed change or changes in the Work (2) a written comprehensive and itemized cost breakdown of the estimated reasonable additional or reduced costs to the Contractor of all labor, materials and equipment required by such proposal requests and (3) the length of any extension or reduction of the Contract Time for effecting the proposed change or changes in the Work.

§ 7.1.5 If any Change Order, signed by the Owner and the Contractor, results in or contains an adjustment to the Contract Price, the amount of such adjustment shall be conclusively deemed and held to include the Contractor's applicable profit, Fee and costs of and for all applicable taxes, bond premiums, insurance premiums, supervision, overhead, profit, labor, labor impact and materials related to the Change Order and the additional Work required and/or contemplated thereby, and the Contractor shall be conclusively deemed and held to have waived any claim for any additional sum or time extension for delays, disruption, acceleration, loss of productivity, ripple effect, inefficiency or any other matter arising out of or in any way related to such Change Order and the additional Work contemplated thereby.

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~~§ 7.3 Construction Change Directives~~

~~§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.~~

~~§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.~~

~~§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:~~

- ~~.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;~~
- ~~.2 Unit prices stated in the Contract Documents or subsequently agreed upon;~~
- ~~.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or~~
- ~~.4 As provided in Section 7.3.4.~~

~~§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:~~

- ~~.1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;~~
- ~~.2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;~~
- ~~.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;~~
- ~~.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and~~
- ~~.5 Costs of supervision and field office personnel directly attributable to the change.~~

~~§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.~~

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~~§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.~~

~~§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.~~

~~§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.~~

~~§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.~~

~~§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.~~

§ 7.2.2 If the Change Order provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 Mutual acceptance of a lump sum properly itemized and supp011ed by sufficient substantiating data to permit evaluation;

.2 Unit prices stated in the Contract Documents or subsequently agreed upon;

.3 Cost to be determined in a manner agreed upon by the patties and a mutually acceptable fixed or percentage fee; or

.4 As provided in Section 7.2.3.

§ 7.2.3 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.2.2, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.2.3 shall be limited to the following:

.1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;

.2 Costs of materials, supplies, and equipment, including cost of transpo11ation, whether incorporated or consumed;

.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and

.5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.2.4 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15

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§ 7.2.5 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.2.6 In subparagraph 7.2.3 above, the reasonable allowance for overhead and profit, including the Contractor's Fee, if any, included in the total cost to the Owner, shall be based on the following schedule, which shall be full compensation for all overhead and profit of whatever nature associated with the Change:

.1 For the Contractor, for any Work performed by the Contractor's own forces, ten percent (10%) of the cost.

.2 For the Contractor, for Work performed by its Subcontractor, five percent (5%) Overhead and 5% profit of the amount due the Subcontractor.

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§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day including weekends and legal holidays unless otherwise specifically defined.

...

§ 8.3.2 ~~Claims relating to time shall be made in accordance with applicable provisions of Article 15.~~When alterations or additions on the critical path are made to the Work, and such alterations or additions increase the overall completion date, the Contractor shall submit to the Architect in writing any resultant claim for an extension in the Contract Time, and shall deliver such claims to the Architect within ten (10) days after the occurrence of the event giving rise to the claim. The recommendation of the Architect regarding extension of Contract Time shall be submitted to the Owner for approval.

~~§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.~~

§ 8.3.2.1 Any approved changes in Contract Time shall be incorporated in a Change Order. No changes in Contract Time shall be made for any alterations or additions to the Work which are not demonstrated to affect the overall completion of the job. The provision of this Article 8 shall in no way alter, change or invalidate the provisions of the Contract Documents with respect to liquidated damages. The Contractor shall not be entitled to any delay damages or other compensation solely on account of an increase in Contract Time except in accordance with Section 8.3.3 below.

§ 8.3.3. Notwithstanding Subparagraph 8.3.1, if the Work is delayed due to the fault or neglect of the Owner, and such delays have a cumulative total impact of more than fifteen (15) calendar days to the critical path, the Contractor may make claim pursuant to Article 4 for its actual and direct costs arising out of the delay. The Contract Sum shall be adjusted for such actual and direct costs, but in no event shall indirect, impact, inefficiency, offsite or home office overhead, loss of productivity, consequential damages, legal or consulting costs be paid on account of such delays.

§ 8.3.4 In the event the Contractor accelerates its Work, without written authorization of the Owner, the Owner shall pay no overtime inefficiencies to the Contractor for such acceleration and the Contractor hereby expressly waives its right to recover such overtime inefficiencies.

§ 8.3.5 The Contractor's written claims for extension of Contract Time shall be accompanied by detailed dates, correspondence, notices and any other data which provides proof of the events which are the basis for the claim, including a network analysis justifying the time extension. Said network analysis shall specifically detail the extension of the critical path of the Project caused by the events, which underlie the time extension request. Any claim not including said data and network analysis shall be deemed waived.

§ 8.3.6 Should the Contractor be obstructed or delayed in the commencement, prosecution or completion of any part of the Work by any act or delay of the Owner; or by any acts or neglect by any separate contractor employed by the Owner; material or appurtenances for the Work; or by riot, insurrection, war (excluding wars involving the United States in the Mid-Eastern portion of the World), pestilence, fire, earthquakes, cyclones, floods, epidemics; or through any act, default or delay of other parties under contract with the Owner; then the Contract Time for the Work so

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delayed shall be extended for a period equivalent to the time lost. Such allowance shall not be made unless a claim for extension of time is made by the Contractor to the Owner and Architect in writing within ten (10) days from the time when the alleged cause for delay occurs.

§ 8.3.7 It is further expressly agreed that the Contractor shall not be entitled to any damages or compensation from the Owner on account of any delays resulting from any of the causes specified above except those circumstances where delays are caused by the Owner or by parties under contract with the Owner, in which circumstances the Contractor shall be entitled to compensation (1) for Contractor's actual costs of increased direct jobsite wages resulting from the extended completion date caused by Owner; and (2) for extra premiums on bonds actually paid by the Contractor on account of the additional time required to complete all Work hereunder. Any change in the Contract Time resulting from any claims for delays shall be incorporated in a signed Change Order upon approval of the change by the Owner.

§ 8.3.8 Except for weather events listed in Section 8.3.6 above, Contractor expressly assumes the risk for all weather delays of every kind and nature.

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Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. The schedule of values shall be prepared in such manner that each major item of the Work and each subcontracted item of the Work is shown as a separate line item on AIA Document G703, Application and Certificate for Payment, Continuation Sheet, or other form acceptable to the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment. The Contractor shall not make changes in the Schedule of Values without prior approval of the Architect and Owner. The form for the Application for Payment shall be AIA Document G702, supported by AIA Document G703, or other Owner approved form. The Schedule of Values shall be prepared in such a manner that each major item of Work and each subcontracted item of Work is shown as a single item on AIA Document G703 Application and Certificate for Payment Continuation Sheet, or other Owner approved form.
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§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in ~~writing.~~ writing and bonded or insured as required by the Owner. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site. The Contractor shall submit, within 30 days after the date of commencement of the Work and thereafter as the Owner requires, schedules of materials and equipment for each category or subcontract for which application for payment under this Section 9.3.2 will be made, which schedules shall include items, quantities, value of unit prices with extensions and the month in which Application for Payment with respect thereto is expected to occur. Schedules shall be updated on a monthly basis and submitted as an attachment to the Contractor's Application for Payment.
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§ 9.5.2 When ~~either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.~~ the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.3 ~~When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.~~ If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by

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joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.5.4 If the ~~Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.~~Contractor disputes any determination by the Architect and/or Owner with respect to any Certificate of Payment, the Contractor nevertheless expeditiously shall continue to complete the Work and may submit a Claim in accordance with Article 15.

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If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven (7) days after the date established in the Contract Documents, the amount certified by the ~~Architect or awarded by binding dispute resolution,~~ Architect, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount ~~owing~~ not in dispute has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable direct costs of ~~shutdown, delay~~ shutdown and start-up, plus interest as provided for in the Contract Documents. Notwithstanding the preceding sentence, the Contractor shall not stop the Work during the pendency of a bona fide dispute between the Owner and the Contractor, provided all sums not in dispute claimed by the Contractor are paid.

...

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. For the Work or any designated portion thereof to be "Substantially Complete," the Work must also satisfy all of the following conditions, except to the extent the same shall be specifically waived or modified in writing by the Owner:

.1 the Work has been completed in accordance with the Contract Documents, except for Punch List Work, to the extent required for the Owner to obtain an occupancy permit and such permit(s) shall have been granted by the appropriate authorities for all of the Work; and

.2 all HVAC, plumbing and electrical systems included in the Work are functioning substantially in accordance with the Contract Documents; and

.3 all life safety systems included in the Work are functioning in accordance with the Contract Documents;
and

.4 a Certificate of Substantial Completion has been issued by the Architect as required under Paragraph
9.8; and

.5 all elevators, if any, included in the Work are functioning in accordance with the Contract Documents; and

.6 all offices, rooms and public areas are ready to receive, or have received if required for issuance of a Certificate of Occupancy, furniture, fixtures and equipment supplied by the Owner.

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§ 9.8.6 The Owner shall have the right to take possession of and use any completed or partially completed portions of the Work, notwithstanding that the time for completing the entire Work or such portions of the Work may not yet have expired. However, such action on the part of the Owner shall not be deemed to be an acceptance of any Work not completed in accordance with the Contract Documents. Likewise, absent the issuance of a Certificate of Substantial Completion by the Project Architect, no portion of the Work shall be subject to the running of the Contractor's bonded one (1) year guarantee on workmanship and materials, despite the fact that the building may be partially utilized. Where mechanical equipment is used prior to final inspection, the Owner shall perform routine maintenance and furnish those supplies that normally wear out in use, such as seals, packings, lubricants, etc. However, any major

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failure or breakdown of equipment not attributable to lack of maintenance or improper use or abuse of the equipment by Owner shall be made good by the Contractor under terms of its contract warranty, guarantee, bonds, etc.

...

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work. A reasonable sum may be withheld until the Contractor delivers to the Owner record Drawings, Specifications, Addenda, Change Orders and other Modifications maintained at the site; the warranties, instructions and maintenance manuals required to be furnished; and a final statement of the cost of the Work allocated in accordance with the budget and in a form approved by Owner's lender.
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§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) ~~if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract,~~ Contractor's Final Payment Affidavit, Contractor's Affidavit of Outstanding Accounts, Final Waiver and Release of Lien from Contractor and Final Waivers and Releases of Liens form Contractor's Subcontractors, Sub-subcontractors, suppliers and materialmen or any party with lien rights, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees. As a condition precedent to Final Payment, and as part of the Application for Payment, the Contractor shall deliver to the Owner all warranties, guarantees and other close out documents required under the Contract Documents. Copies of the required ***Contractor's Final Payment Affidavit, Contractor's Affidavit of Outstanding Accounts, Final Waiver and Release of Lien from Contractor and Final Waivers and Releases of Liens from Contractor's Subcontractors, Sub-subcontractors, suppliers and materialmen or any party with lien rights*** shall be set forth in an exhibit to be incorporated in the Contract Documents.

...

§ 9.10.6 After execution of the Certificate of Substantial Completion, and prior to the submittal of the Final Certificate and Application for Payment, the Contractor shall submit to the Architect, along with the affidavits and other documents set forth in Section 9.10.2 above:

.1 Validated warranties and notarized copies of all guarantees for equipment and materials as required by the Construction Documents, and as referred to in the Supplementary Conditions;

.2 Copies of all approved Shop Drawings or installation diagrams and three (3) copies of all brochures, manuals, etc. of all equipment as offered by the manufacturers;

.3 List of subcontractors and major material suppliers (shall include address, telephone number and name of individual to contact regarding this Project);

.4 As-built drawings of the completed Project. The Contractor shall provide to the Owner two

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(2) copies of all electronic drawing files of all as-built drawings in a format compatible with the AutoCAD release version designated by Owner. This shall include an organized, rational file/drawing nami1 1g system that would refer directly to the actual hard copy drawings. For example, drawings shall be named A-1.dwg, A-2.dwg, M-1.dwg, M-2.dwg etc. Each drawing file shall be processed through AutoCad's XREF Manager utilizing the "bind process" prior to submittal to the Owner to combine the files and eliminate the need for attached files. Text documents such as specification books shall be presented in Microsoft Word or pdf format. Such electronic files shall be delivered to the Owner within ten (I 0) days after requested by the Owner or, if not specifically requested, prior to final payment from Owner; and

.5 The Contractor shall obtain an electronic version of the Site Master Survey from the Owner and insert an as-built survey of the project into the Site Master Survey via the addition of another CADD layer added to the file in a format compatible with the AutoCAD release version designated by Owner. The CADD layer shall include an organized, rational file/drawing naming system that refers specifically to the precise name of the project constructed. The Contractor will establish permanent control monuments (hub set in concrete, iron pin in ground, etc.), or use existing monuments when approved by the Owner, to tie the location of the project to the overall facility Site Master Survey. The permanent control monument(s) shall be identified in the CADD layer such that the Owner will be able to utilize the monument for future design and development projects. Such electronic files shall be delivered to the Owner within ten (10) clays after requested by the Owner or, if not specifically requested, prior to final payment from Owner

§ 9.10.6.6 These items shall be packaged in a suitable metal file box, supplied for the Project as approved by the Architect, and shall be properly indexed. Individual submission of these items will not be acceptable.

§ 9.10.7 Prior to submission of the Final Certificate and Application for Payment, Contractor and manufacturer's representatives shall provide free instruction in the proper use of installed equipment to representatives of the Owner as designated by the Architect. Instruction shall be given in presence of the Architect.

§ 9.10.7.1 Instruction of the Owner's designated Maintenance Supervisor in the proper methods of cleaning and maintaining all of the finished surfaces and the proper methods of replacement of the consumable items such as filters, light bulbs, washers, etc. shall be the responsibility of the Contractor.

§ 9.10.8 Prior to submission of the Final Certificate and Application for Payment, the Contractor shall start up, test, adjust, balance and otherwise place in a satisfactory working condition all items of mechanical and electrical systems and shall fully instruct representatives of the Owner in the care and operation of such systems

§ 9.10.8.1 Contractor shall submit to the Architect, along with final requisition for payment, three (3) copies of a manual for the Project, assembled and bound, presenting for the Owner's guidance full details for care and maintenance of equipment included in the Contract

§ 9.10.8.2 Contractor shall, for this manual, obtain from subcontractors literature of manufacturers relating to equipment, including motors; also furnish cuts, wiring diagrams, instruction sheets and other information pertaining to same in overall operation and maintenance.

§ 9.10.9 During a valid warranty period, if the Contractor is unable or unwilling to respond immediately to make emergency repairs under conditions which the Owner may determine to be an emergency situation, the Owner reserves the right to make such emergency repairs and then to bill the Contractor for a fair and reasonable amount in the reimbursement for such repair

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§ 9.10.10 At closeout, Contractor shall complete the *Contract Completion Checklist*, a copy of which is to be incorporated as an exhibit to the Contract Documents, and shall provide to the Owner all items required thereon as a condition precedent to final payment being due from the Owner.

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§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss. Contractor shall comply with all applicable federal, state and county, and city statutes, safety regulations, codes, ordinances and orders, including the Occupational Safety and Health Administration Act of 1970 (OSHA).

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§ 10.2.9 Contractor shall protect adjoining private or municipal property and shall provide barricades, temporary fences, and covered walkways required to protect the safety of passers-by, as required by prudent construction practices, local building codes, ordinances or other laws, or the Contract Documents

§ 10.2.10 Contractor shall maintain Work, materials and apparatus free from injury or damage from rain, wind, storms, frost or heat. If adverse weather makes it impossible to continue operations safely in spite of weather precautions, the Contractor shall cease Work and notify the Owner and the Architect of such cessation. The Contractor shall not permit open fires on the Project site.

§ 10.2.11 In addition to its other obligations pursuant to this Article 10, the Contractor shall, at its sole cost and expense, promptly repair any damage or disturbance to walls, utilities, sidewalks, curbs and the property of third parties (including municipalities) resulting from the performance of the Work, whether by it, or by its Subcontractors at any tier. The Contractor shall maintain streets in good repair and traversable condition.

§ 10.3.1 The ~~Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.~~Owner has on file the following information: (1) Asbestos Management Plan, and (2) Asbestos Survey Report. These documents are available for the Contractor's review at the above locations. The Contractor shall determine if the information contained therein is relevant to the Project. The Contractor shall execute the Owner's "Contractor Acknowledgement Form" of these documents.

§ 10.3.1.1 If during the construction of the Project any known hazardous material, or friable asbestos is suspected or encountered, Work in that area shall be suspended and the Owner's Representative shall be notified immediately.

§ 10.3.1.2 The Owner shall be responsible for investigation, removal and disposition of any such material in accordance with applicable laws and regulations. The Contractor will be directed by the Owner on further procedures concerning the project as a result of investigation, removal and disposition of such material.

§ 10.3.2 ~~Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless,~~ In the event the Contractor encounters on the site

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material reasonably believed to be asbestos or polychlorinated biphenyl (PCB) which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner's Representative in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner and Contractor if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless. The Work in the affected area shall ~~resume upon~~ be resumed in the absence of asbestos or polychlorinated biphenyl (PCB), or when it has been rendered harmless, by written agreement of the Owner and ~~Contractor.~~ Contractor, or in accordance with final determination by the Architect. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 ~~To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.~~ The Contractor shall not be required, pursuant to Article 13, perform without consent any Work relating to asbestos or polychlorinated biphenyl (PCB).

§ 10.3.4 ~~The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.~~ To the fullest extent permitted by law, the Owner shall defend and indemnify and hold harmless the Contractor and its agents and employees from and against claims, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from performance of the Work in the affected area if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, other than the Work itself, including loss of use resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the Owner, anyone directly or indirectly employed by the Owner, or anyone for whose acts the Owner may be liable.

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ARTICLE 11 INSURANCE AND BONDS – See Exhibits "B" and "B-1"

...

§ 11.1.2 ~~The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.~~ (Intentionally omitted.)

§ 11.1.3 ~~Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.~~ (Intentionally omitted.)

...

§ 11.2.1 ~~The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.~~ (Intentionally omitted.)

§ 11.2.2 **Failure to Purchase Required Property ~~Insurance.~~** ~~If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the~~

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~~Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.~~Insurance.(Intentionally omitted.)

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. ~~Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.~~(Intentionally omitted.)

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The Owner, at the Owner's option, may require the Contractor to purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. ~~The~~ Except for losses caused by Contractor or resulting from Contractor's negligence, the Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

...

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the ~~Owner~~ Contractor as fiduciary and made payable to the ~~Owner~~ Contractor as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The ~~Owner~~ Contractor shall pay the Architect and ~~Contractor~~ Owner their just shares of insurance ~~proceeds~~ proceeds, if any, received by the ~~Owner,~~ Contractor, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the ~~Owner~~ Contractor shall notify the ~~Contractor~~ Owner of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The ~~Contractor~~ Owner shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the ~~Contractor~~ Owner does not object, the ~~Owner~~ Contractor shall settle the loss and the ~~Contractor~~ Owner shall be bound by the settlement and allocation. Upon receipt, the ~~Owner~~ Contractor shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the ~~Contractor~~ Owner timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the ~~Owner~~ Contractor may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15.~~Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.~~

...

The Contractor shall promptly correct Work rejected by the Architect ~~or~~ for failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional

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testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.
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§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the ~~Work.~~Work nor to Owner's right to make claim with respect to latent defects.

...

§ 13.1.2 Historical lack of enforcement of any local law shall not constitute a waiver of Contractor's responsibility for compliance with such law in a manner consistent with the Contract Documents unless and until the Contractor has received written consent for the waiver of such compliance from the Owner and the agency responsible for the local law enforcement.

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. ~~Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless~~ If Contractor attempts to make such an assignment, it shall never the less remain legally responsible for all obligations under the Contract.
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§ 13.4.1.1 During construction, periodic building code compliance inspections are required and will be performed by the Owner's building department inspectors when requested by the Contractor. It is the responsibility of the Contractor to properly request such code inspections and no Work shall be covered until such Work has been inspected for code compliance.

§ 13.4.2.1 The Owner reserves the right to perform additional tests of materials, work and equipment provided under this Contract and will pay all costs involved in such additional tests. In the event one or more test results indicate a failure of materials, work and/or equipment to meet the requirements of the Contract Documents, the Contractor agrees to correct all identified deficiencies, arrange for and pay the cost of all re-testing and repeat the process until re-test reports indicate all deficiencies have been corrected. In all cases, re-tests shall be performed by the same testing agency who performed the initial test.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's ~~expense.~~expense, including the cost of retesting for verification of compliance if necessary, until the Architect certifies that the Work in question does comply with the requirements of the Contract Documents, and all such costs shall not be included in computing the Contract Sum.
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§ 13.6 Time Limits on Claims
The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law.

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§ 13.7 Financial Disclosures

§ 13.7.1 During the term of this Contract, Contractor covenants and agrees that it will keep adequate books and records of accounts in accordance with Generally Accepted Accounting Principles (GAAP). Contractor further covenants and agrees that, upon request from Owner, Contractor shall provide to Owner financial statements of Contractor, including current income and expense statements of Contactor, consolidated balance sheets signed by a financial officer of Contractor, and audited reports provided to Contractor's Surety, audited financial statements certified by a Certified Public Accountant concerning the financial affairs of Contractor and all affiliates of Contractor, and such other financial information requested by Owner. All such financial information shall comply with GAAP.

§ 13.7.2 In the event that Contractor becomes insolvent and/or fails to pay its current obligations when they become due, Contractor shall so advise Owner of such situation. Contractor hereby authorizes its sureties, lenders, financial institutions and other third parties to release to Owner financial information requested by Owner, including, but not limited to, the financial information described in the preceding Section 13.7.1.

§ 13.8 Waiver of Jury Trail

All parties hereby waive any and all right to any trial by jury in any action or proceeding arising directly or indirectly hereunder.

...

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of ~~30~~ 45 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

...

.2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped; or

...

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead ~~and profit~~ on Work not executed, and costs incurred by reason of such termination.

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.3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; ~~or~~

.4 otherwise is guilty of substantial breach of a provision of the Contract ~~Documents.~~Documents; or

.5 is adjudged a bankrupt or insolvent, or if it makes a general assignment for the benefit of its creditors, or if a trustee or receiver is appointed for the Contractor or for any of its property, or if it files a petition to take advantage of any debtor's loss, or to reorganize under the bankruptcy or similar laws.

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§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; ~~and the termination fee, if any, set forth in the Agreement.~~along with reasonable overhead and profit on the Work performed to date, but in no event shall the Contractor be entitled to anticipated profits on unperformed Work.

...

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~~The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.~~Any statutes of limitations shall commence to run, and all causes of action shall be deemed to have accrued, in accordance with applicable Florida law.

...

§ 15.1.3.1 Claims by either ~~the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated~~ party must be made within 21 days after occurrence of the event giving rise to such Claim or within 21 ~~days~~ clays after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Claims must be made by written notice to the Architect and the other party. Claims must specifically detail all facts and issues substantiating the Claim, including all costs and expenses incurred. Contractor Claims must be made in writing and timely filed in accordance with the specific requirements of the Contract Documents and under no circumstances whatsoever be based upon actual or verbal notice or lack of prejudice to the other party. An additional Contractor Claim after the initial Claim has been implemented by Change Order will not be considered unless submitted in a timely manner.

...

§ 15.1.5.1 If the Contractor believes additional cost is involved for reasons including but not limited to (1) a written interpretation from the Architect, (2) an order by the Owner to stop the Work where the Contractor was not at fault,
(3) a written order for a minor change in the Work issued by the Architect, (4) failure of payment by the Owner, (5) termination of the Contract by the Owner, (6) Owner's suspension or (7) other reasonable grounds, Claim shall be filed in accordance with this Section 15.1.

PAGE 44

§ 15.2.1 ~~Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision~~ Decision of the Architect, Claims, including those alleging an error or omission by the Architect but excluding those arising under Section 10.3 shall be referred initially to the Architect for decision. An initial decision by the Architect shall be required as a condition precedent to mediation ~~of any Claim. If an initial decision has not been rendered within 30 days~~ or litigation of all Claims between the Contractor and Owner arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the ~~Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker~~ Architect with no decision having been rendered by the Architect. The Architect will not decide disputes between the Contractor and persons or entities other than the Owner.

...

§ 15.2.5 The ~~Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker,~~ Architect will approve or reject Claims by written decision, which shall state the reasons therefore and which shall notify the parties of any change in the Contract Sum or Contract Time or both. The ~~initial decision~~ approval or rejection of a Claim by the Architect shall be final and binding on the parties but subject to mediation ~~and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.~~and litigation.

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§ 15.3.2 ~~The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.~~Claims, disputes or other matters in question between the parties to this Agreement shall be first subject to pre-suite mediation prior to the filing of any legal claims or litigation. Completion of pre-suite mediation is a condition precedent to litigation. The obligation to mediate is a material and essential provision of the Agreement.

...

§ 15.3.4 ~~The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.~~Unless otherwise agreed in writing, the Contractor shall carry on the Work and maintain its progress during any mediation or litigation, and the Owner shall continue to make payments to the Contractor in accordance with the Contract Documents.

§ 15.3.5 Either party may initiate a mediation preceding by a request in writing to the other party within a reasonable time after the claim, dispute or other matter in question has arisen or as provided in subparagraph 15.3.1, but in no event after the expiration of the applicable statute of limitations.

§ 15.3.6 The parties shall endeavor in good faith to mutually agree upon an acceptable mediator. In the event the parties have not agreed upon a mediator within thirty (30) days of the request for mediation, the Orlando office of the American Arbitration Association, upon the written request of either party, shall appoint a mediator from its pool of approved mediators.

§ 15.3.7 Unless otherwise mutually agreed, the mediation shall be held in accordance with the Construction Indusrty Mediation Rules of the American Arbitration Association currently in effect, each party to bear its own fees, costs and expenses.

§ 15.3.8 In the event that pre-suit mediation is unsuccessful, all claims, disputes or other matters in question shall be resolved in the Circuit Courts of Volusia County Florida. The Parties, including the Contractor's Surety, waive Venue and Jurisdiction of any Federal Court and expressly waive Trial by Jury.

§ 15.3.9 All references to Arbitration in the Contract Documents are deleted.

§ 15.4 Arbitration – NOT APPLICABLE~~§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.~~

~~§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.~~

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~~§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.~~

~~§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.~~

~~§ 15.4.4 Consolidation or Joinder~~

~~§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).~~

~~§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.~~

~~§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.~~

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Client#: 706782 WHARTINC

ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 11/13/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer any rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Marsh & McLennan Agency
Bouchard Region
1 N. Dale Mabry Hwy, Suite #450
Tampa, FL 33609

CONTACT NAME: Certificate Specialist
PHONE (A/C, No, Ext): 727 447-6481 **FAX (A/C, No):**
E-MAIL ADDRESS: MMABouchard.certificates@MarshMMA.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Amerisure Insurance Company	19488
INSURER B : Starr Indemnity & Liability Company	38318
INSURER C : Amerisure Partners Insurance Company	11050
INSURER D : Amerisure Mutual Insurance Company	23396
INSURER E : Berkley Assurance Company	39462
INSURER F :	

INSURED
Wharton-Smith, Inc.
750 Monroe Road
Sanford, FL 32771

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE / X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY / X PRO-JECT / X LOC OTHER:	Y	Y	GL20361081901	04/01/2024	04/01/2025	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG 	$1,000,000 $1,000,000 $10,000 $1,000,000 $2,000,000 $2,000,000 $
C	AUTOMOBILE LIABILITY X ANY AUTO OWNED AUTOS ONLY / SCHEDULED AUTOS X HIRED AUTOS ONLY / X NON-OWNED AUTOS ONLY	Y	Y	CA20361071905	04/01/2024	04/01/2025	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) 	$1,000,000 $ $ $ $
A	X UMBRELLA LIAB / X OCCUR EXCESS LIAB / CLAIMS-MADE DED / X RETENTION $0	Y	Y	CU21171470301	04/01/2024	04/01/2025	EACH OCCURRENCE AGGREGATE 	$5,000,000 $5,000,000 $
D	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N: N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N / A	Y	WC20361091802	04/01/2024	04/01/2025	X PER STATUTE / OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $1,000,000 $1,000,000 $1,000,000
E	Pollution Liab	Y		PCADB50245320424	04/01/2024	04/01/2025	$10,000,000	
E	Professional Liab			PCADB50245320424	04/01/2024	04/01/2025	$10,000,000	
G	Rented Equipment			UM00024961MA24A	04/01/2024	04/01/2025	$2,500,000	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
PROJECT: Public Utilities Field Operations Facility City of Port Orange

Insurers Affording Coverage Continued:
Insurer G - XL Specialty Insurance Company
Policy #UM00024961MA24A - Rented Equipment Coverage
(See Attached Descriptions)

CERTIFICATE HOLDER
City of Port Orange
1000 City Center Circle
Port Orange, FL 32129

CANCELLATION
SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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DESCRIPTIONS (Continued from Page 1)

Blanket Loss Payee applies for Rented and Leased Equipment.
Rented and Leased Equipment deductible:
$10,000 standard deductible.
2% subject to a $10K minimum deductible applies to all rented cranes.

Certificate holder is additional insured as respects General Liability, Automobile Liability, Pollution Liability and Umbrella/Excess Liability policies only if required by written contract, and subject to the terms, conditions and exclusions as specified in the policies.

Coverage is primary as respects to General Liability & Automobile Liability and non-contributory as subject to the terms, conditions and exclusions of your policy.

Waiver of subrogation applies in favor of certificate holder as respects General Liability, Automobile Liability and Workers Compensation only if required by written contract, and subject to the terms, conditions and exclusions as specified in the policy.

It is agreed by endorsement to the General Liability, Automobile Liability and Workers Compensation policy that this policy shall not be cancelled by the insurance carrier without first giving thirty (30) days prior written notice except for nonpayment of premium or if the first named insured elects to non renew.

Umbrella/Excess Liability policies follow the forms/endorsements of the underlying General Liability, Automobile Liability and Workers Compensation policies.

BUILDER'S RISK COVERAGE

NAMED INSURED: Wharton-Smith, Inc.
COMPANY: XL Specialty Insurance Company
NAIC #37885 AM Best Rating: A (Excellent), XV ($2 Billion or greater)
POLICY TERM: 4/1/2024 - 4/1/2025
POLICY NUMBER: UM00024960MA24A

COVERED PROPERTY AND PREMISES DESCRIPTION

New construction and remodeling of waste or water treatment plants; new construction and non-structural renovations of commercial buildings at various premises within the state of Georgia, Florida, North Carolina, South Carolina, Virginia, Mississippi, Alabama, Louisiana, Texas and Tennessee

SUMMARY

COVERAGE	LIMIT OF INSURANCE
Covered Property at Premises Described Above – Consisting of Frame or Joisted Masonry Construction	$2,500,000
Covered Property at Premises Described Above – Consisting of Non-Combustible, Masonry Non-Combustible, Semi Fire-Resistive and Fire-Resistive Construction (Including Water Treatment Plants Except on Islands)	$100,000,000
Covered Property at Premises Described Above – On Islands (Water Treatment Plant Projects Only)	$5,000,000
Soft Costs	$1,000,000

DEDUCTIBLE OR WAITING PERIOD

COVERAGE	DEDUCTIBLE OR WAITING PERIOD
All Coverages Unless Otherwise Specified Below	$5,000 projects $50,000,000 and under. $25,000 on projects over $50,000,000.
Named Storm – On Islands	12.5%, Subject to $500,000 minimum on projects up to $8M. 10.0%, Subject to $500,000 minimum on projects over $8M.
Named Storm – Water Treatment Plant Projects Only	3%, Subject to $25,000 Minimum.
Named Storm – Frame, Joisted Masonry or Non-Combustible Construction	5%, Subject to $25,000 Minimum.
Named Storm – Masonry Non-Combustible, Semi Fire-Resistive or Fire-Resistive Construction	3%, Subject to $25,000 Minimum.

Flood – Zones C or X (Unshaded)	$25,000
Flood – Zone B or Shaded X	$50,000
Flood – All Other Zones and Water Treatment Projects on Islands	$500,000
Earth Movement and Volcanic Eruption “Pacific Northwest Seismic Area” “High Hazard Seismic Zones”	1% Subject to $50,000 Minimum
Earth Movement and Volcanic Eruption “New Madrid Seismic Area”	1% Subject to $50,000 Minimum
Earth Movement and Volcanic Eruption – All Other	$25,000

SUBLIMITS

COVERAGE	LIMIT OF INSURANCE
Flood – Per Occurrence – Zone C or Unshaded X	$75,000,000
Flood – Per Occurrence – Zones B & Shaded X	$15,000,000
Flood – Per Occurrence – All Other Zones	$1,000,000
Flood – Per Occurrence – Islands (Wastewater Treatment Plants Only)	$500,000
Flood Annual Aggregate	$75,000,000
Earth Movement and Volcanic Eruption – Pacific Northwest Seismic Area, High Hazard Seismic Zones	$1,000,000
Earth Movement and Volcanic Eruption – New Madrid Seismic Area	$10,000,000
Earth Movement and Volcanic Eruption – Per Occurrence	$50,000,000
Earth Movement and Volcanic Eruption – Annual Aggregate	$50,000,000
Windstorm or Hail – Premises Located on Islands	$2,500,000

COVERAGE TERMS

- Maximum Limit of Insurance: $100,000,000
- Valuation Clause: Replacement Cost
- Co-Insurance: 0%
- Additional Coverages – Testing: Electrical, Mechanical, Pneumatic and Hydrostatic
- Equipment Breakdown Endorsement
- Loss of Use Coverage Endorsement
- Permission to Occupy Endorsement
- Additional Coverage Limit for Valuable Papers - $250,000

ADDITIONAL COVERAGE	LIMIT OF INSURANCE
Contract Penalty	$250,000
Debris Removal	$500,000 / 25%
Extra and Expediting Expenses	$50,000
Fire Department Service Charge	$25,000
Fire Protection Systems	$25,000
Increase in Construction Costs	$200,000 / 10%
Landscaping and Signs	$100,000
Limited Coverage for “Fungi”, Wet Rot and Dry Rot	$25,000
Loss Adjustment Expenses	$5,000
Demolition Cost and Increased Cost of Construction	$500,000
Pollutant Cleanup and Removal	$25,000
Preservation of Property	Covered
Property in the Open	$25,000
Property that Supports your Business	$50,000
Reimbursement for Returning Stolen Property	$10,000
Reward Coverage	$5,000
Site Preparation	Covered
Sewer and Drain Backup	Covered
Sinkhole Collapse	Covered
Temporary Premises	$1,000,000
Temporary Structures	$25,000
Transit	$1,000,000
Unintentional Errors and Omissions	$25,000
Virus, Harmful Code or Similar Instruction	$10,000
Voluntary Parting	$25,000

HUMAN TRAFFICKING AFFIDAVIT
(SECTION 787.06, FLORIDA STATUTES)

STATE OF Florida §
§
COUNTY OF Seminole §

The undersigned ("Affiant"), on behalf of the entity listed below ("Entity"), after being duly sworn, hereby attests as follows:

1. My name is Darin A. Crafton. I am over the age of Twenty-one years old. I am the Chief Operating Officer - Commercial (Title) of Wharton-Smith, Inc. (Business Name), a non-governmental entity which does business in the State of Florida, hereinafter called the "Entity."

2. I have personal knowledge of each and every statement of fact contained herein, and each and every statement of fact is true and correct.

3. Entity does not use coercion, as defined in Section 787.06, Florida Statutes, for labor or services.

4. The undersigned is an officer or representative of the entity and is authorized to execute this affidavit on behalf of the Entity.

5. Under penalties of perjury, I declare that I have read the foregoing Human Trafficking Affidavit and that the facts stated herein are true.

Further Affiant sayeth not.

Date: November 12, 20 24

Signed: _____

Print Name: Darin A. Crafton

Title: Chief Operating Officer - Commercial

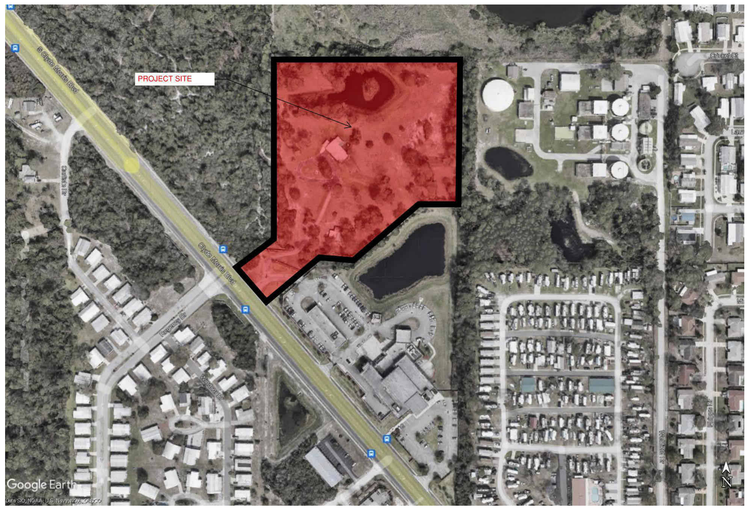
SUBSCRIBED AND SWORN before me by means of [X] physical presence or [__] online notarization on the 12th day of November, 20 24 by Darin A. Crafton as COO - Commercial on behalf of Wharton-Smith, Inc. who is personally known to me or who has produced _____ as identification.

(Notary Seal)

Notary Public State of Florida
Francine Z. Guillemette
My Commission HH 145206
Expires 08/19/2025

_____
Notary Public, State of Florida
Printed name, commission and expiration of commission term

SKB.7.8.2024. Rev. 9.6.2024
CA7985



SUBMITTAL LOG

ISSUE DATE	NAME
02/04/2022	SCHEMATIC DESIGN SUBMITTAL
04/08/2022	DESIGN DEVELOPMENT SUBMITTAL
06/03/2022	90% CONSTRUCTION DOCUMENTS SUBMITTAL
07/15/2022	100% CONSTRUCTION DOCUMENTS SUBMITTAL
09/30/2024	PERMIT/BID DOCUMENTS



GENERAL

SHEET NUMBER	SHEET TITLE
G000	COVER
G001	GENERAL INFORMATION AND ABBREVIATIONS
G010	CODE SUMMARY & CALCULATIONS
G021	UL ASSEMBLIES
G022	UL ASSEMBLIES
G031	PARTITION TYPES & NOTES
G032	TYPICAL PARTITION DETAILS
G033	TYPICAL PARTITION DETAILS
G101	LIFE SAFETY PLAN ADMIN
G102	LIFE SAFETY PLAN WAREHOUSE
Grand total: 10	

CIVIL

SHEET NUMBER	SHEET TITLE
C1	COVER SHEET
C2	CONSTRUCTION NOTES
C3	CONSTRUCTION NOTES
C4	CONSTRUCTION NOTES
C5	DEMOLITION AND EROSION CONTROL PLAN
C6	GEOMETRY, SIGNAGE, AND STRIPING PLAN
C7	PAVING, GRADING, AND DRAINAGE PLAN
C8	STORMWATER STRUCTURES TABLE
C9	UTILITY PLAN
C10	CONSTRUCTION DETAILS
C11	CONSTRUCTION DETAILS
C12	CONSTRUCTION DETAILS
C13	CONSTRUCTION DETAILS
C14	CONSTRUCTION DETAILS
C15	CONSTRUCTION DETAILS
Grand total: 15	

LANDSCAPE & IRRIGATION

SHEET NUMBER	SHEET TITLE
TP1	TREE PROTECTION PLAN & DETAILS
TP2	TREE PROTECTION PLAN & DETAILS
LA1	LANDSCAPE PLAN & DETAILS
LA2	LANDSCAPE PLAN & DETAILS
LA3	LANDSCAPE PLAN & DETAILS
LA4	LANDSCAPE PLAN & DETAILS
IR1	IRRIGATION PLAN & DETAILS
IR2	IRRIGATION PLAN & DETAILS
Grand total: 8	

STRUCTURAL

SHEET NUMBER	SHEET TITLE
S001	STRUCTURAL GENERAL NOTES
S002	STRUCTURAL GENERAL NOTES & ABBREVIATIONS
S003	STRUCTURAL GENERAL NOTES
S004	STRUCTURAL GENERAL NOTES & WIND DESIGN CRITERIA
S101	FOUNDATION PLAN
S101A	FOUNDATION PLAN - COVERED PARKING AREAS A & B & GRANULAR STORAGE
S101B	STREET SWEEPER RAMP & VACCUM TRUCK WASH DOWN FOUNDATION PLAN & SECTIONS
S102	ROOF FRAMING PLAN
S201	FOUNDATION SECTIONS AND DETAILS
S301	ROOF FRAMING SECTIONS AND DETAILS
S401	SCHEDULES, SECTIONS AND DETAILS
Grand total: 11	

ARCHITECTURAL SITE

SHEET NUMBER	SHEET TITLE
AS011	ARCHITECTURE SITE PLAN
AS501	DETAILS - SITE
AS502	DETAILS - SITE
AS503	DETAILS - SITE
Grand total: 4	

ARCHITECTURAL

SHEET NUMBER	SHEET TITLE
A101	OVERALL ARCHITECTURAL FLOOR PLAN
A101A	ARCHITECTURAL FLOOR PLAN - ADMINISTRATION
A101B	ARCHITECTURAL FLOOR PLAN - WAREHOUSE
A102	ARCHITECTURAL FLOOR PLAN & BUILDING SECTIONS - COVERED PARKING "A"
A103	ARCHITECTURAL FLOOR PLAN & BUILDING SECTIONS - COVERED PARKING "B"
A121A	DIMENSION PLAN - ADMINISTRATION
A121B	DIMENSION PLAN - WAREHOUSE
A141	OVERALL REFLECTED CEILING PLAN
A141A	REFLECTED CEILING PLAN - ADMINISTRATION
A141B	REFLECTED CEILING PLAN - WAREHOUSE
A142	REFLECTED CEILING PLANS - COVERED PARKING
A151	ROOF PLAN
A152	ROOF PLAN - COVERED PARKING
A160	INTERIOR FINISH SCHEDULE, LEGENDS AND DETAILS
A161A	FINISH PLAN - ADMINISTRATION
A161B	FINISH PLAN - WAREHOUSE
A171A	EQUIPMENT & FURNITURE PLAN - ADMINISTRATION
A171B	EQUIPMENT & FURNITURE PLAN - WAREHOUSE
A190	SIGNAGE TYPES & NOTES
A191A	SIGNAGE PLAN - ADMINISTRATION
A191B	SIGNAGE PLAN - WAREHOUSE
A201	EXTERIOR ELEVATIONS
A202	EXTERIOR ELEVATIONS
A251	INTERIOR ELEVATIONS
A261	TOILET ROOM ELEVATIONS
A301	BUILDING SECTIONS
A302	BUILDING SECTIONS
A303	BUILDING SECTIONS
A351	WALL SECTIONS
A352	WALL SECTIONS
A353	WALL SECTIONS
A354	WALL SECTIONS
A355	WALL SECTIONS
A356	WALL SECTIONS
A401	ENLARGED FLOOR PLANS AND ELEVATIONS
A460	TYPICAL TOILET FIXTURE & ACCESSORY SCHEDULE
A461	ENLARGED FLOOR PLANS - TOILET/MUD ROOM

ARCHITECTURAL

SHEET NUMBER	SHEET TITLE
A500	DOOR SCHEDULE
A501	DOOR, FRAME & LOUVER TYPES
A502	ALUMINUM STOREFRONT & CURTAINWALL TYPES, GLAZING LEGEND
A503	ALUMINUM STOREFRONT & CURTAINWALL TYPES, GLAZING LEGEND
A510	DETAILS - DOOR / WINDOW / LOUVER
A511	DETAILS - DOOR / WINDOW / LOUVER
A512	DETAILS - STOREFRONT / CURTAINWALL
A513	DETAILS - STOREFRONT / CURTAINWALL
A521	DETAILS - EXTERIOR
A522	DETAILS - EXTERIOR
A523	DETAILS - EXTERIOR
A524	PRE-ENGINEERED METAL BUILDING DETAILS
A541	DETAILS - CEILING
A551	DETAILS - ROOF SYSTEM
A552	DETAILS - ROOF SYSTEM
A561	DETAILS - INTERIOR
A562	DETAILS - INTERIOR
A563	DETAILS - INTERIOR
A901	MISC. DETAILS
Grand total: 56	

PLUMBING

SHEET NUMBER	SHEET TITLE
P001	PLUMBING SYMBOLS, LEGEND, NOTES AND INDEX
P101A	PLUMBING FLOOR PLAN ADMIN
P101B	PLUMBING FLOOR PLAN WAREHOUSE
P300	PLUMBING DETAILS
P301	PLUMBING RISERS
P302	PLUMBING RISERS
P303	PLUMBING RISERS
Grand total: 7	

FIRE PROTECTION

SHEET NUMBER	SHEET TITLE
FP001	FIRE PROTECTION SYMBOLS, LEGEND, NOTES AND INDEX
FP101A	FIRE PROTECTION ADMIN
FP101B	FIRE PROTECTION FLOOR PLAN WAREHOUSE
Grand total: 3	

MECHANICAL

SHEET NUMBER	SHEET TITLE
M001	MECHANICAL LEGEND
M101A	MECHANICAL PLAN - ADMINISTRATION
M101B	MECHANICAL PLAN - WAREHOUSE
M400	MECHANICAL DETAILS
M500	MECHANICAL CONTROLS SCHEMATICS
M600	MECHANICAL SCHEDULES
Grand total: 6	

ELECTRICAL

SHEET NUMBER	SHEET TITLE
E001	ELECTRICAL LEGEND AND NOTES
ES101	SITE ELECTRICAL PLAN
ES102	PHOTOMETRICS SITE PLAN
E101A	LIGHTING PLAN - ADMINISTRATION
E101B	LIGHTING PLAN - WAREHOUSE
E111A	POWER PLAN - ADMINISTRATION
E111B	POWER PLAN - WAREHOUSE
E121	ELECTRICAL PLAN - ROOF
E131	ELECTRICAL PLAN - COVERED PARKING
E201	ENLARGED PLANS
E301	ELECTRICAL DETAILS
E302	ELECTRICAL DETAILS
E401	ELECTRICAL ONE-LINE DIAGRAM
ES01	LIGHTING FIXTURE SCHEDULE
ES02	ELECTRICAL PANEL SCHEDULES
Grand total: 15	

FIRE ALARM

SHEET NUMBER	SHEET TITLE
FA001	FIRE ALARM LEGEND AND NOTES
FA101A	FIRE ALARM PLAN - ADMINISTRATION
FA101B	FIRE ALARM PLAN - WAREHOUSE
FA201	FIRE ALARM RISER DIAGRAM AND RESPONSE MATRIX
Grand total: 4	

TECHNOLOGY/SYSTEMS

SHEET NUMBER	SHEET TITLE
T001	TECHNOLOGY LEGEND AND NOTES
T002	TECHNOLOGY SITE PLAN
T101A	TECHNOLOGY FLOOR PLAN - ADMINISTRATION
T101B	TECHNOLOGY FLOOR PLAN - WAREHOUSE
T401	TECHNOLOGY ENLARGED PLANS
T501	TECHNOLOGY DETAILS
T502	TECHNOLOGY DETAILS
T503	TECHNOLOGY DETAILS
T504	TECHNOLOGY DETAILS
T505	TECHNOLOGY DETAILS
T506	TECHNOLOGY DETAILS
T601	TECHNOLOGY SCHEDULES
Grand total: 12	

CITY OF PORT ORANGE
PUBLIC UTILITIES FIELD OPERATIONS FACILITY

4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

PERMIT/BID DOCUMENTS

COMM. NO.: **2021815**

09/30/2024

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CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:

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PORT ORANGE, FL 32129

SCHENKEL SHULTZ

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ABREVIATIONS

&	AND
@	AT
A/E	ARCHITECT / ENGINEER
AB	ANCHOR BOLT
AC	AIR CONDITIONING
ACC	ACCESSIBLE
ACOUST	ACOUSTICAL
ACT	ACOUSTIC CEILING TILE
AD	AREA DRAIN
AD	ACCESS DOOR
ADJ	ADJACENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AGGR	AGGREGATE
ALT	ALTERNATE
ALUM	ALUMINUM
ANOD	ANODIZED
APC	ACOUSTICAL PANEL CEILING
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ASPH	ASPHALT
ATTN	ATTENTION
AUTO	AUTOMATIC
AV	AUDIOVISUAL
B	
BD	BOARD
BIT	BITUMINOUS
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BO	BOTTOM OF
BOB	BOTTOM OF BEAM
BOC	BOTTOM OF CURB
BOT	BOTTOM
BRG	BEARING
BRK	BRICK
BRKT	BRACKET
BSMNT	BASEMENT
BUR	BUILT UP ROOFING
C	
3IS	
C	CHANNEL
C/C	CENTER TO CENTER
CAB	CABINET
CAT	CATEGORY
CB	CATCH BASIN
CB	CEMENT BOARD
CBU	CEMENTITIOUS BACKER UNIT
CCTV	CLOSED CIRCUIT TELEVISION
CEM	CEMENT
CER	CERAMIC
CG	CORNER GUARD
CH	CHILLER
CI	CAST IRON
CIP	CAST-IN-PLACE
CJ	CONTROL JOINT
CL	CENTERLINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CNTR	COUNTER
CO	CLEANOUT
COL	COLUMN
CONC	CONCRETE
COND	CONDITION
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
COORD	COORDINATE
CORR	CORRIDOR
CPT	CARPET
CT	CERAMIC TILE
CTR	CENTER
CTSK	COUNTERSUNK
CUST	CUSTODIAL
CW	COLD WATER
D	
D	DEEP, DEPTH
DBL	DOUBLE
DEG	DEGREE
DEMO	DEMOLISH OR DEMOLITION
DEMO	DEMOLITION
DEPT	DEPARTMENT
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIAG	DIAGONAL
DIFF	DIFFUSER
DIM	DIMENSION
DIMS	DIMENSIONS
DISP	DISPENSER
DIV	DIVISION
DMPF	DAMP PROOFING
DN	DOWN
DO	DOOR OPENING
DR	DOOR
DRN	DRAIN
DS	DOWNSPOUT
DTL	DETAIL
DW	DISHWASHER
DWG	DRAWING
DWR	DRAWER
E	
E	EAST
EA	EACH
EB	EXPANSION BOLT
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
EMER	EMERGENCY
ENCL	ENCLOSURE
ENG	ENGINEER
EP	ELECTRICAL PANEL
EPDM	ETHYLENE PROPYLENE DIENE M-CLASS
EQ	EQUAL
EQUIP	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
F	
FA	FIRE ALARM
FB	FACE BRICK
FD	FLOOR DRAIN OR FIRE DEPARTMENT
FDC	FIRE DEPARTMENT CONNECTION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF&E	FURNITURE, FIXTURES AND EQUIPMENT
FFB	FLUSH FLOOR BOX
FFEL	FINISH FLOOR ELEVATION
FH	FULL HEIGHT OR FLAT HEAD
FHC	FIRE HOSE CABINET
FIN	FINISH
FIXT	FIXTURE
FLASH	FLASHING
FLR	FLOOR
FLUOR	FLUORESCENT
FND	FOUNDATION
FO	FACE OF OR FINISHED OPENING

ABREVIATIONS

FP	FIRE PROTECTION
FPG	FIREPROOFING
FR	FIRE RESISTANT
FRC	FIBER REINFORCED CONCRETE
FRP	FIBER REINFORCED PLASTIC
FRT	FIRE RETARDANT TREATED
FS	FLOOR SINK
FT	FEET/FOOT
FTG	FOOTING
FURN	FURNITURE
FURR	FURRING
FWC	FABRIC WALL COVERING
FWP	FABRIC WRAPPED PANEL
G	
GA	GAUGE
GALV	GALVANIZED
GB	GRAB BAR
GC	GENERAL CONTRACT(OR)
GEN	GENERAL
GFRC	GLASS FIBER REINFORCED CONCRETE
GL	GLASS
GLAZ	GLAZING
GR	GRADE
GRAN	GRANULAR
GRD	GROUND
GRFG	GLASS FIBER REINFORCED GYPSUM
GSM	GALVANIZED SHEET METAL
GV	GAS VALVE
GWB	GYPSUM WALL BOARD
GYP	GYPSUM
H	
H	HIG
HB	HOSE BIB
HC	HANDICAPPED OR HOLLOW CORE
HDWD	HARDWOOD
HDWR	HARDWARE
HGT	HEIGHT
HM	HOLLOW METAL
HNDRL	HANDRAIL
HO	HOLD OPEN
HORIZ	HORIZONTAL
HP	HIGH POINT
HR	HOUR
HRC	HOSE REEL CABINET
HT	HEIGHT
HTG	HEATING
HVAC	HEATING VENTILATION & AIR CONDITIONING
HW	HOT WATER
I	
ID	INSIDE DIAMETER
IN	INCH/INCHES
INCAND	INCANDESCENT
INCL	INCLUDED/INCLUDING
INFO	INFORMATION
INSUL	INSULATED OR INSULATION
INT	INTERIOR
INTERM	INTERMEDIATE
INV	INVERT
J	
JAN	JANITOR
JC	JANITOR'S CLOSET
JST	JOIST
JT	JOINT
K	
KIT	KITCHEN
KO	KNOCK OUT
L	
LAM	LAMINATE
LAV	LAVATORY
LB	POUND
LF	LINEAR FEET
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LT	LIGHT
LTG	LIGHTING
LTWT	LIGHTWEIGHT
LVL	LEVEL
LVR	LOUVER
M	
MAINT	MAINTENANCE
MAS	MASONRY
MAT	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MECH	MECHANICAL
MED	MEDIUM
MEMBR	MEMBRANE
MEZZ	MEZZANINE
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MR	MOISTURE RESISTANT
MTD	MOUNTED
MTG	MOUNTING
MTL	METAL
MULL	MULLION
N	
N	NORTH
NA	NOT APPLICABLE
NC	NOISE CRITERIA
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NR	NON RATED
NTS	NOT TO SCALE
O	
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
OA	OUTSIDE AIR
OC	ON CENTER
OD	OUTSIDE DIAMETER
OD	OVERFLOW DRAIN
OF	OWNER FURNISHED
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFF	OFFICE
OFOI	OWNER FURNISHED, OWNER INSTALLED
OH	OVERHEAD
OPNG	OPENING
OPP	OPPOSITE
ORD	OVERFLOW ROOF DRAIN
ORIG	ORIGINAL
P	
P	PAINT
PAV	PAVING
PBD	PARTICLE BOARD
PC	PRECAST
PDF	POWER DRIVEN FASTENER
PERF	PERFORATED
PERIM	PERIMETER
PERP	PERPENDICULAR
PL	PLATE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLBG	PLUMBING
PLF	POUNDS PER LINEAR FOOT
PLYWD	PLYWOOD
PNL	PANEL
PNT	PAINT OR PAINTED
POL	POLISHED
PR	PAIR
PREFAB	PREFABRICATED
PROJ	PROJECT
PSF	POUNDS PER SQUARE FOOT

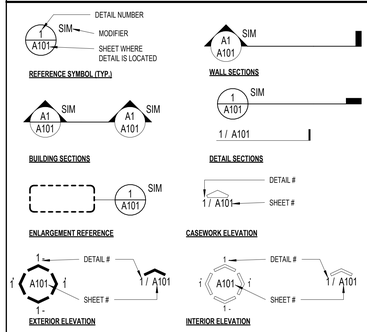
ABREVIATIONS

PT	POINT
PT	PRESSURE TREATED
PTD	PAINTED
PTN	PARTITION
PVC	POLYVINYL CHLORIDE
Q	
QT	QUARRY TILE
QTY	QUANTITY
R	
R	RADIUS/RISER
RA	RETURN AIR
RAD	RADIUS
RB	RESILIENT BASE
RBR	RUBBER
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REC	RECESSED
RECPT	RECEPTACLE
REF	REFERENCE
REFR	REFRIGERATOR
REG	REGISTER
REINF	REINFORCED REINFORCING
REINF	REINFORCED
REL	RELOCATE
REM	REMOVABLE
REQ	REQUIRE/REQUIRED
REQD	REQUIRED
RESIL	RESILIENT
REV	REVISION/REVISED
RM	ROOM
RO	ROUGH OPENING
RTD	RATED
RTG	RATING
RWL	RAIN WATER LEADER
S	
S	SOUTH
SA	SUPPLY AIR
SAF	SELF ADHERED FLASHING
SC	SOLID CORE
SCHED	SCHEDULE
SD	STORM DRAIN
SECT	SECTION
SF	SQUARE FEET/FOOT
SH	SPRINKLER HEAD
SHR	SHOWER
SHT	SHEET
SIM	SIMILAR
SJ	SAW JOINT
SM	SHEET METAL
SM	SURFACE MOUNTED
SP	STANDPIPE
SPEC	SPECIFIED OR SPECIFICATION
SPK	SPRINKLE
SPKR	SPEAKER
SQ	SQUARE
SS	STAINLESS STEEL
SSK	SERVICE SINK
STA	STATION
STC	SOUND TRANSMISSION COEFFICIENT
STL	STEEL
STOR	STORAGE
STRG	STRINGER
STRUCT	STRUCTURAL
STRUCT	STRUCTURE OR STRUCTURAL
SUBCAT	SUBCATEGORY
SUSP	SUSPENDED
SYM	SYMMETRICAL
SYS	SYSTEM
T	
T	TREAD
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
TB	TOWEL BAR
TDC	TRAFFIC DECK COATING
TEL	TELEPHONE/TELECOM
TELE	TELEPHONE
TEMP	TEMPORARY
THK	THICKNESS
THRU	THROUGH
TKBD	TACK BOARD
TLT	TOILET
TMPD	TEMPERED
TO	TOP OF
TOB	TOP OF BEAM
TOC	TOP OF CONCRETE OR TOP OF CURB
TOS	TOP OF STEEL
TOW	TOP OF WALL
TS	TUBE STEEL
TV	TELEVISION
TYP	TYPICAL
U	
UL	UNDERWRITERS LABORATORY
UNFIN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
UON	UNLESS OTHERWISE NOTED
URNL	URINAL
V	
VAC	VENTILATION AND AIR CONDITIONING
VAR	VARIES
VCT	VINYL COMPOSITION TILE
VER	VERIFY
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VP	VISION PANEL
VR	VAPOR RETARDER
VT	VINYL TILE
VWC	VINYL WALL COVERING
W	
W	WIDE OR WEST
W/	WITH
W/O	WITHOUT
WC	WATER CLOSET
WD	WOOD
WIN	WINDOW
WM	WIRE MESH
WP	WATERPROOF OR WATERPROOFING
WPM	WATERPROOF MEMBRANE
WS	WEATHER-STRIPPING
WSCT	WAINSCOT
WT	WEIGHT
WV	WATER VALVE
WWF	WELDED WIRE FABRIC
WWM	WELDED WIRE MESH
Y	
YR	YEAR

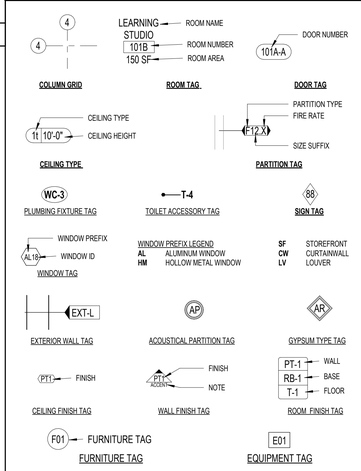
GENERAL NOTES - ARCHITECTURE

1. EACH CONTRACTOR SHALL VERIFY ALL DIMENSIONS SHOWN ON THE DRAWINGS AND OBTAIN ALL MEASUREMENTS REQUIRED FOR PROPER EXECUTION OF WORK. WHEN VERIFICATION OF EXISTING DIMENSIONS IS REQUIRED, THE CONTRACTOR REQUIRING SAID VERIFICATION FOR THE CONSTRUCTION OR FABRICATION OF HIS MATERIAL SHALL BE THE CONTRACTOR RESPONSIBLE FOR THE PROCUREMENT OF THE FIELD INFORMATION.
2. PROVIDE ALL WOOD BLOCKING NECESSARY FOR THE ATTACHMENT OF MISCELLANEOUS EQUIPMENT INCLUDING BUT NOT LIMITED TO TOILET ACCESSORIES, DOOR HARDWARE, ELECTRICAL DEVICES, LABORATORY EQUIPMENT, GRAB BARS, HANDRAILS, CASEWORK AND MILLWORK.
3. THE TRANSITION OF DIFFERENT FLOORING MATERIALS AT A DOORWAY SHALL OCCUR AT THE CENTERLINE OF DOOR UNLESS INDICATED OTHERWISE.
4. ALL WALL SURFACES, DOOR FRAMES, BULKHEADS AND CEILINGS SHALL RECEIVE PAINT WHEN PAINT IS INDICATED ON THE FINISH SCHEDULE OR FINISH PLANS. PAINT SURFACES BEHIND MOVABLE EQUIPMENT AND FURNITURE SAME AS SIMILAR EXPOSED SURFACES. PAINT SURFACES BEHIND PERMANENTLY FIXED EQUIPMENT OR FURNITURE WITH PRIME COAT ONLY BEFORE FINAL INSTALLATION OF EQUIPMENT. PAINT ALL MECHANICAL AND ELECTRICAL EQUIPMENT EXPOSED IN FINISHED SPACES UNLESS INDICATED OTHERWISE.
5. REPAIR ALL SURFACES DAMAGED BY RENOVATION AND NEW CONSTRUCTION TO MATCH EXISTING ADJACENT OR CONTIGUOUS FINISH.
6. ALL CUTTING AND PATCHING AS A RESULT OF NEW CONSTRUCTION OR DEMOLITION SHALL BE PERFORMED IN A WORKMANLIKE MANNER, AND SHALL MATCH IN COLOR, SHAPE, SIZE AND TEXTURE ADJACENT AND/OR CONTIGUOUS FINISHED SURFACES.
7. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED MEASUREMENTS. DO NOT SCALE DRAWINGS.
8. DETAILED DRAWINGS AND LARGER SCALE DRAWINGS TAKE PRECEDENCE OVER SMALL SCALE DRAWINGS.
9. UNLESS OTHERWISE NOTED, PLAN DIMENSIONS ARE TAKEN FROM FACE OF CMU OR CONCRETE TO FACE OF WALL, OR FACE OF WALL TO FACE OF WALL.
10. DOORS NOT OTHERWISE DIMENSIONED SHALL BE 8" FROM FACE OF ADJACENT CMU OR CONCRETE WALL TO ROUGH DOOR OPENING, AND 4" FROM FACE OF ADJACENT STUD WALL TO ROUGH DOOR OPENING.
11. FOR CONSTRUCTION DETAILS NOT SHOWN, USE THE PRODUCT MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS AND STANDARD DETAILS, IN STRICT ACCORDANCE WITH THE PROJECT SPECIFICATION REQUIREMENTS AND DESIGN INTENT.
12. PROVIDE FIRE EXTINGUISHERS (FE) AND FIRE EXTINGUISHER CABINETS (FEC) AS INDICATED ON THE PLANS. PROVIDE TYPE AND SIZE AS SPECIFIED. MOUNT AT 42" AFF TO TOP OF FE AND 48" AFF TO TOP OF FEC

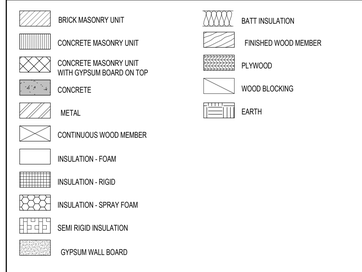
REFERENCE SYMBOLS



IDENTITY SYMBOLS

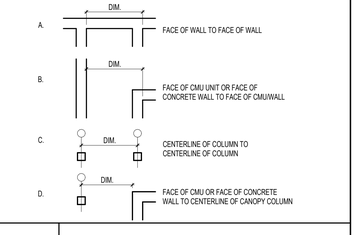


MATERIAL LEGEND



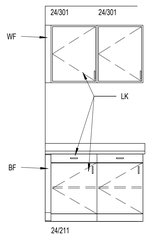
DIMENSIONING

1. DOORS NOT OTHERWISE DIMENSIONED SHALL BE:
   A. 8" FROM FACE OF ADJACENT MASONRY WALL TO ROUGH DOOR OPENING.
   B. 4" FROM FACE OF ADJACENT STUD WALL TO ROUGH DOOR OPENING.
2. SEE LARGE SCALE DETAILS FOR LOCATIONS AND ALIGNMENTS OF PARTITIONS NOT DIMENSIONED ON FLOOR PLANS.
3. UNLESS OTHERWISE NOTED, PLAN DIMENSIONS ARE TAKEN FROM:

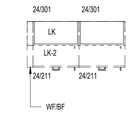


CASEWORK LEGEND

CASEWORK ELEVATION LEGEND



CASEWORK PLAN LEGEND



CASEWORK TAG LEGEND



NOTE:
STANDARD CASEWORK MAY BE INDICATED IN PLAN OR ELEVATION. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION ON CONSTRUCTION & MATERIALS.
REFER TO PLANS AND DETAILS FOR NON-STANDARD CASEWORK & MILLWORK CONSTRUCTION AND DETAILING.

AF ACCESSORY FILLER PANEL
BF BASE CABINET FILLER PANEL
FF FULL HEIGHT CABINET FILLER PANEL
WF WALL CABINET FILLER PANEL
LK DRAWER / DOOR LOCK
FP FINISHED PANEL

ALL BASE CABINETS 24" DEEP U.N.O.
ALL WALL CABINETS 12" DEEP U.N.O.
ALL FULL HEIGHT CABINETS 24" DEEP U.N.O.

DRAWING CONVENTIONS

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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REVISIONS

MARK	DESCRIPTION	DATE
1	OWNER REVISIONS MEETING	09/22/2023

COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
DRAWN BY: JB

GENERAL INFORMATION AND ABBREVIATIONS

G001

PERMIT/BID DOCUMENTS

9/30/2024 2:11:42 PM
Autodesk Docs://2021815 Port Orange Field Operations/2021815_PORT ORANGE FIELD OPERATIONS_A_R2023.rvt

PROJECT SUMMARY

THIS PROJECT CONSISTS OF A NEW 1 STORY ADMIN BUILDING AND ONE STORY WAREHOUSE BUILDING.

EHPA / STORM SHELTER

THIS PROJECT **WILL NOT** BE CONSTRUCTED AS AN E.H.P.A. OR STORM SHELTER

APPLICABLE CODES & STANDARDS

BUILDING:	FLORIDA BUILDING CODE 8TH EDITION (2023)
FIRE / LIFE SAFETY:	FLORIDA FIRE PREVENTION CODE 8th EDITION (2023) NFPA 1, FIRE CODE - (2021) NFPA 101, LIFE SAFETY CODE - 2023 WITH FLORIDA AMENDMENTS
PLUMBING:	FLORIDA BUILDING CODE 8th EDITION (2023) - PLUMBING FLORIDA BUILDING CODE 8th EDITION (2023) - FUEL GAS
MECHANICAL:	FLORIDA BUILDING CODE 8th EDITION (2023) - MECHANICAL
ELECTRICAL:	FLORIDA BUILDING CODE 8th EDITION (2023) - CHAPTER 27 NFPA 70, NATIONAL ELECTRICAL CODE - 2020 EDITION
ENERGY:	FLORIDA BUILDING CODE 8th EDITION (2023) - ENERGY CONSERVATION
ACCESSIBILITY:	FLORIDA BUILDING CODE 8th EDITION (2023) - ACCESSIBILITY
TESTING FOR HVHZ:	FLORIDA BUILDING CODE 8th EDITION (2023) - TEST PROTOCOLS

AUTHORITIES HAVING JURISDICTION

BUILDING:	PORT ORANGE BUILDING DEPARTMENT
FIRE / LIFE SAFETY:	PORT ORANGE FIRE RESCUE

OCCUPANCY CLASSIFICATION

(FBC CHAPTER 3 - Use & Occupancy Classification)
(FBC CHAPTER 5 - General Building Heights & Areas)
(NFPA CHAPTER 6 - Classification Occupancy)

ADMIN BUILDING: BUSINESS OCCUPANCY PER F.B.C. SECTION 304.1 & NFPA 101 (FL ED) 6.1.11

WAREHOUSE BUILDING: WAREHOUSE-S-1 (MODERATE HAZARD STORAGE) PER F.B.C. SECTION 311 & NFPA 101 CHAPTER 42 (STORAGE OCC)

CONSTRUCTION TYPE

(F.B.C. Chapter 6 - Types of Construction)

BUILDING:	TYPE II B CONSTRUCTION, SPRINKLERED (FBC TABLE 601)

FIRE RESISTANCE OF BLDG. ELEMENTS BY CONSTRUCTION TYPE

PRIMARY STRUCT. FRAME:	0 HOURS
BEARING WALLS - EXT:	0 HOURS
BEARING WALLS - INT:	0 HOURS
NONBEARING WALLS - EXT:	SEE TABLE 602
NONBEARING WALLS - INT:	0 HOURS
FLOOR CONSTRUCTION:	0 HOURS
ROOF CONSTRUCTION:	0 HOUR
CORRIDORS:	0 HOUR (WITH SPRINKLER SYSTEM PER F.B.C. 1020.1)

NOTE: REFER TO SHEETS G020-G024 FOR UL ASSEMBLIES TO PROVIDE REQUIRED FIRE RESISTANCE OF BLDG. ELEMENTS

BUILDING HEIGHT BY CONSTRUCTION TYPE

(F.B.C. Chapter 5 - General Building Heights and Areas)

ALLOWABLE HEIGHT:	4 STORIES (ADMIN), 3 STORIES (WAREHOUSE) / 75 FT.
ACTUAL BUILDING HEIGHT:	1 STORY / 26'-0" (ADMIN) 1 STORY / 28'-0" (WAREHOUSE)

BUILDING AREA BY CONSTRUCTION TYPE

(F.B.C. Chapter 5 - General Building Heights and Areas)

ALLOWABLE BUILDING AREA:	92,000 SF(ADMIN) / 70,000 SF (WAREHOUSE)
ACTUAL BUILDING AREA:	
ADMIN	11,684 GSF
WAREHOUSE	12,289 GSF

NON-SEPARATED OCCUPANCY PER F.B.C SECTION 508.3

508.3.1 OCCUPANCY CLASSIFICATION: NON SEPARATED OCCUPANCIES SHALL BE INDIVIDUALLY CLASSIFIED IN ACCORDANCE WITH SECTION 302.1. THE REQUIREMENTS OF THIS CODE SHALL APPLY TO EACH PORTION OF THE BUILDING BASED ON THE OCCUPANCY CLASSIFICATION OF THAT SPACE EXCEPT THAT THE MOST RESTRICTIVE APPLICABLE PROVISIONS OF SECTION 403 AND CHAPTER 9 SHALL APPLY TO THE BUILDING OR PORTION THEREOF IN WHICH THE NONSEPARATED OCCUPANCIES ARE LOCATED.

508.3.2 ALLOWABLE BUILDING AREA AND HEIGHT: THE ALLOWABLE BUILDING AREA AND HEIGHT OF THE BUILDING OR PORTION THEREOF SHALL BE BASED ON THE MOST RESTRICTIVE ALLOWANCES FOR THE OCCUPANCY GROUPS UNDER CONSIDERATION FOR THE TYPE OF CONSTRUCTION OF THE BUILDING IN ACCORDANCE WITH SECTION 503.1

508.3.3 SEPARATION: NO SEPARATION IS REQUIRED BETWEEN NONSEPARATED OCCUPANCIES

SEPARATION BETWEEN BUILDINGS

PER FBC TABLE 602 FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE (TO IMAGINARY LINE BETWEEN BUILDINGS EXTERIOR WALLS FOR THE LISTED APPLICABLE OCCUPANCY GROUPS)

= **1 HOUR** *(B OCCUPANCY - ADMIN BUILDING)* FIRE SEPARATION DISTANCE **X** < 5 FT (TO IMAGINARY LINE SEPARATION)
= **0 HOUR** *(S-1 OCCUPANCY - WAREHOUSE)* FIRE SEPARATION DISTANCE 10 < **X** < 30 FT (TO IMAGINARY LINE SEPARATION)
** NOTE 15'-6" TOTAL MIN. FIRE SEPARATION DISTANCE CLEARANCE IS PROVIDED BETWEEN EXTERIOR WALLS OF THE ADMIN BUILDING TO THE WAREHOUSE* ***(WHICH EXCEEDS THE MINIMUM REQUIRED SEPARATION)***

PER FBC 705.5 NO ADDITIONAL FIRE RATING REQUIRED FOR EXTERIOR WALLS FROM OUTSIDE FIRE IF DISTANCE BETWEEN BUILDINGS IS GREATER THAN 10'

PER FBC TABLE 705.8 MAXIMUM AREA OF EXTERIOR WALL OPENINGS BASED ON FIRE SEPARATION DISTANCE AND DEGREE OF OPENING PROTECTION (BASED ON ABOVE MENTIONED FIRE SEPARATION DISTANCES)

= **25% MAX. ALLOWABLE AREA - PROTECTED OPENINGS** *(ADMIN BUILDING)*
= **45% MAX. ALLOWABLE AREA - UNPROTECTED, SPRINKLERED OPENINGS** *(WAREHOUSE)*
NOTE THE PROVIDED OPENINGS ARE A LOWER AREA THAN THE MAX. ALLOWED* *(WHICH MEETS THIS REQUIREMENT)***

SEPARATION FROM HAZARDS

ROOM OR AREA	FIRE RESISTANCE RATING	STANDARD
BOILER / FURNACE ROOM	SMOKE PARTITION W/ SPRINKLER	NFPA 101
JANITOR CLOSETS	SMOKE PARTITION W/ SPRINKLER	NFPA 101
STORAGE ROOMS	SMOKE PARTITION W/ SPRINKLER	NFPA 101

INTERIOR FINISHES

(per NFPA 101 38.3.3.2.1- more stringent than FBC)

CONSTRUCTION TYPE	FIRE RESISTANCE RATING
EXITS	CLASS A
EXIT ACCESS CORRIDORS	CLASS B
OTHER THAN EXITS	CLASS C
LOW HEIGHT PARTITIONS	CLASS C (SEE NOTE 1)
INTERIOR FLOOR FINISHES	CLASS II
GENERAL ASSEMBLY AREAS (>300)	CLASS B
ASSEMBLY AREAS (<300)	CLASS C

NOTES:
1. PARTITIONS NOT EXCEEDING 60 INCHES AND IN LOCATIONS OTHER THAN EXITS
2. FIRE RESISTANCE RATINGS SHOWN ABOVE ARE FOR BUSINESS OCCUPANCY (WHICH IS MORE STRINGENT THAN THOSE FOR S-1 OCCUPANCY)

OCCUPANT LOADS

THE CALCULATED OCCUPANT LOAD RESULTS IN A TOTAL BUILDING POPULATION FOR EGRESS AS INDICATED BELOW. REFER TO EGRESS CAPACITY TABLES BELOW FOR EGRESS BY FLOOR OR AREA. REFER TO THE LIFE SAFETY DRAWINGS FOR THE OCCUPANCY SCHEDULES OR COUNTS.

BUILDING	OCCUPANT LOAD	PROVIDED EGRESS
ADMIN	159 PERSONS	1020 PERSONS
WAREHOUSE	25 PERSONS	1190 PERSONS

EGRESS CAPACITY

REFER TO THE LIFE SAFETY DRAWINGS FOR THE LOCATION AND CAPACITY OF ALL EGRESS COMPONENTS

EXITS

BUILDING	EXIT WIDTH - REQUIRED	EXIT WIDTH - PROVIDED
ADMIN	159 PERSONS X 0.2" = **32 INCHES**	**5100 INCHES**
WAREHOUSE	25 PERSONS X 0.2" = **5 INCHES**	**5950 INCHES**

EGRESS COMPONENTS

MIN. NUMBER OF EXITS:	2 (PER F.B.C. TABLE 1006.2.1 AND 1006.3.2)
MAX. TRAVEL DISTANCE:	300 FT (B OCC) / 400 FT (S-1 OCC) (PER F.B.C TABLE 1017.2 & NFPA 101 38.2.6.3 AND 101 42.2.6)
MAX. COMMON PATH OF TRAVEL:	100 FT. (PER F.B.C TABLE 1006.2.1 & NFPA 101 38.2.5.3.1 AND 101 42.2.5)
MAX. DEAD END CORRIDOR:	50 FT. (PER F.B.C. SECTION 1020.4.2 & NFPA 38.2.5.2.1)
MIN. CORRIDOR WIDTH:	44 " CLEAR (PER F.B.C. SECTION 1020.2 & NFPA 101 7.3, 101 38.2.3.2 AND 101 42.2.3)
MIN. DOOR WIDTH:	0.2" PER PERSON (PER F.B.C. 1005.3.2 & NFPA 101 7.3.3.1) BUT NO LESS THAN 32" (PER F.B.C. SECTION 1010.1.1 AND NFPA 101 7.2.1.2.3.2)

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
DRAWN BY: ZL

CODE SUMMARY & CALCULATIONS

G010
PERMIT/BID DOCUMENTS

UL Product iQ®

UL Solutions

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States
BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

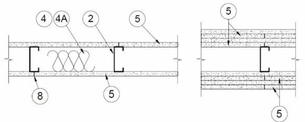
See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States
Design Criteria and Allowable Variances

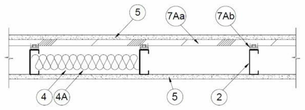
See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

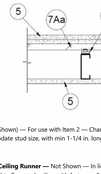
Design No. U419

June 14, 2024

Nonbearing Wall Ratings — 1, 2, 3 or 4 Hr (See Items 4 & 5 through 5J)
*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**







1. **Floor and Ceiling Runners —** (Not Shown) — For use with Item 2 — Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min depth to accommodate stud size, with min 1-1/4 in. long legs, attached to floor and ceiling with fasteners 24 in. OC max.

1A. **Framing Members* — Floor and Ceiling Runner —** Not Shown — In lieu of Item 1 — For use with Item 2B, proprietary channel shaped runners, 3-5/8 in. deep attached to floor and ceiling with fasteners 24 in. OC max.
CEMCO, LLC — Viper25™ Track

CRACO MFG INC — SmartTrack25™

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper25™ Track

IMPERIAL MANUFACTURING GROUP INC — Viper25™ Track

1B. **Framing Members* — Floor and Ceiling Runner —** Not Shown — In lieu of Item 1 — For use with Item 2C, proprietary channel shaped runners, 1-1/4 in. wide by 3-5/8 in. deep fabricated from min 0.018 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
CEMCO, LLC — Viper20™ Track

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™ Track

IMPERIAL MANUFACTURING GROUP INC — Viper20™ Track

1C. **Framing Members* — Floor and Ceiling Runners —** (Not Shown) — In lieu of Item 1 — Channel shaped, attached to floor and ceiling with fasteners 24 in. OC. max.
ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME D24/30EQD and Type SUPREME D20

CONSOLIDATED FABRICATORS CORP, BUILDING PRODUCTS DIV — Type SUPREME D24/30EQD and Type SUPREME D20

QUAIL RUN BUILDING MATERIALS INC — Type SUPREME D24/30EQD and Type SUPREME D20

SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME D24/30EQD and Type SUPREME D20

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME D24/30EQD and Type SUPREME D20

TELLING INDUSTRIES L L C — Type SUPREME D24/30EQD and Type SUPREME D20

UNITED METAL PRODUCTS INC — Type SUPREME D24/30EQD and Type SUPREME D20

1D. **Floor and Ceiling Runners —** (Not Shown) — For use with Item 2A — Channel shaped, fabricated from min 20 MSG corrosion-protected or galv steel, min depth to accommodate stud size, with min 1 in. long legs, attached to floor and ceiling with fasteners spaced max 24 in. OC.

1E. **Framing Members* — Floor and Ceiling Runners —** (Not Shown, As an alternate to Item 1) — For use with Items 2E, 5F or 5G or 5I only, channel shaped, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, attached to floor and ceiling with fasteners 24 in. OC. max.
CLARKDIETRICH BUILDING SYSTEMS — CD ProTRAK

DMFCWBS L L C — ProTRAK

MBA METAL FRAMING — ProTRAK

RAM SALES L L C — Ram ProTRAK

STEEL STRUCTURAL PRODUCTS L L C — Tri-S ProTRAK

1F. **Framing Members* — Floor and Ceiling Runner —** Not Shown — In lieu of Item 1 — For use with Item 2F, proprietary channel shaped runners, minimum width to accommodate stud size, with 1-1/8 in. long legs fabricated from min 0.015 in. (min bare metal thickness) galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
SUPER STUD BUILDING PRODUCTS — The Edge

1G. **Framing Members* — Floor and Ceiling Runner —** For use with Item 2G, proprietary channel shaped runners, minimum width to accommodate stud size attached to floor and ceiling with fasteners 24 in. OC max.
STUDCO BUILDING SYSTEMS — CROCSTUD Track

1H. **Floor and Ceiling Runners —** (Not Shown) — Channel shaped, fabricated from min 0.02 in. galv steel, min width to accommodate stud size, with min 1 in. long legs, for use with studs specified below and fabricated from min 0.018 in. galv steel or thicker, attached to floor and ceiling with fasteners spaced max 24 in. OC.
MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™ Track VT100

IMPERIAL MANUFACTURING GROUP INC — Viper20™ Track VT100

1I. **Framing Members* — Floor and Ceiling Runners —** (Not Shown, As an alternate to Item 1) — For use with Items 2H, channel shaped, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, attached to floor and ceiling with fasteners 24 in. OC., max.
TELLING INDUSTRIES L L C — TRUE-TRACK™

1J. **Framing Members* — Floor and Ceiling Runner —** Not Shown — In lieu of Item 1 — For use with Item 2I, proprietary channel shaped runners, 3-5/8 in. deep attached to floor and ceiling with fasteners 24 in. OC max.

1K. **Framing Members* — Floor and Ceiling Runner —** Not Shown — In lieu of Item 1 — For use with Item 2J, proprietary channel shaped runners, 1-1/4 in. wide by 3-5/8 in. deep fabricated from min 0.018 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
RESCUE METAL FRAMING, L L C — AlphaTRAK

1M. **Framing Members* — Floor and Ceiling Runners —** Not Shown — As an alternate to Item 1 — For use with Item 2O, proprietary channel shaped runners, min width to accommodate stud size, galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
RONDO BUILDING SERVICES PTY LTD — Rondo Wall Track

1N. **Framing Members* — Floor and Ceiling Runners —** Not Shown — As an alternate to Item 1 — For use with Item 2P, proprietary channel shaped runners, min width to accommodate stud size, galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
OEG BUILDING MATERIALS — OEG Track

1O. **Framing Members* — Floor and Ceiling Runner —** Not Shown — In lieu of Item 1 — For use with Item 2Q, proprietary channel shaped runners, min width to accommodate stud size, fabricated from min. 25 MSG (0.018 in. min. bare metal thickness), attached to floor and ceiling with fasteners spaced 24 in. OC max.
CEMCO, LLC — Viper X Track

1P. **Framing Members* — Floor and Ceiling Runner —** (Not Shown — Alternate to Item 1) — For use with Item 2R, channel shaped runners pre-equipped with proprietary attachment clips. Min. 3-5/8 in. wide. Legs of top runners minimum 1-1/4 in. wide. Legs of bottom runners minimum 1-1/2 in. wide. Runners attached to floor and ceiling with fasteners 24 in. OC max.
HYPERFRAME INC - Hypertrack

1Q. **Framing Members* — Floor and Ceiling Runner —** Not Shown — In lieu of Item 1 — For use with Item 25 , proprietary channel shaped runners, min width to accommodate stud size, fabricated from min. 20 EQ/22 mils. (min. 0.0221 in. thick) galvanized steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.
JJC INTERNATIONAL DISTRIBUTORS — Non-structural Tracks 3-5/8" and 6".

1R. **Framing Members* — Floor and Ceiling Runner —** Not Shown — In lieu of Item 1 — For use with Item 2T, proprietary channel shaped runners, min width to accommodate stud size, fabricated from min. 25 MSG (0.018 in. min. bare metal thickness), attached to floor and ceiling with fasteners spaced 24 in. OC max
IRONLINE METALS LLC — Bantam Track.

2. **Steel Studs —** Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.

2A. **Steel Studs —** (As an alternate to Item 2, For use with Items 5B, 5E, 5H, 5I or Type ULIX) — Channel shaped, fabricated from min 20 MSG corrosion-protected or galv steel, 3-1/2 in. min depth, spaced a max of 16 in. OC. Studs friction-fit into floor and ceiling runners. Studs to be cut 5/8 to 3/4 in. less than assembly height.

2B. **Framing Members* - Steel Studs —** (As an alternate to Item 2, For use with Items 5C, 5I or Type ULIX) — Proprietary channel shaped studs, 3-5/8 in. deep spaced a max of 24 in. OC. Studs to be cut 3/4 in less than the assembly height and installed with a 1/2 in. gap between the end of the stud and track at the bottom of the wall. For direct attachment of gypsum board only.

CEMCO, LLC — Viper25™

CRACO MFG INC — SmartStud25™

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper25™

IMPERIAL MANUFACTURING GROUP INC — Viper25™

2C. **Framing Members* — Steel Studs —** Not Shown — In lieu of Item 2 — proprietary channel shaped steel studs, min depth as indicated under Item 5, spaced a max of 24 in. OC, fabricated from min 0.018 in. thick galv steel. Studs cut 3/8 in. to 3/4 in. less in lengths than assembly heights.
CEMCO, LLC — Viper20™

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™

IMPERIAL MANUFACTURING GROUP INC — Viper20™

2D. **Framing Members* — Steel Studs —** In lieu of Item 2 — Channel shaped studs, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.
ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME D24/30EQD and Type SUPREME D20

CONSOLIDATED FABRICATORS CORP, BUILDING PRODUCTS DIV — Type SUPREME D24/30EQD and Type SUPREME D20

QUAIL RUN BUILDING MATERIALS INC — Type SUPREME D24/30EQD and Type SUPREME D20

SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME D24/30EQD and Type SUPREME D20

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME D24/30EQD and Type SUPREME D20

TELLING INDUSTRIES L L C — Type SUPREME D24/30EQD and Type SUPREME D20

UNITED METAL PRODUCTS INC — Type SUPREME D24/30EQD and Type SUPREME D20

2E. **Framing Members* — Steel Studs —** (Not Shown, As an alternate to Item 2) — For use with Items 5F or 5G or 5I or Type ULIX only, channel shaped studs, min depth as indicated under Item 5F, 5G or 5I, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.
CLARKDIETRICH BUILDING SYSTEMS — CD ProSTUD

DMFCWBS L L C — ProSTUD

MBA METAL FRAMING — ProSTUD

RAM SALES L L C — Ram ProSTUD

STEEL STRUCTURAL PRODUCTS L L C — Tri-S ProSTUD

2F. **Framing Members* — Steel Studs —** Not Shown — In lieu of Item 2 — proprietary channel shaped steel studs, minimum width indicated under Item 5, 1-1/4 in. deep fabricated from min 0.015 in. (min bare metal thickness) galvanized steel. Studs 3/8 in. to 3/4 in. less in lengths than assembly heights.
SUPER STUD BUILDING PRODUCTS — The Edge

2G. **Framing Members* — Steel Studs —** Not Shown — In lieu of Item 2 — proprietary channel shaped studs, minimum width indicated under Item 5. Studs to be cut 3/8 to 3/4 in less than the assembly height.
STUDCO BUILDING SYSTEMS — CROCSTUD

2H. **Framing Members* — Steel Studs —** (Not Shown, As an alternate to Item 2) — Fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.
TELLING INDUSTRIES L L C — TRUE-STUD™

2I. **Framing Members* — Steel Studs —**

2J. **Framing Members* — Metal Studs —** Not Shown — In lieu of Item 2 — proprietary channel shaped steel studs, min depth as indicated under Item 5, spaced a max if 24 in. OC, fabricated from min 0.018 in. thick galv steel. Studs cut 3/8 in. to 3/4 in. less in lengths than assembly heights

2K. **Framing Members* — Steel Studs —** As an alternate to Item 2 — For use with Item 1, channel shaped studs, fabricated from min 25 MSG corrosion-protected steel, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.
EB METAL INC — NITROSTUD

2L. **Framing Members* — Steel Studs —** As an alternate to Item 2 — For use with Item 1, channel shaped studs, fabricated from min 25 MSG corrosion-protected steel, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.
OLMAR SUPPLY INC — PRIMESTUD

2M. **Framing Members* — Steel Studs —** As an alternate to Item 2 — For use with Item 1, channel shaped studs, fabricated from min 25 MSG corrosion-protected steel, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.
MARINO/WARE, DIV OF WARE INDUSTRIES INC — StudRite™

2N. **Framing Members*— Steel Studs —** As an alternate to Item 2 — proprietary channel shaped steel studs, min depth 3-1/2 in. and as indicated under Item 5, spaced a max of 24 in. OC, fabricated from min 0.018 in. thick galv steel. Studs cut 3/8 in. to 3/4 in. less in length than assembly height.
RESCUE METAL FRAMING, L L C — AlphaSTUD

2O. **Framing Members* — Steel Studs —** As an alternate to Item 2 — proprietary channel shaped steel studs, min width as indicated under Item 5, galv steel. Studs to be cut 3/8 to 3/4 in. less in lengths than assembly height. Spaced 24 in. OC max.
RONDO BUILDING SERVICES PTY LTD — Rondo Lipped Wall Stud

2P. **Framing Members* — Steel Studs —** As an alternate to Item 2 — proprietary channel shaped steel studs, min width as indicated under Item 5, min 25 MSG galv steel. Studs to be cut 3/8 to 3/4 in. less in lengths than assembly height. Spaced 24 in. OC max.
OEG BUILDING MATERIALS — OEG Stud

2Q. **Framing Members* — Steel Studs —** Not Shown — In lieu of Item 2 — For use with Item 1Q, proprietary channel shaped steel studs, min depth as indicated under Item 5, spaced a max of 24 in. OC, fabricated from min 25 MSG (0.018 in. min. bare metal thickness). Studs cut 3/8 in. to 3/4 in. less in lengths than assembly heights.
CEMCO, LLC — Viper X

2R. **Framing Members* — Steel Studs —** (Not Shown — Alternate to Item 2, For use with Item 1P) — Channel shaped steel studs with attachment clips at top and bottom, min 3-5/8 in. depth, spaced a max of 24 in. OC. Studs clipped into floor and ceiling runners (Item 1P). Max 2-3/8 in. extension reveal from top of stud to inside of ceiling runner.

HYPERFRAME INC— Hyperstud

2S. **Framing Members* — Steel Studs —** Not Shown — In lieu of Item 2 — For use with Item 1Q, proprietary channel shaped steel studs, min depth as indicated under Item 5, spaced a max of 24 in. OC, fabricated from min. 20 EQ/22 mils. (min. 0.0221 in. thick) galvanized steel. Studs cut 3/8 in. to 3/4 in. less in lengths than assembly heights.
JJC INTERNATIONAL DISTRIBUTORS — Non-structural Studs 3-5/8" and 6".

2T. **Framing Members* — Steel Studs —** Not Shown — In lieu of Item 2 — For use with Item 1R, proprietary channel shaped steelstuds, min depth as indicated under Item 5, spaced a max of 24 in. OC, fabricated from min 25 MSG (0.018 in. min. bare metal thickness). Studs cut 3/8 in. to 3/4 in. less in lengths than assembly heights.
IRONLINE METALS LLC — Bantam Stud.

3. **Wood Structural Panel Sheathing —** (Optional, For use with Item 5 Only) — (Not Shown) — 4 ft wide, 7/16 in. thick oriented strand board (OSB) or 15/32 in. thick structural 1 sheathing (plywood) complying with DOC PS1 or PS2, or APA Standard PRP-108, manufactured with exterior glue, applied horizontally or vertically to the steel studs. Vertical joints centered on studs, and staggered one stud space from wallboard joints. Attached to studs with flat-head self-drilling tapping screws with a min. head diam. of 0.292 in. at maximum 6 in. OC. in the perimeter and 12 in. OC. in the field. When used, gypsum panels attached over OSB or plywood panels and fastener lengths for gypsum panels increased by min. 1/2 in.

4. **Batts and Blankets* —** (Required as indicated under Item 5) — Mineral wool batts, friction fitted between studs and runners. Min nom thickness as indicated under Item 5.
See **Batts and Blankets** (BKNV or BZJZ) Categories for names of Classified companies.

4A. **Batts and Blankets* —** (Optional – as an alternate to item 4) — Placed in stud cavities, any glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance.
See **Batts and Blankets** (BKNV or BZJZ) Categories for names of Classified companies.

4B. **Fiber, Sprayed* —** (Optional — as an alternate for items 4 or 4A, for use with Type ULIX) Where insulation is required - Spray applied cementitious mineral fiber material. The fiber is applied with adhesive at a minimum density of 4.0 pcf to completely fill the wall cavity in accordance with the application instructions supplied with the product. See **Fiber, Sprayed** (CCAZ).
AMERICAN ROCKWOOL MANUFACTURING, LLC — Type Rockwool Premium Plus

4C. **Foamed Plastic* —** (As an alternate for items 4, 4A or 4B, for use with Item 5K) — Spray applied, foamed plastic insulation, at any thickness from partial fill to completely filling stud cavity, for 2 hour rated assemblies only. When foamed plastic is used, minimum stud depth shall be 3-1/2 in. with minimum 20 MSG steel thickness.
CARLISLE SPRAY FOAM INSULATION — Types SealTite ONE, SealTite Pro Closed Cell (CC), SealTite Pro Open Cell (OC), SealTite Pro OCX, SealTite Pro No Trim 21, SealTite Pro One Zero, Foamulate Closed Cell, Foamulate OCX, Foamulate 70, and Foamulate HFO.

4D. **Foamed Plastic* —** (As an alternate for items 4, 4A or 4B, for use with Item 5K) — Spray applied, foamed plastic insulation, at any thickness from partial fill to completely filling stud cavity, for up to 2 hour rated assemblies only. When foamed plastic is used, minimum stud depth shall be 3-1/2 in. with minimum 20 MSG steel thickness.
BASF CORP – Enertite® NM, Enertite® G, FE1178®, Sprayette® 178, Sprayette® B1206, Walltite® 200, Walltite® US, Walltite® US-N, Walltite HP+, FE1378®, FE158®, Sprayette® 158, Sprayette® SP, Sprayette® B1205, Sprayette® Comfort XL, Walltite® XL, Walltite® MAX, Walltite® LWP, Walltite® Plus and Enertite® Max

5. **Gypsum Board* —** Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers (multilayer systems) staggered one stud cavity. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite

sides of studs need not be staggered. Horizontal edge joints and horizontal butt joints in adjacent layers (multilayer systems) staggered a min of 12 in. Horizontal edge joints and horizontal butt joints in adjacent layers (multilayer systems) staggered a min of 12 in. The thickness and number of layers for the 1 hr, 2 hr, 3 hr and 4 hr ratings are as follows:

Gypsum Board Protection on Each Side of Wall

Rating, Hr	Min Stud Depth, in. Items 2, 2C, 2D, 2F, 2G, 2O	No. of Layers & Thickness of Panel	Min Thkns of Insulation (Item 4)
1	3-1/2	1 layer, 5/8 in. thick	Optional
1	2-1/2	1 layer, 1/2 in. thick	1-1/2 in.
1	1-5/8	1 layer, 3/4 in. thick	Optional
2	1-5/8	2 layers, 1/2 in. thick	Optional
2	1-5/8	2 layers, 5/8 in. thick	Optional
2	3-1/2	1 layer, 3/4 in. thick	3 in.
3	1-5/8	3 layers, 1/2 in. thick	Optional
3	1-5/8	2 layers, 3/4 in. thick	Optional
3	1-5/8	3 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 1/2 in. thick	Optional
4	2-1/2	2 layers, 3/4 in. thick	2 in.

CGC INC — 1/2 in. thick Type C, IP-X2 or IPC-AR, WRC, 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULIX, WRX or WRC; 3/4 in. thick Types IP-X3 or ULTRACODE

THE SIAM GYPSUM INDUSTRY (SONGKHLA) CO — 1/2 in. thick Type C and 5/8 in. thick Type SCX

UNITED STATES GYPSUM CO — 1/2 in. thick Type C, IP-X2, IPC-AR or WRC, 5/8 in. thick Type SCX, SGX, SHX, ULIX, WRX, IP-X1, AR, C, WRC, FRX-G, IP-AR, IP-X2, IPC-AR, 3/4 in. thick Types IP-X3 or ULTRACODE

USG BORAL DRYWALL SFZ LLC — 1/2 in. Type C, 5/8 in. Types C, SCX, SGX, ULTRACODE

USG MEXICO S A DE C V — 1/2 in. thick Type C, IP-X2, IPC-AR or WRC, 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRX, WRC or; 3/4 in. thick Types IP-X3 or ULTRACODE

When Item 7B, **Steel Framing Members***, is used, Nonbearing Wall Rating is limited to 1 Hr. Min. stud depth is 3-1/2 in., min. thickness of insulation (Item 4) is 3 in., and two layers of gypsum board panels (1/2 in. or 5/8 in. thick) shall be attached to framing channels as described in Item 6. One layer of gypsum board panels (1/2 in. or 5/8 in. thick) attached to opposite side of stud without furring channels as described in Item 6.

5A. **Gypsum Board* —** (As an alternate to Item 5) — 5/8 in. thick, 24 to 54 in. wide, applied horizontally as the outer layer to one side of the assembly. Secured as described in Item 6.
CGC INC — Type SHX.

UNITED STATES GYPSUM CO — Type FRX-G, SHX.

USG MEXICO S A DE C V — Type SHX.

5B. **Gypsum Board* —** (Not Shown) — As an alternate to Item 5 when used as the base layer on one or both sides of wall when 5/8 in or 3/4 in. thick products are specified. For direct attachment only to steel studs Item 2A, (not to be used with Item 3) — Nom 5/8 in. or

3/4 in. may be used as alternate to all 5/8 in. or 3/4 in. shown in Item 5, Wallboard Protection on Each Side of Wall table. Nom 5/8 in. or 3/4 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Gypsum board secured to 20 MSG steel studs Item 2A with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. To be used with Lead Batten Strips (see Item 11) or Lead Discs or Tabs (see Item 12).
RAY-BAR ENGINEERING CORP — Type RB-LBG

5C. **Gypsum Board* —** (For Use With Item 2B) — Rating Limited to 1 Hour. 5/8 in. thick, 48 in. wide, Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. (Vertical Application) - The gypsum board is to be installed on each side of the studs with 1 in. long Type S coated steel screws spaced 8 in. OC starting 4 in. from the edge of the board at the vertical edges and 12 in. OC starting 6 in. from the edge of the board at the center of each board. Gypsum boards are to be secured to the top and bottom track with screws spaced 8 in. OC starting 4 in. from the board edge. Fasteners shall not penetrate through both the stud and the track at the same time. Vertical joints are to be centered over studs and staggered one stud cavity on opposite sides of studs. (Horizontal Application) - The gypsum board is to be installed on each side of the studs with 1 in. long Type S coated steel screws spaced 8 in. OC starting 4 in. from the edge of the board at the vertical edges and 12 in. OC starting 6 in. from the edge of the board at the center of each board. Gypsum boards are to be secured to the top and bottom track with screws spaced 8 in. OC starting 4 in. from the board edge. Fasteners shall not penetrate through both the stud and the track at the same time. All horizontal joints are to be backed as outlined under section VI of Volume 1 in the Fire Resistive Directory.
CGC INC — Type SCX, ULIX

THE SIAM GYPSUM INDUSTRY (SONGKHLA) CO — Type SCX

UNITED STATES GYPSUM CO — Type SCX, SGX, ULIX

USG BORAL DRYWALL SFZ LLC — Type SCX

USG MEXICO S A DE C V — Type SCX

5D. **Gypsum Board* —** (As an alternate to Item 5) — 5/8 in. thick, 48 in. wide, applied vertically or horizontally. Secured as described in item 6. For use with Items 1 and 2 only.
CGC INC — Type USGX

UNITED STATES GYPSUM CO — Type USGX

USG BORAL DRYWALL SFZ LLC — Type USGX

USG MEXICO S A DE C V — Type USGX

5E. **Gypsum Board* —** (Not Shown) — (As an alternate to Item 5 when used as the base layer on one or both sides of wall when 1/2 in. or 5/8 in thick products are specified, For direct attachment only to steel studs Item 2A, not to be used with Item 3). Nominal 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 (or No. 6 by 1-1/4 in. long bugle head fine driller) steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field.
NEW ENGLAND LEAD BURNING CO INC, DBA NELCO — Nelco

5F. **Gypsum Board* —** (As an alternate to Item 5) — For use with Items 1E and 2E and limited to 1 Hour Rating only, Gypsum panels with beveled, square or tapered edges, applied vertically, and fastened to the steel studs with 1 in. long Type S screws spaced 8 in. OC along vertical and bottom edges and 12 in. OC in the field. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Steel stud depth shall be a minimum 3-5/8 in.
THE SIAM GYPSUM INDUSTRY (SONGKHLA) CO — Type SCX

UNITED STATES GYPSUM CO — 5/8 in. thick Type SCX, SGX, ULIX

USG BORAL DRYWALL SFZ LLC — 5/8 in. thick Type SCX, SGX

5G. **Gypsum Board* —** (As an alternate to Item 5) — For use with Items 1E and 2E only, Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally, as specified in the table below and fastened to the steel studs as described in Item 6. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers (multilayer systems) staggered one stud cavity. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered. Horizontal edge joints and horizontal butt joints in adjacent layers (multilayer systems) staggered a min of 12 in. The thickness and number of layers for the 2 hr, 3 hr and 4 hr ratings are as follows:

Gypsum Board Protection on Each Side of Wall

Rating, Hr	Min Stud Depth, in. Item 2E	No. of Layers & Thickness of Panel	Min Thkns of Insulation (Item 4)
2	1-5/8	2 layers, 1/2 in. thick	Optional
2	1-5/8	2 layers, 5/8 in. thick	Optional
3	1-5/8	3 layers, 1/2 in. thick	Optional
3	1-5/8	3 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 1/2 in. thick	Optional

CGC INC — 1/2 in. thick Type C, IP-X2 or IPC-AR; 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULIX or 3/4 in. thick Types IP-X3 or ULTRACODE

THE SIAM GYPSUM INDUSTRY (SONGKHLA) CO — 1/2 in. thick Type C and 5/8 in. thick SCX

UNITED STATES GYPSUM CO — 1/2 in. thick Type C, IP-X2, IPC-AR or; 5/8 in. thick Type SCX, SGX, SHX, IP-X1, AR, C , FRX-G, IP-AR, IP-X2, IPC-AR, ULIX; 3/4 in. thick Types IP-X3 or ULTRACODE

USG BORAL DRYWALL SFZ LLC — 1/2 in. Type C; 5/8 in. Types C, SCX, SGX, ULTRACODE

USG MEXICO S A DE C V — 1/2 in. thick Type C, IP-X2, IPC-AR or; 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULIX or 3/4 in. thick Types IP-X3 or ULTRACODE

5H. **Gypsum Board* —** (Not Shown) — (As an alternate to Item 5 when used as the base layer on one or both sides of wall when 5/8 or 3/4 in thick products are specified. For direct attachment only to steel studs Item 2A, (not to be used with Item 3) - Nom 5/8 or 3/4 in. may be used as alternate to all 5/8 or 3/4 in. shown in Item 5, Wallboard Protection on Each Side of Wall table. Nom 5/8 or 3/4 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over 20 MSG steel studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. Gypsum board secured to 20 MSG steel studs Item 2B with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. For Joint Compound see Item 5. To be used with Lead Batten Strips (see Item 11A) or Lead Discs (see Item 12A).
MAYCO INDUSTRIES INC — Type X-Ray Shielded Gypsum

5I. **Gypsum Board* —** (As an alternate to Item 5) — Nom. 5/8 in. thick gypsum panels with beveled, square or tapered edges installed as described in Item 5. Steel stud minimum depth shall be as indicated in Item 5.
CGC INC — Type ULIX, ULX

UNITED STATES GYPSUM CO — Type ULIX, ULX

USG MEXICO S A DE C V — Type ULX

5J. **Gypsum Board* —** (Not Shown) — (As an alternate to Item 5 when used as the base layer on one or both sides of wall when 1/2 in. or 5/8 in thick products are specified. For direct attachment only to steel studs Item 2A, not to be used with Item 3). Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 steel screws gypsum panel steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations. Lead batten strips, min 2 in. wide, max 8 lbf long with a max thickness of 0.14 in. placed on the face of studs and attached to the stud with construction adhesive and two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead discs, nominal 3/8 in. diam by max 0.085 in. thick. Compression fitted or adhered over the screw heads. Lead batten strips and discs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C".
RADIATION PROTECTION PRODUCTS INC — Type RPP - Lead Lined Drywall

5K. **Gypsum Board* —** (As an alternate to Item 5 when Foam Plastic insulation (Items 4C or 4D) is used) — Any 5/8 in. thick, 4 ft. wide, Gypsum Board listed in Item 5 above. Applied vertically with vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Gypsum panels secured to studs with 1-1/4 in. long Type S steel screws spaced 8 in. OC at perimeter and in the field. For 2 layer assemblies outer layer will be attached to studs over inner layer with the 1-7/8 in. long steel screws spaced 8 in. OC.

6. **Fasteners —** (Not Shown) — For use with Items 2 and 2F - Type S or S-12 steel screws used to attach panels to studs (Item 2) or furring channels (Item 7). **Single layer systems:** 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 8 in. OC when panels are applied horizontally, or 8 in. OC along vertical and bottom edges and 12 in. OC in the field when panels are applied vertically. **Single layer system with Type ULIX:** 1 in. long, spaced 12 in. OC in the field and perimeter, when panels are applied horizontally or vertically. **Two layer systems:** First layer- 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels or 2-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC with screws offset 8 in. from first layer.**Three-layer systems:** First layer- 1 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in., 5/8 in. thick panels or 2-5/8 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below. **Four-layer systems:** First layer- 1 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in. thick panels or 2-5/8 in. long for 5/8 in. thick panels, spaced 24 in. OC. Fourth layer- 2-5/8 in. long for 1/2 in. thick panels or 3 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below.

7. **Furring Channels —** (Optional, Not Shown, for single or double layer systems) — Resilient furring channels fabricated from min 25 MSG corrosion-protected steel, spaced vertically a max of 24 in. OC. Flange portion attached to each intersecting stud with 1/2 in. long Type S-12 steel screws. Not for use with Item 5A.

7A. **Framing Members* —** (

UL DESIGN NO. U905

UL Product iQ®

UL Solutions

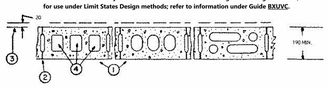
BXUVC - Fire-resistance Ratings

See General Information for Fire-resistance Ratings

Design No. **U905**

July 28, 2023

Assembly Rating - 2 h
Load Restricted — Assembly evaluated in accordance with Working Stress Design methods, for use under Limit States Design methods; refer to information under Guide BXUVC.



Horizontal Section
Bearing or Nonbearing Wall

1. **Concrete Blocks of Various Designs —** (CAZTC). 2 h rating based on noncombustible members framed into wall. Rating is 1 h when combustible members are framed into wall.
BASALITE CONCRETE PRODUCTS VANCOUVER ULC

BRAMPTON BRICK LTD — Types "PCR Blocks", "Atlas FR2", "BV-FR2 Blocks", "PL-FR2 Blocks" ,"CA-FR2 Blocks" and "HI-FR2 Blocks".

BROWNSEY BLOCK (1985) LTD — Types "Brownsey 2 Hour" and "Lightweight 2 Hour" blocks.

EXPOCRETE, AN OLDCASTLE COMPANY - EDMONTON

GROUPE PERMACON, DIV OF OLDCASTLE BUILDING PRODUCTS CANADA INC

TRISTAR BRICK & BLOCK LTD — 190 mm thick Natural Aggregate Concrete Blocks, 20 CM and 21 CM Semilite Standard Blocks.

2. **Mortar —** Blocks laid in full bed of mortar, 13 mm thick, of 3 parts of clean and sharp sand to 1 part Portland Cement (proportioned by volume), and 15% hydrated lime (by cement volume). Vertical joints staggered.

3. **Portland, Cement, Stucco or Gypsum Plaster —** Add 1/2 h to Classification if used. Where combustible members are framed in wall, plaster or stucco must be applied on the face opposite framing to achieve a max Classification of 1-1/2 h.

4. **Loose Masonry Fill —** If all core spaces are filled with loose dry expanded slag, burned clay or shale (Rotary Kiln Process) or water repellent vermiculite masonry fill insulation, add 2 h to Classification.

Last Updated on 2023-07-28

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CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
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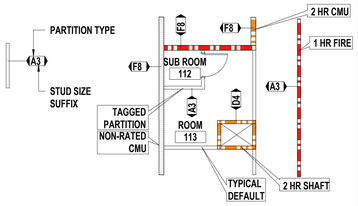
REVISIONS		
MARK	DESCRIPTION	DATE

COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
DRAWN BY: JB

UL ASSEMBLIES

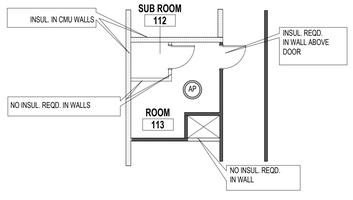
G022
PERMIT/BID DOCUMENTS

PARTITION TAG EXAMPLE **PARTITION IDENTIFICATION EXAMPLE**



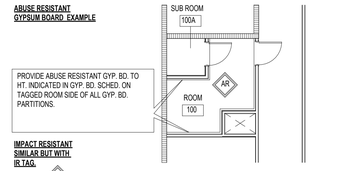
- GRAPHIC PARTITIONS ARE CALLED OUT FORCLARIFICATION OF EXAMPLE ONLY AND MAY NOT BE CALLED OUT ON PLANS.
- RATINGS AS SHOWN WILL BE INDICATED ONLIFE SAFETY PLANS ONLY.

ACOUSTIC PARTITION EXAMPLE



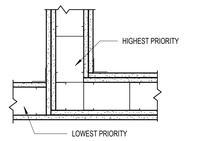
NOTE: REFER TO SOUND ATTENUATION SCHEDULE FOR TYPE OF INSULATION REQUIRED. SOUND ATTENUATION BATTS SHOWN FOR CLARIFICATION OF EXAMPLE ONLY AND WILL NOT BE GRAPHICALLY INDICATED ON PLANS

ABUSE RESISTANT GYPSUM BOARD EXAMPLE



IMPACT RESISTANT SIMILAR BUT WITH IR TAG

NOTE: DASHED LINE AT ABUSE RESISTANT GYP. BD. SHOWN FOR CLARIFICATION OF EXAMPLE ONLY AND WILL NOT BE SHOWN ON PLANS



PARTITION PRIORITIES

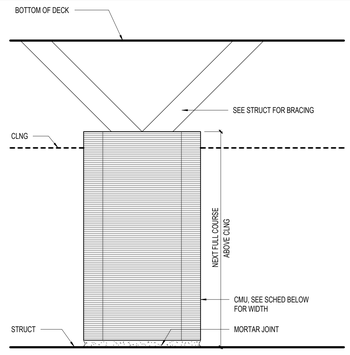
TWO HOUR FIRE AND SMOKE WALL	PRIORITY 1 (HIGHEST)
TWO HOUR FIRE WALL	PRIORITY 2
TWO HOUR SHAFT WALL	
ONE HOUR FIRE AND SMOKE WALL	PRIORITY 3
ONE HOUR FIRE WALL	PRIORITY 4
ONE HOUR SHAFT WALL	
SMOKE TIGHT WALL	PRIORITY 5
NON-RATED WALL	PRIORITY 6 (LOWEST)

TYPE "X" 5/8" GYPSUM BOARD	ALL LOCATIONS UNLESS NOTED BELOW OR DETAILED OTHERWISE
5/8" ABUSE RESISTANT GYPSUM BOARD	REFER TO FLOORPLANS FOR AR TAG. PROVIDE ABUSE RESISTANT GYP. BD. ON ALL WALLS ENCLOSING TAGGED ROOM TO 4'-0" A.F.F. UNLESS NOTED OTHERWISE. SEE ABUSE RESISTANT DIAGRAM.
5/8" IMPACT RESISTANT GYPSUM BOARD	REFER TO FLOORPLANS FOR IR TAG. PROVIDE IMPACT RESISTANT GYP. BD. ON ALL WALLS ENCLOSING TAGGED ROOM TO 4'-0" A.F.F. UNLESS NOTED OTHERWISE. SEE ABUSE RESISTANT DIAGRAM.
5/8" MOISTURE AND MOLD RESISTANT GYPSUM BOARD	"WET WALLS" NOT RECEIVING TILE WITH PLUMBING FIXTURES SUCH AS DRINKING FOUNTAINS, WATER CLOSETS, LAVATORIES, URINALS AND SIMILAR.
1/2" TILE BACKER BOARD	ALL WALLS RECIEVING TILE, U.N.O.
1/2" CEMENTITIOUS BACKER BOARD	WALLS EXPOSED DIRECTLY TO RUNNING WATER AND SCHEDULED TO RECEIVE TILE. - BATHTUBS, SHOWERS, SAUNAS, WATER THERAPY, ETC. NOTE: CEMENT BD. SHALL BE APPLIED OVER PARTITIONS WATER RESISTANT OR GLASS MAT GYPSUM BOARD AT RATED WALLS.

MISCELLANEOUS STUFFING INSULATION	WHERE DETAILED AND/OR NOTED, TO INFILL OPENINGS IN NON-RATED WALLS AROUND PIPES, STRUCTURAL COMPONENTS, CONDUITS AND SIMILAR. TO SEAL TOPS OF NON-RATED MASONRY WALLS TO DECK, AT EXPANSION JOINTS TO INSULATE.
UNFACED BATT INSULATION	WHERE DETAILED AND/OR NOTED, WITHIN STUD CAVITY OF ALL EXTERIOR WALLS WHERE INSULATION IS ENCAPSULATED UNLESS NOTED OR DETAILED OTHERWISE.
SEMI-RIGID FIBERGLASS INTERIOR INSULATION	WHERE DETAILED AND/OR NOTED, AT ALL EXTERIOR WALLS WHERE INSULATION IS NOT ENCAPSULATED UNLESS NOTED OR DETAILED OTHERWISE.
SOUND ATTENUATION BLANKETS (SAB)	WHERE DETAILED AND/OR NOTED, AT ALL NON-RATED PARTITIONS INDICATED TO BE ACOUSTICAL. REFER TO ACOUSTICAL PARTITION SCHEDULE AND PLANS FOR AP TAG.
MINERAL WOOL INSULATION	WHERE DETAILED AND/OR NOTED, AT ALL FIRE RATED PARTITIONS INDICATED TO BE ACOUSTICAL. REFER TO ACOUSTICAL PARTITION SCHEDULE AND PLANS FOR AP TAG.
SPRAY POLYURETHANE FOAM	WHERE DETAILED AND/OR NOTED, AT ALL **MASONRY** PARTITIONS INDICATED TO BE ACOUSTICAL. REFER TO ACOUSTICAL PARTITION SCHEDULE AND PLANS FOR AP TAG.

PARTITION ID DIAGRAM

NOT TO SCALE



DESIGN CRITERIA REFER TO LIFE SAFETY PLANS FOR PARTITION RATINGS

RATING	UL DESIGN #	FLOOR PLAN GRAPHIC	STC	STC W/ 3" SAB
NON-RATED	N/A		N/A	N/A

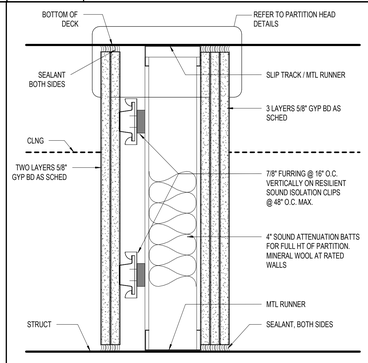
CONSTRUCTION

SUFFIX	STUD SIZE	OVERALL WIDTH	REMARKS
4	3 5/8"	3 5/8" *	* SOLID UNITS ONLY AT RATED WALL
6	5 5/8"	5 5/8" **	** SEE EQUIV. THICKNESS
8	7 5/8"	7 5/8"	TABLE AT RATED WALL
10	9 5/8"	9 5/8"	
12	11 5/8"	11 5/8"	

PARTITION TYPE K

ACOUSTIC PARTITION DIAGRAM

NOT TO SCALE



DESIGN CRITERIA REFER TO LIFE SAFETY PLANS FOR PARTITION RATINGS

RATING	UL DESIGN #	FLOOR PLAN GRAPHIC	STC	STC W/ 3" SAB
NON-RATED	N/A		N/A	61
SMOKE RES.	N/A		N/A	61
1 HR.	U419		N/A	61

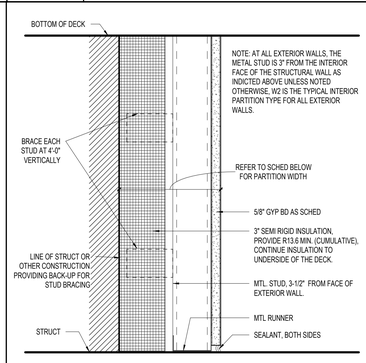
CONSTRUCTION

SUFFIX	STUD SIZE	OVERALL WIDTH	REMARKS
3	3 5/8"	8 3/8"	3 LAYERS OF GYP BD SHALL GO ON THE SIDE OF WALL REQUIRING ATTENUATION
6	6"	11 3/8"	

PARTITION TYPE L

ABUSE RESISTANT GYP. BD. DIAGRAM

NOT TO SCALE



DESIGN CRITERIA REFER TO LIFE SAFETY PLANS FOR PARTITION RATINGS

RATING	UL DESIGN #	FLOOR PLAN GRAPHIC	STC	STC W/ 3" SAB
NON-RATED	N/A		N/A	N/A

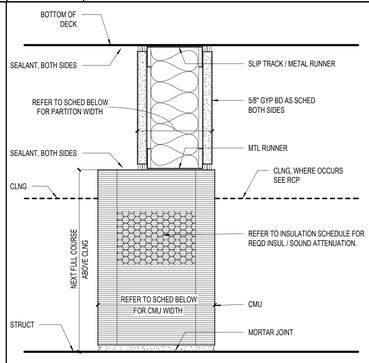
CONSTRUCTION

SUFFIX	STUD SIZE	OVERALL WIDTH	REMARKS
1	1 5/8"	5 3/4"	NOTE: WALLS WITH PLASTER FINISH ARE IDENTIFIED WITH "Wfp" THICKNESS IS NOT SHOWN FOR CLARITY IN FLOOR PLAN
2	2 1/2"	6 5/8"	
3	3 5/8"	7 3/4"	
4	4"	8 1/4"	
6	6"	10 1/4"	

PARTITION TYPE WA

? PARTITION PRIORITY DIAGRAM

1 1/2" = 1'-0"



DESIGN CRITERIA REFER TO LIFE SAFETY PLANS FOR PARTITION RATINGS

RATING	UL DESIGN #	FLOOR PLAN GRAPHIC	STC	STC W/ 3" SAB
NON-RATED	N/A		N/A	N/A

CONSTRUCTION

SUFFIX	CMU SIZE	STUD SIZE	OVERALL WIDTH	REMARKS
8	7 5/8"	3 5/8"	7 5/8"	
12	11 5/8"	3 5/8"	11 5/8"	

PARTITION TYPE XA

GYPSUM BOARD SCHEDULE

NOT TO SCALE

Wall Schedule
Type Mark
A3
A4
A6
A6.1
A6.S
A8
E1
E2
F8
F8.1
G3
G3s
G6
J1
J2
J6
K8
L3.S
WA2
WA3
WA6
XA8

INSULATION SCHEDULE

NOT TO SCALE

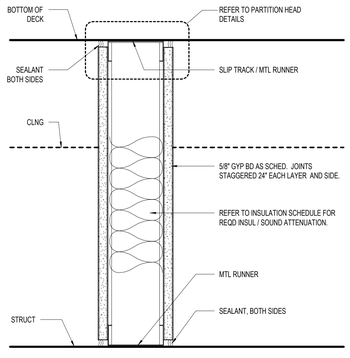
WALL RATING LEGEND

GRAPHIC PATTERN	WALL RATING
	SMOKE (.S)
	1 - HOUR (.1)
	2 - HOUR (.2)
	3 - HOUR (.3)

GENERAL NOTES - PARTITIONS

1. PARTITIONS ARE DISTINGUISHED ON FLOOR PLANS BY GRAPHIC AND TWO-PART SYMBOL DESIGNATIONS. THE ALPHANUMERIC SYMBOL INDICATES THE PARTITION TYPE AND THE NUMERIC CHARACTER DESIGNATES THE STUD, CMU OR CONCRETE WIDTH. REFER TO THE PARTITION TYPE DIAGRAMS
2. PARTITIONS REQUIRED TO BE SMOKE AND/OR FIRE RESISTANT ARE DISTINGUISHED GRAPHICALLY ON THE LIFE SAFETY PLANS. REFER TO THE FIRE & SMOKE RESISTANCE LEGEND
3. FLR, CLNG AND STRUCT DELINEATED IN THE PARTITION TYPE SECTIONS ARE DIAGRAMMATIC AND DO NOT REFLECT EXACT CONSTRUCTION CONDITIONS OR GEOMETRY.
4. GYPSUM BOARD TYPES INDICATED IN THE PARTITION TYPE SECTIONS IS TYPICAL UNLESS NOTED OTHERWISE IN THE GYPSUM BOAD SCHEDULE FOR THE PARTITION LOCATION (EXAMPLE: TYPE "A3" PARTITION AT A WET WALL WILL RECEIVE 5/8 " MOISTURE AND MOLD RESISTANT GYP BD IN LIEU OF 5/8 " GYP BD; TYPE "A3" PARTITION SCHEDULED TO RECEIVE TILE WILL HAVE ½ " TILE BACKER IN LIEU OF 5/8 " GYP BD).
5. REFER TO PARTITION HEAD DETAILS FOR CONSTRUCTION AT RATED PARTITIONS. WHERE A SPECIFIC DETAIL IS NOTE PROVIDED, COORDINATE WITH ARCHITECT
6. ALL DIMENSIONS ARE FROM FACE OF GYPSUM BOARD TO FACE OF GYPSUM BOARD. REFER TO PARTITION TYPE MATRICES FOR PARTITION WIDTH DIMENSIONS UNLESS INDICATED TO BE SHOWN ON PLANS
7. SEALANT: REFER TO THE SEALANT SCHEDULE FOR SEALANT TYPES AT ALL PARTITIONS. ALL PARTITIONS SHALL HAVE SCHEDULED SEALANT AT THE HEAD, SILL, THRU-PENETRATIONS, OPENINGS AND JUNCTURES WITH DISSIMILAR MATERIALS
8. SEALANT: REFER TO THE SEALANT SCHEDULE FOR SEALANT TYPES AT ALL PARTITIONS. ALL PARTITIONS SHALL HAVE SCHEDULED SEALANT AT THE HEAD, SILL, THRU-PENETRATIONS, OPENINGS AND JUNCTURES WITH DISSIMILAR MATERIALS.
9. FOR PARTITIONS DESIGNATED TO RECEIVE SOUND ATTENUATION BLANKETS (SAB); EXTEND SAB TO FULL HEIGHT OF PARTITION U.N.O. FLOOR TRACK TO BE SET IN A CONT BED OF SCHEDULED SEALANT.
10. IF NO SYMBOL DESIGNATION IS PROVIDED, STUD WALLS SHALL BE TYPE A3 AND MASONRY WALLS SHALL BE TYPE F8
11. REFER TO SPECIFICATIONS MINIMUM STUD THICKNESS, MAXIMUM SPACING AND ALLOWABLE LIMITING HEIGHTS AND DEFLECTION CRITERIA FOR GYPSUM BOARD ASSEMBLIES
12. FIRE RESISTANT AND SMOKE RESISTANT SMOKE BARRIER RATINGS ARE TO SURROUND ALL OPENINGS IN RATED PARTITIONS
13. SMOKE RESISTANT, FIRE RESISTANT AND FIRE RESISTANT SMOKE BARRIER PARTITIONS SHALL EXTEND AND SEAL TO THE INSIDE FACE OF EXTERIOR SHEATHING, INCLUDING EXTENSIONS THROUGH SOFFITS
14. EACH NEW FIRE WALL, FIRE FIRE PARTITION, SMOKE BARRIER, SMOKE PARTITION, OR ANY OTHER NEW WALL REQUIRED TO HAVE PROTECTED OPENINGS SHALL BE PERMANENTLY IDENTIFIED WITH SIGNS OR STENCILING ABOVE ANY DECORATIVE CEILING AND IN CONCEALED SPACES WITH THE WORDING, "FIRE AND SMOKE BARRIER - PROTECT ALL OPENINGS." SUCH SIGNS OR STENCILING SHALL BE IN 4 INCH HIGH LETTERS, 1/2 INCH STROKE, AND NOT MORE THAN 15 FEET ON CENTER OR AS REQUIRED BY LOCAL CODE
15. REFER TO STRUCTURAL DRAWINGS FOR REINFORCING INFORMATION
16. REFER TO CASEWORK AND TOILET ACCESSORY SHEETS FOR MOUNTING INFORMATION AND BACKING REQUIREMENTS INSULATION: REFER TO INSULATION SCHEDULE FOR INSULATION TYPE AT ALL PARTITIONS
17. DO NOT UTILIZE BULLNOSE BLOCK AT WALLS DESIGNATED TO RECEIVE CORNER GUARDS
18. ALL PENETRATIONS THRU FIRE OR SMOKE RATED PARTITION SHALL BE SEALED TO MAINTAIN THE INTEGRITY OF THE PARTITION RATING. REFER TO SEALANT SCHEDULE
19. ALL PENETRATIONS THRU SOUND RATED PARTITION SHALL BE SEALED TO MAINTAIN THE INTEGRITY OF THE PARTITION RATING. REFER TO SEALANT SCHEDULE
20. ALL EXTERIOR WALLS TO BE PROVIDED WITH R.13.6 MIN. INSULATION (CUMULATIVE). PROVIDE SEMI RIGID INSULATION AT INTERIOR FACE OF "W" PARTITIONS (SEE PLANS FOR PARTITION TYPES CALLED OUT)

PARTITION TYPE A



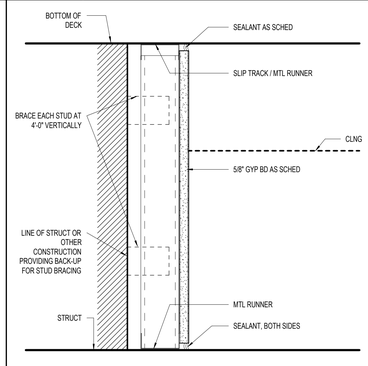
DESIGN CRITERIA REFER TO LIFE SAFETY PLANS FOR PARTITION RATINGS

RATING	UL DESIGN #	FLOOR PLAN GRAPHIC	STC	STC W/ 3" SAB
NON-RATED	N/A		40	49
SMOKE RES.	N/A		40	49
1 HR.	U419		40	49

CONSTRUCTION

SUFFIX	STUD SIZE	OVERALL WIDTH	REMARKS
1	1 5/8"	2 7/8" *	* REFER TO UL FOR MIN. GYP BD THICKNESS AND REQD INSULATION.
2	2 1/2"	3 3/4" *	
3	3 5/8"	4 7/8"	
4	4"	5 1/4"	
6	6"	7 1/4"	
8	8"	9 1/4"	

PARTITION TYPE E



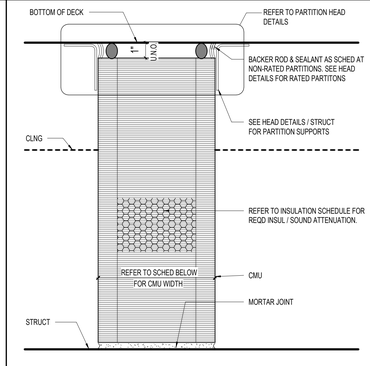
DESIGN CRITERIA REFER TO LIFE SAFETY PLANS FOR PARTITION RATINGS

RATING	UL DESIGN #	FLOOR PLAN GRAPHIC	STC	STC W/ 3" SAB
NON-RATED	N/A			

CONSTRUCTION

SUFFIX	STUD SIZE	OVERALL WIDTH	REMARKS
0	7/8" HAT CHANNEL	1 1/2"	
1	1 5/8"	3"	
2	2 1/2"	4"	
3	3 5/8"	5"	
4	4"	6"	
6	6"	8"	

PARTITION TYPE F



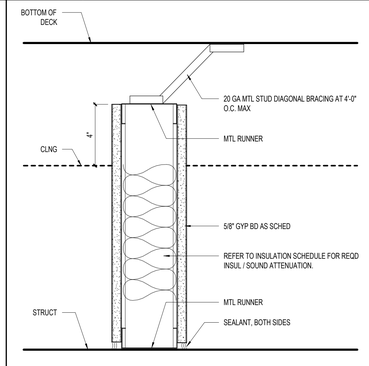
DESIGN CRITERIA REFER TO LIFE SAFETY PLANS FOR PARTITION RATINGS

RATING	UL DESIGN #	FLOOR PLAN GRAPHIC	STC	STC W/ 3" SAB
NON-RATED	N/A		45	53
SMOKE RES.	N/A		45	53
1 HR.	U905		45	53

CONSTRUCTION

SUFFIX	STUD SIZE	OVERALL WIDTH	REMARKS
4	3 5/8"	3 5/8" *	* SOLID UNITS ONLY AT RATED WALL
6	5 5/8"	5 5/8" **	** SEE EQUIV. THICKNESS
8	7 5/8"	7 5/8"	TABLE AT RATED WALL
10	9 5/8"	9 5/8"	
12	11 5/8"	11 5/8"	

PARTITION TYPE WA



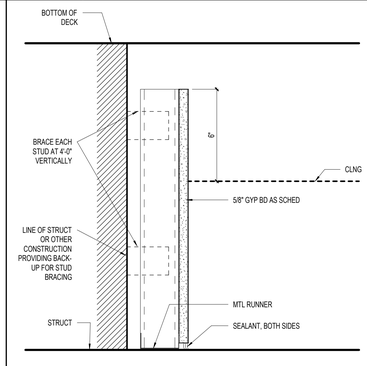
DESIGN CRITERIA REFER TO LIFE SAFETY PLANS FOR PARTITION RATINGS

RATING	UL DESIGN #	FLOOR PLAN GRAPHIC	STC	STC W/ 3" SAB
NON-RATED	N/A		N/A	

CONSTRUCTION

SUFFIX	STUD SIZE	OVERALL WIDTH	REMARKS
1	1 5/8"	2 7/8"	
2	2 1/2"	3 3/4"	
3	3 5/8"	4 7/8"	
4	4"	5 1/4"	
6	6"	7 1/4"	
8	8"	9 1/4"	

PARTITION TYPE G



DESIGN CRITERIA REFER TO LIFE SAFETY PLANS FOR PARTITION RATINGS

RATING	UL DESIGN #	FLOOR PLAN GRAPHIC	STC	STC W/ 3" SAB
NON-RATED	N/A		N/A	N/A

CONSTRUCTION

SUFFIX	STUD SIZE	OVERALL WIDTH	REMARKS
0	7/8" HAT CHANNEL	1 1/2"	
1	1 5/8"	3"	
2	2 1/2"	4"	
3	3 5/8"	5"	
4	4"	6"	
6	6"	8"	

PARTITION TYPE J

PARTITION TAG

PARTITION TAG

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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REVISIONS		
MARK	DESCRIPTION	DATE
1	OWNER REVISIONS MEETING	09/23/2023

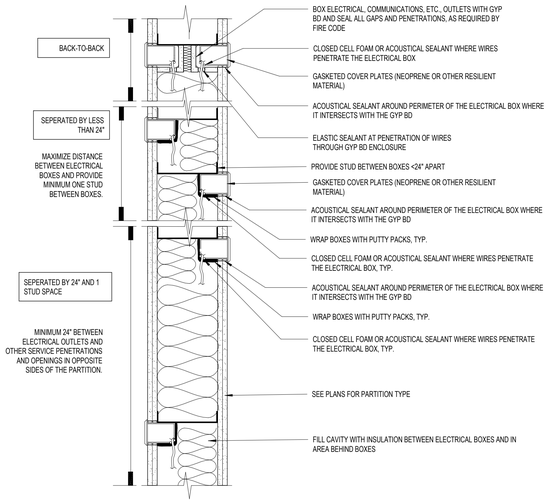
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ISSUE DATE: 09/30/2024
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PARTITION TYPES & NOTES

G031

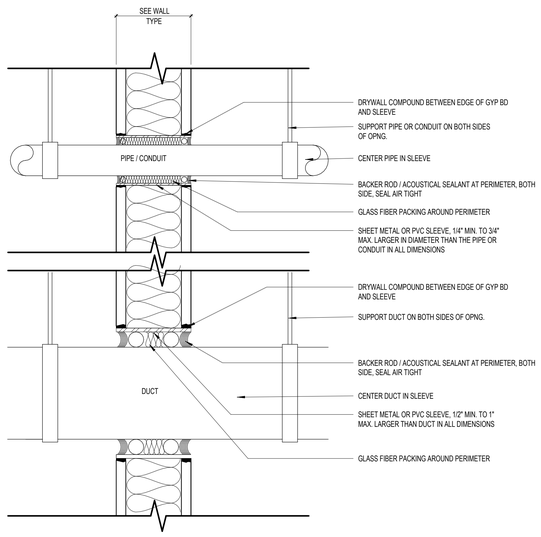
PERMIT/BID DOCUMENTS

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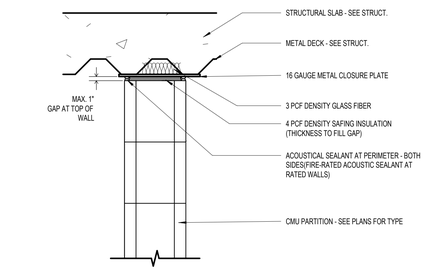
L18 PENETRATIONS AT ACOUSTICAL PARTITONS 2

1 1/2" = 1'-0"



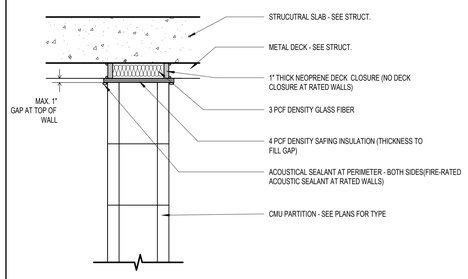
E18 PENETRATIONS AT ACOUSTICAL PARTITIONS

3" = 1'-0"



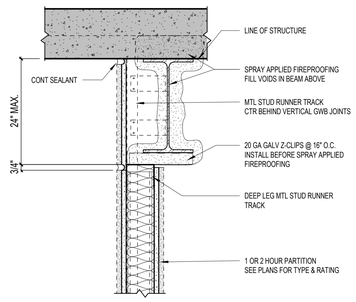
N12 ACOUSTICAL CMU WALL AT DECK - PARALLEL

1 1/2" = 1'-0"



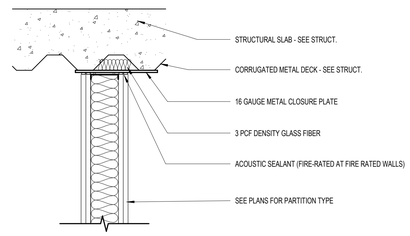
N8 ACOUSTIC CMU WALL AT DECK - PERPENDICULAR

1 1/2" = 1'-0"



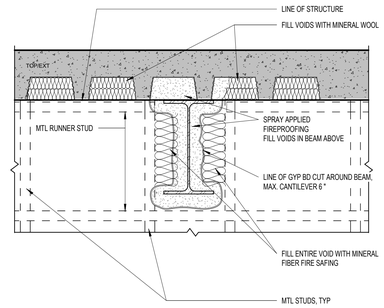
N4 HEAD AT RATED PARTITION UNDER BEAM (OFFSET)

1 1/2" = 1'-0"



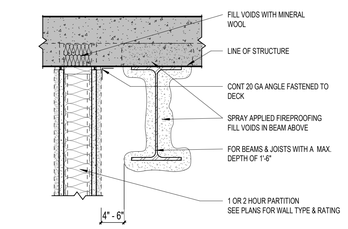
J12 ACOUSTICAL WALL AT DECK - PARALLEL

1 1/2" = 1'-0"



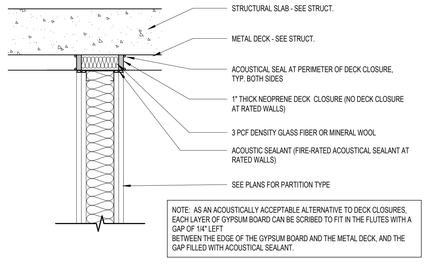
J8 HEAD AT RATED PARTITION PERPENDICULAR TO BEAM

1 1/2" = 1'-0"



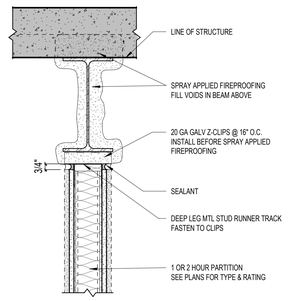
J4 HEAD AT RATED PARTITION ADJACENT TO BEAM (4"-6")

1 1/2" = 1'-0"



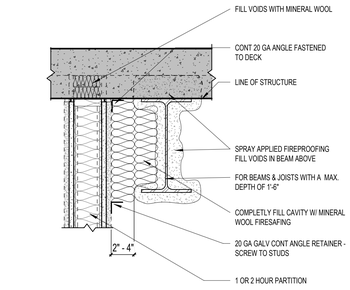
E12 ACOUSTICAL WALL AT DECK - PERPENDICULAR

1 1/2" = 1'-0"



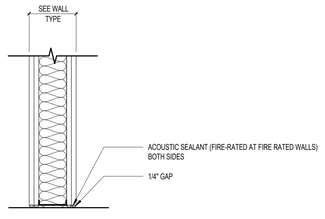
E8 HEAD AT RATED PARTITION UNDER BEAM (CENTERED)

1 1/2" = 1'-0"



E4 HEAD AT RATED PARTITION ADJACENT TO BEAM (2" -4")

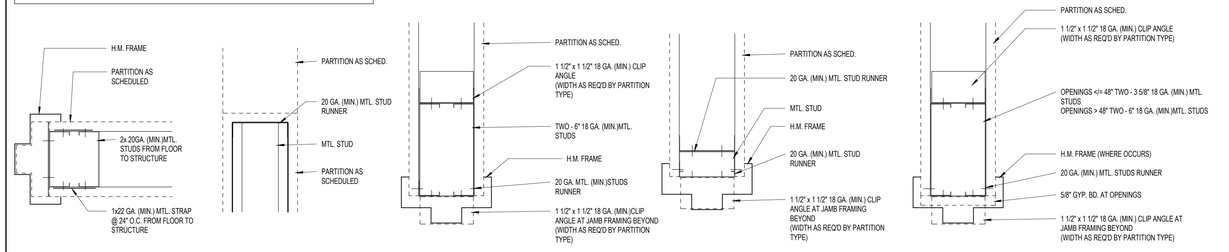
1 1/2" = 1'-0"



A18 ACOUSTICAL WALL AT PLATE

1 1/2" = 1'-0"

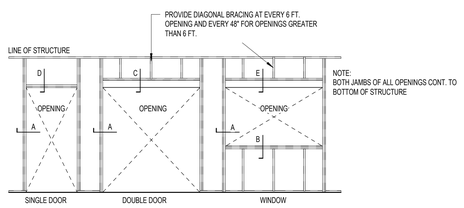
FRAMING DETAILS GENERAL NOTES:
REFER TO SPECIFICATIONS FOR SUPPLEMENTAL INFORMATION, GAUGE THICKNESS & OTHER REQUIREMENTS; TYP.



A - DOOR JAMB B - SILL C - DOUBLE DOOR HEADER D - SINGLE DOOR HEADER E - WINDOW / GYP. BD. OPENING HEADER

A15 TYPICAL OPENING FRAMING DETAILS

3" = 1'-0"



NOTE: DETAIL CALLOUTS REFER TO TYPICAL OPENING FRAMING DETAILS THIS SHEET

A4 TYPICAL METAL STUD PARTITION DETAILS

1/4" = 1'-0"

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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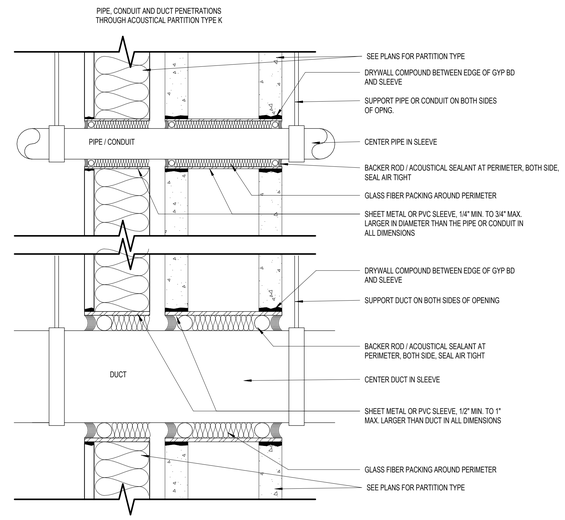
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MARK	DESCRIPTION	DATE

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TYPICAL PARTITION DETAILS

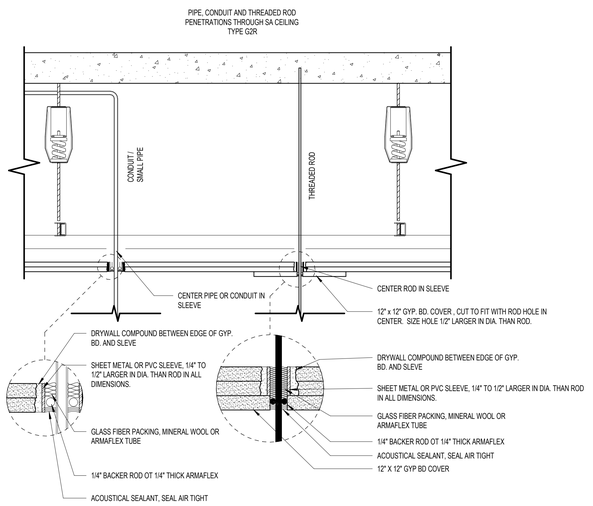
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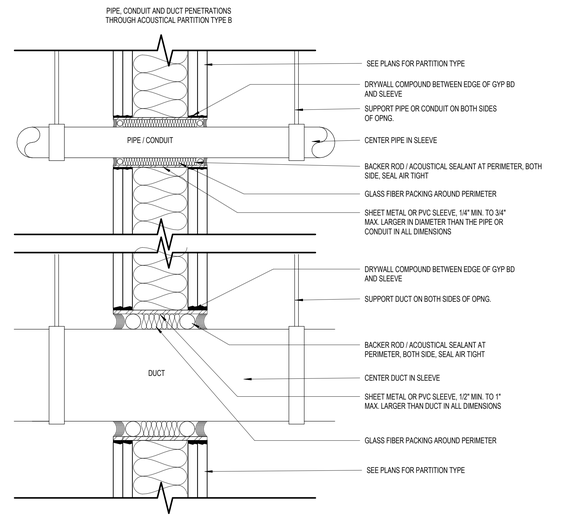
G5 ACOUSTICAL PENETRATIONS AT PARTITION TYPE K

3" = 1'-0"



A10 ACOUSTICAL PENETRATIONS AT SOUND ISOLATION CEILING

1 1/2" = 1'-0"



A5 ACOUSTICAL PENETRATIONS AT PARTITION TYPE B

3" = 1'-0"

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

SCHENKEL SHULTZ

SS Lic. No. AA-C000937
www.schenkelshultz.com
834 N. Orange Avenue,
Winter Park, FL 32789
voice 407-872-3322

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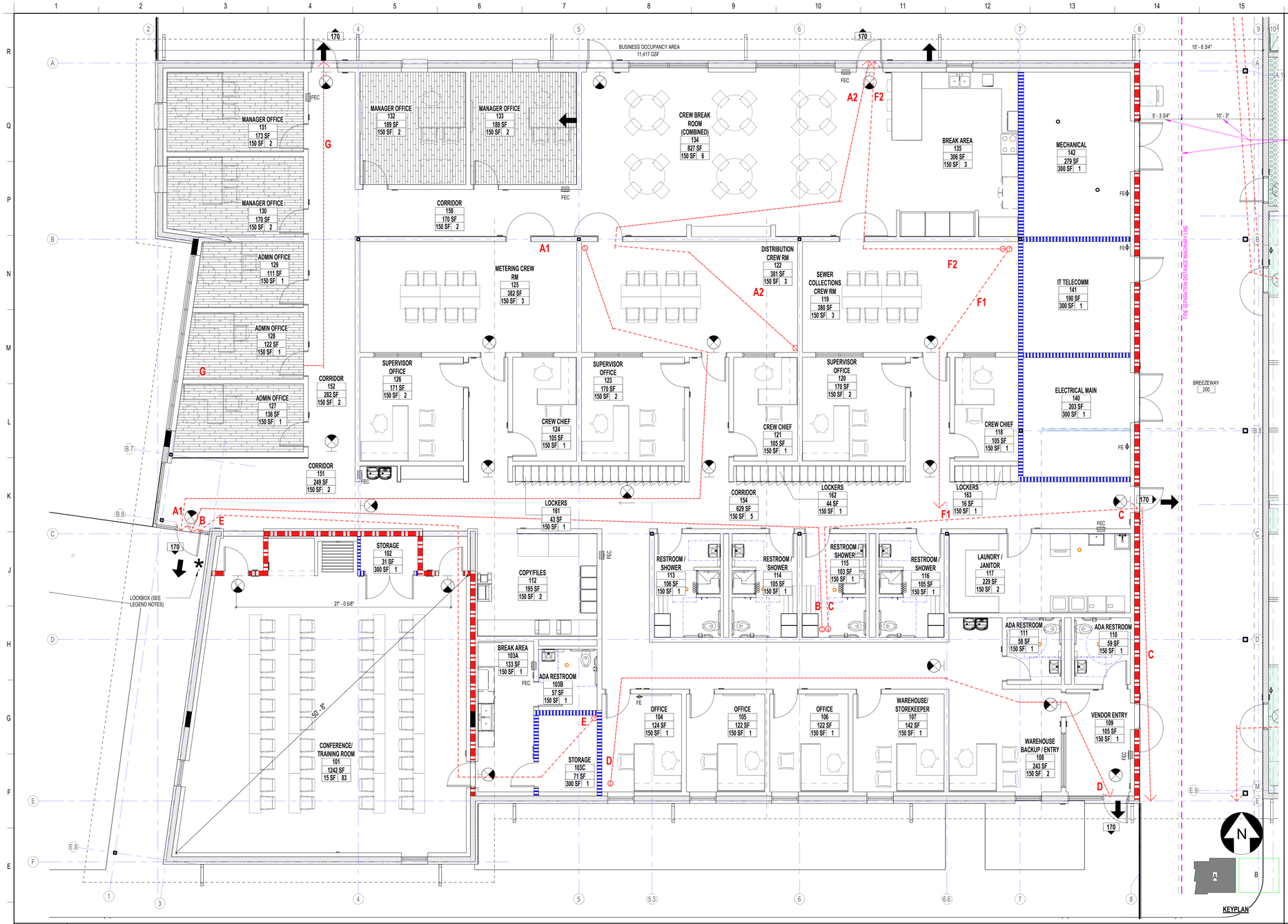
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TYPICAL PARTITION DETAILS

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UL LIST

Sheet Number	View Name
G021	UL DESIGN NO. U419
G022	UL DESIGN NO.U905

TRAVEL DISTANCE SCHEDULE - ADMINISTRATION

Travel Path ID	Travel Distance
A1	109' - 0 3/4"
A2	75' - 6"
B	93' - 3 1/2"
C	140' - 7"
D	82' - 1"
E	84' - 0 1/2"
F1	35' - 3 1/2"
F2	40' - 11"
G	54' - 10 1/4"

D1 — LIFE SAFETY PLAN - 1ST FLR

3/16" = 1'-0"

D16 — TRAVEL DISTANCE

LIFE SAFETY LEGEND

SYMBOL	DESCRIPTION
A	TRAVEL PATH ID
	MAX. TRAVEL DISTANCE PATH
FE	FIRE EXTINGUISHER W/ BRACKET
FEC	SEMI RECESSED FIRE EXTINGUISHER CABINET

SYMBOL	DESCRIPTION
	EXIT SIGN - CEILING MOUNT
	EXIT SIGN - WALL MOUNT
*	LOCK BOX- EXACT LOCATION TO BE COORDINATED WITH LOCAL FIRE DEPARTMENT. MOUNTING HT. 4'-0" A.F.F. TIE TO FIRE ALARM
XXX SF / XX \ XX	NET SQUARE FOOTAGE OCCUPANCY; ROOM OCCUPANT CAPACITY; OCCUPANCY MODIFIER

SYMBOL	DESCRIPTION
	PRIMARY EGRESS DIRECTION
DOOR CAPACITY TAGS	
1340 1340	EGRESS CAPACITY PER CODE
1340 1340	ARROW INDICATES DIRECTION OF TRAVEL
STAIR CAPACITY TAG	
1911	EGRESS CAPACITY PER CODE

NOTES:
1. REFER TO SYSTEM DRAWINGS FOR LOCATION OF HEAT AND SMOKE DETECTORS.
2. REFER TO MECHANICAL FOR LOCATION OF FIRE AND SMOKE DAMPERS
3. REFER TO SIGNAGE DRAWINGS FOR ALL CODE REQUIRED SIGNAGE
4. COORDINATE WITH ELECTRICAL DRAWINGS FOR EXACT LOCATION OF EMERGENCY LIGHTING, FIRE ALARM STROBES, AND PULL STATIONS
5. REFER TO TRAVEL DISTANCE SCHEDULE FOR TRAVEL DISTANCES
6. EXTERIOR WALL RATING SHOWN PER FBC TABLE 602 FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS SOLELY BASED ON FIRE SEPARATION DISTANCE BETWEEN BUILDINGS (ON THE SAME LOT)

TOTAL EXIT CAPACITY ADMIN: 1,020
TOTAL OCCUPANT LOAD ADMIN : 159

OCCUPANCY LOAD CLASSIFICATION

- ASSEMBLY W/O FIXED SEATS - UNCONCENTRATED
- ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM
- BUSINESS AREA
- WAREHOUSE

GRAPHIC PATTERN	WALL RATING
	SMOKE
	1 - HOUR
	2 - HOUR

LIFE SAFETY LEGEND — NOT TO SCALE

A11 — OCCUPANT LOAD

A14 — OCCUPANT LOAD CLASSIFICATION

WALL RATING — NOT TO SCALE

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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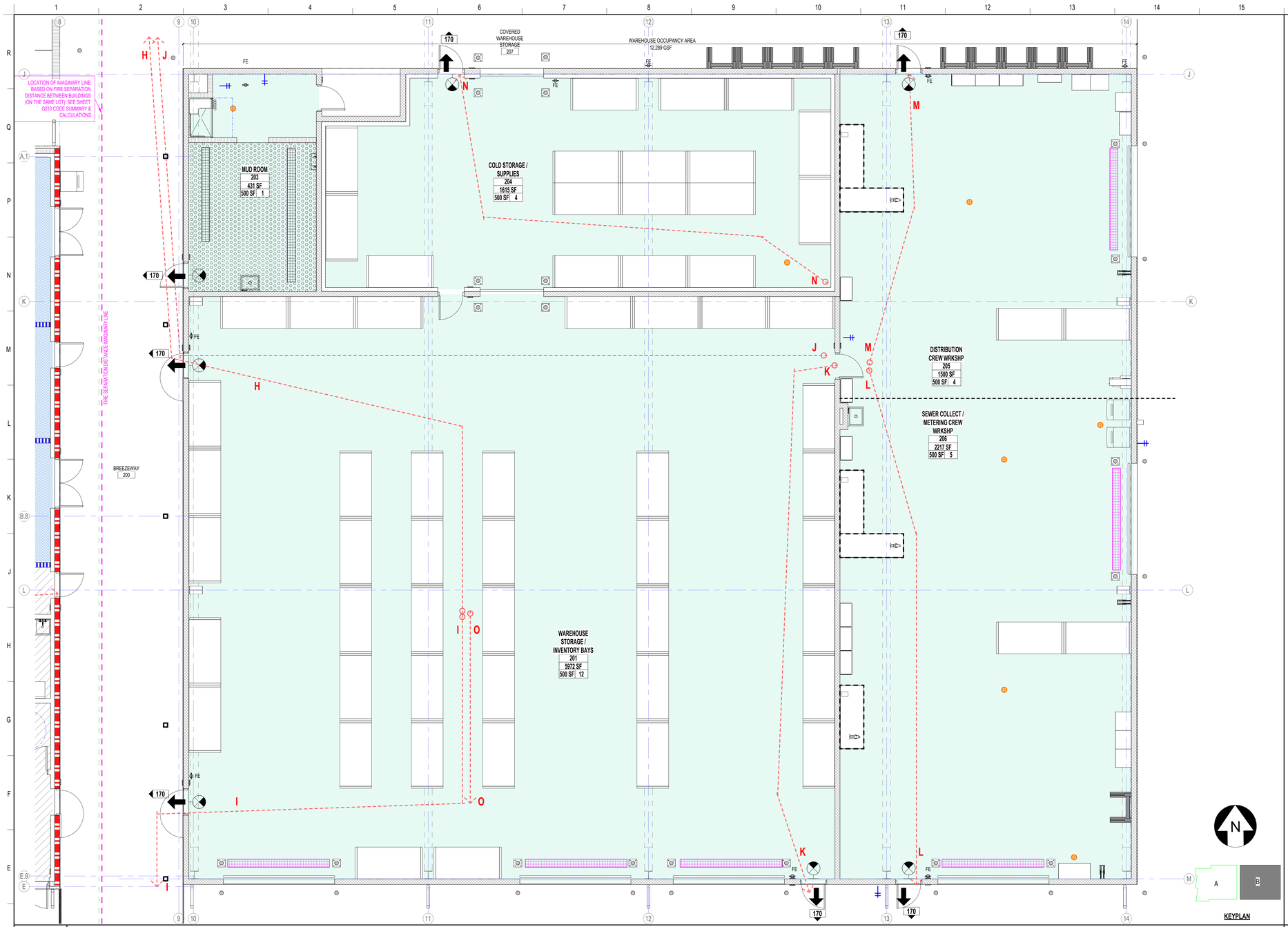
REVISIONS		
MARK	DESCRIPTION	DATE
1	SITE PERMIT COORDINATION	01/XX/2023

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LIFE SAFETY PLAN ADMIN

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D1 — LIFE SAFETY PLAN - 1ST FLR WAREHOUSE

3/16" = 1'-0"

KEYPLAN

D16 — TRAVEL DISTANCE

TRAVEL DISTANCE SCHEDULE - WAREHOUSE	
Travel Path ID	Travel Distance
H	101' - 1"
I	71' - 1 3/4"
J	121' - 3"
K	71' - 5 1/2"
L	65' - 7 1/2"
M	37' - 1 1/2"
N	63' - 2"
O	23' - 11"

LIFE SAFETY LEGEND

SYMBOL	DESCRIPTION
A	TRAVEL PATH ID
	MAX. TRAVEL DISTANCE PATH
FE	FIRE EXTINGUISHER W/ BRACKET
FEC	SEMI RECESSED FIRE EXTINGUISHER CABINET

SYMBOL	DESCRIPTION
	EXIT SIGN - CEILING MOUNT
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1340 1340	ARROW INDICATES DIRECTION OF TRAVEL
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5. REFER TO TRAVEL DISTANCE SCHEDULE FOR TRAVEL DISTANCES
6. EXTERIOR WALL RATING SHOWN PER FBC TABLE 602 FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS SOLELY BASED ON FIRE SEPARATION DISTANCE BETWEEN BUILDINGS (ON THE SAME LOT)

TOTAL EXIT CAPACITY WAREHOUSE: 1,190
TOTAL OCCUPANT LOAD : 25

A11 — OCCUPANT LOAD

A14 — OCCUPANCY LOAD CLASSIFICATION

- ASSEMBLY W/O FIXED SEATS - UNCONCENTRATED
- ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM
- BUSINESS AREA
- WAREHOUSE

WALL RATING

GRAPHIC PATTERN

- SMOKE
- 1 - HOUR
- 2 - HOUR

NOT TO SCALE

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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LIFE SAFETY PLAN
WAREHOUSE

G102
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PORT ORANGE PUBLIC UTILITIES FIELD OPS FACILITY

CITY OF PORT ORANGE - VOLUSIA COUNTY, FL

FINAL ENGINEERING PLANS

PROJECT DESCRIPTION:

THIS PROJECT INCLUDES THE CONSTRUCTION OF A 11,398 SF ADMINISTRATION BUILDING AND 16,674 SF WAREHOUSE BUILDING WITH ASSOCIATED PARKING, STORAGE AREAS, UTILITIES, AND STORMWATER AREAS

OWNER:

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE
PORT ORANGE, FL, 32129
PHONE NUMBER: 386-506-5563

CONTACT PERSON: JUNOS REED, P.E.
e-mail: jureed@port-orange.org

CIVIL ENGINEER:

ZEV COHEN & ASSOCIATES, INC.
300 INTERCHANGE BLVD., SUITE C
ORMOND BEACH, FL 32174
PHONE NUMBER: 386-677-2482
FAX NUMBER: 386-677-2505
CONTACT PERSON: ROBERT J. BALL, P.E.
e-mail: bball@zevcohen.com

SURVEYOR:

SLIGER & ASSOCIATES, INC.
3921 NOVA RD.
PORT ORANGE, FL 32127
PHONE NUMBER: 386-761-5385
CONTACT PERSON: JOSEPH ZAPERT, P.L.S
e-mail: jzapert@sligerassociates.com

GEOTECHNICAL ENGINEER:

BECHTOL ENGINEERING AND TESTING, INC.
605 WEST NEW YORK AVE.
DELAND, FL 32720
PHONE NUMBER: 386-734-8444
FAX NUMBER:I 386-734-8541
CONTACT PERSON: LOVE B. PATEL, P.E.
e-mail: love@bechtol.com

LANDSCAPE ARCHITECT:

ZEV COHEN & ASSOCIATES, INC.
300 INTERCHANGE BLVD., SUITE C
ORMOND BEACH, FL 32174
PHONE NUMBER: 386-677-2482
FAX NUMBER: 386-677-2505
CONTACT PERSON: JAKE STEHR, P.L.A
e-mail: jstehr@zevcohen.com

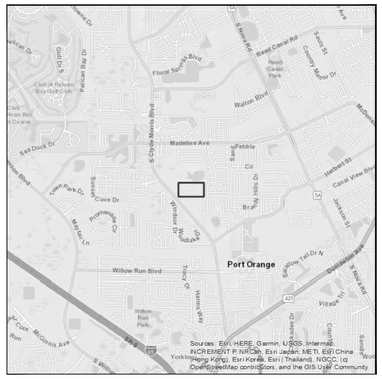
SITE INFORMATION:

SITE ADDRESS:	4505 CLYDE MORRIS BLVD, PORT ORANGE, FL 32129
PROJECT AREA:	±18.82 AC
TOTAL AREA:	37.3 AC
TAX PARCEL I.D. #:	630600000060, 630600000061, 630600000062, 630600000064
EXISTING ZONING:	GPU
PROPOSED ZONING:	GPU
EXISTING LAND USE:	VACANT/WATER TREATMENT PLANT
PROPOSED LAND USE:	FIELD OPERATIONS FACILITY
EXISTING FUTURE LAND USE:	PUBLIC/INSTITUTIONAL (630600000060 & 630600000061), URBAN MEDIUM DENSITY RESIDENTIAL (4-8 UNITS/ACRE)(630300000062), OFFICE/RESIDENTIAL (630600000064)
REQUIRED SETBACKS:	
FRONT:	10 FT
SIDE:	10 FT
REAR:	25 FT
PROPOSED SETBACKS:	
FRONT:	121.66 FT
NORTH:	184.28 FT
EAST:	250.83 FT
SOUTH:	328.67 FT
REQUIRED LANDSCAPE BUFFER(S):	10 FT - ALONG BRUNER ROAD
MAXIMUM BUILDING LOT COVERAGE:	40%
MAXIMUM BUILDING HEIGHT	60 FT
PROPOSED BUILDING HEIGHT	26 FT (ADMINISTRATION), 28 FT (WAREHOUSE)
UTILITIES:	PROVIDED BY CITY OF PORT ORANGE

LAND USE TABLE:		
	ACREAGE	PERCENTAGE
EXISTING CONDITIONS:		
WETLAND AREA	0.2 AC	1.3%
SURFACE WATER AREA	4.1 AC	26.6%
UPLAND AREA	11.1 AC	72.1%
PROPOSED IMPROVEMENTS:		
BUILDING(S)	0.6 AC (28,086 SF)	3.9%
PAVEMENT & SIDEWALK	2.7 AC (119,080 SF)	17.5%
POND AREA(S)	4.6 AC (200,376 SF)	29.9%
OTHER	0.2 AC (6,446 SF)	1.3%
LANDSCAPE/OPEN SPACE	7.3 AC (317,988 SF)	47.4%
TOTAL PERVIOUS	7.3 AC (317,988 SF)	47.4%
TOTAL IMPERVIOUS	8.1 AC (354,008) SF)	52.6%

PARKING CALCULATIONS:			
USE	PARKING REQUIREMENT	SF/UNITS	SPACES REQUIRED
OFFICE	1 SPACE PER 200 SF	11,398 SF	57
WAREHOUSE	1 SPACE PER 4,000 SF	16,674 SF	5
		TOTAL =	62
PARKING SPACES PROVIDED:		86	
HANDICAP PARKING REQUIRED:		3	
HANDICAP PARKING PROVIDED:		3	
BICYCLE PARKING REQUIRED:		8	
BICYCLE PARKING PROVIDED:		9	
LOADING SPACES REQUIRED:			
OFFICE		1	
WAREHOUSE		2	
LOADING SPACES PROVIDED		6	

NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION.



VICINITY MAP
SCALE: 1" = 3000'



ZONING MAP
SCALE: 1" = 300'
CURRENT ZONING FOR THIS SITE IS: GPU



SOILS MAP
SCALE: 1" = 300'
THE SITE LIES WITHIN THE FOLLOWING VOLUSIA COUNTY SOIL CLASSIFICATIONS:
4--ASTATULA FINE SAND, 0 TO 5 PERCENT SLOPES
17--DAYTONA SAND, 0 TO 5 PERCENT SLOPES
22--EAU GALLIE SAND
32--MYAKKA SAND
42--PAOLA FINE SAND, 0 TO 8 PERCENT SLOPES
57--SATELLITE SAND



FLOOD ZONE MAP
SCALE: 1" = 300'
THE PROPERTY LIES IN:
FLOOD ZONE X PER FEMA MAPS 12127C0369J

SHEET INDEX:

C1	COVER SHEET
C2-C4	CONSTRUCTION NOTES
C5	DEMOLITION & EROSION CONTROL PLAN
C6	GEOMETRY, SIGNAGE & STRIPING PLAN
C7	PAVING, GRADING & DRAINAGE PLAN
C8	STORMWATER STRUCTURES TABLE
C9	UTILITY PLAN(S)
C10-C15	CONSTRUCTION DETAILS
TP1-TP2	TREE PROTECTION PLAN & DETAILS
LA1-LA4	LANDSCAPE PLAN & DETAILS
IR1-IR2	IRRIGATION PLAN & DETAILS

LEGAL DESCRIPTION:

THE WEST 10 ACRES OF THE SOUTH ONE HALF OF THE SOUTHEAST ONE QUARTER OF THE SOUTHEAST ONE QUARTER, EXCLUDING THE WEST 30 FEET IN ROADWAY, ALL IN SECTION 6, TOWNSHIP 16 SOUTH, RANGE 33 EAST, VOLUSIA COUNTY, FLORIDA; BEING MORE PARTICULARLY DESCRIBED AS;
COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 6, RUN S89°19'34"W ALONG THE SOUTH LINE OF THE SOUTHEAST 1/4 OF SAID SECTION 6, A DISTANCE OF 664.39 FEET TO THE EAST LINE OF THE WEST 10 ACRES OF THE SOUTH 1/2 OF THE SOUTHEAST 1/4 OF THE SOUTHEAST 1/4 OF SAID SECTION 6 AND TO THE POINT OF BEGINNING; THENCE S89°19'34"W ALONG SAID SOUTH LINE, 634.37 FEET TO THE EASTERLY RIGHT OF WAY LINE OF BRUNNER ROAD, A 60 FOOT RIGHT OF WAY PER DEED RECORDED IN OFFICIAL RECORDS BOOK 2764, PAGE 1153 OF THE PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA; THENCE N01°01'40"E ALONG SAID EASTERLY RIGHT OF WAY LINE, 658.91 FEET TO THE NORTH LINE OF THE SOUTH 1/2 OF THE SOUTHEAST 1/4 OF THE SOUTHEAST 1/4 OF SAID SECTION 6; THENCE N89°29'41"E ALONG SAID NORTH LINE, 633.63 FEET TO THE EAST LINE OF SAID WEST 10 ACRES; THENCE S00°58'02"W ALONG SAID EAST LINE, 657.03 FEET TO THE POINT OF BEGINNING.
CONTAINING 9.573 ACRES, MORE OR LESS.

ALSO:

A PORTION OF SECTION 6, TOWNSHIP 16 SOUTH, RANGE 33 EAST, CITY OF PORT ORANGE, VOLUSIA COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

THE SOUTH 1/2 THE SOUTHEAST 1/4 OF THE SOUTHEAST 1/4 EXCEPT THE WEST 10 ACRES AND EXCEPTING THE EAST 50 FEET IN RIGHT OF WAY

CONTAINING 8.095 ACRES, MORE OR LESS.

ZEV COHEN & ASSOCIATES, INC.
300 INTERCHANGE BLVD., SUITE C
ORMOND BEACH, FL 32174
WWW.ZEVCOHEN.COM

CIVIL ENGINEERING
LANDSCAPE ARCHITECTURE
ENVIRONMENTAL
PLANNING
TRANSPORTATION

NO	DATE	BY	SUBMITTALS / REVISIONS
1	08-25-22	BB/SM	SUBMITTAL TO CITY OF PORT ORANGE/SJRWMD
2	12-15-22	BB/SM	REVISED PER CITY OF PORT ORANGE AND SJRWMD COMMENTS (3-28-23 & 4-20-23)
3	07-06-23	BB/SM	REVISED PER CITY OF PORT ORANGE COMMENTS DATED 02-06-23
4	05-24-24	BB/SM	REVISED PER ARCHITECTURAL PLANS UPDATES

PORT ORANGE PUBLIC UTILITIES FIELD OPS FACILITY
FINAL ENGINEERING PLANS
COVER SHEET
VOLUSIA COUNTY, FLORIDA
CITY OF PORT ORANGE

PROJECT NO: ZC 20035
DESIGNED BY: SM
DRAFTED BY: SM
CHECKED BY: BB
DRAWING FILE: 01_20035_COV

ROBERT J. BALL, P.E. NO. 60001
NOT VALID WITHOUT SEAL

SHEET: C1 OF 15

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CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE
PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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www.schenkelshultz.com
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voice 407-872-3322
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REVISIONS		
MARK	DESCRIPTION	DATE

SEAL

ROBERT J. BALL, P.E. NO. 60001

COMM. NO.: 2021815
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COVER SHEET

C1

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GENERAL NOTES

1. ALL CONSTRUCTION, DRAINAGE STRUCTURES AND OTHER SITE IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITIONS OF FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD PLANS AND SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION OR THE CITY OF PORT ORANGE LAND DEVELOPMENT CODE REQUIREMENTS, STANDARD CONSTRUCTION DETAILS & STANDARD SPECIFICATIONS, WHICHEVER IS MORE STRINGENT.
2. SHOP DRAWINGS AND CERTIFICATIONS FOR ALL MATERIALS AND STRUCTURES ARE REQUIRED. THE CONTRACTOR SHALL REVIEW AND SIGN SHOP DRAWINGS. THE CONTRACTOR SHALL SUBMIT REVIEWED SHOP DRAWINGS TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING THE MATERIALS REQUIRED FOR CONSTRUCTION.
3. CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL REQUIRED PERMITS. THE CONTRACTOR SHALL MAINTAIN COPIES OF ALL RELEVANT PERMITS AND CONSTRUCTION DOCUMENTS AVAILABLE ON THE JOB SITE AT ALL TIMES.
4. CONTRACTOR TO MAINTAIN THE SITE IN A SAFE AND SECURE MANNER TO PROTECT PUBLIC SAFETY AND THE CONDITIONS OF THE IMPROVEMENTS.
5. THE CONTRACTOR SHALL MAINTAIN, AT THE JOB SITE, A RECORD COPY OF ALL CONSTRUCTION DRAWINGS AND SPECIFICATIONS ON WHICH ALL FIELD CHANGES ARE TO BE SHOWN. THESE CHANGES ARE TO BE INCORPORATED IN THE "AS-BUILT" SURVEY FURNISHED TO THE ENGINEER.
6. SHOULD CONDITIONS VARY FROM THOSE SHOWN ON THESE PLANS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF RECORD PRIOR TO CONTINUING CONSTRUCTION.
7. ANY FIELD MODIFICATIONS OR DEVIATIONS TO THESE CONSTRUCTION PLANS REQUIRES APPROVAL BY BOTH THE ENGINEER OF RECORD AND THE CITY OF PORT ORANGE PRIOR TO PERFORMING THE WORK.
8. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE AN "AS-BUILT" SURVEY OF THE COMPLETED CONSTRUCTION. THE "AS-BUILT" SURVEY SHALL BE PREPARED IN ACCORDANCE WITH APPROPRIATE GOVERNMENTAL REGULATIONS AND ZCA REQUIREMENTS. THE "AS-BUILT" SURVEY SHALL BE PREPARED ON ZCA'S DESIGN/PERMITTED PLANS. ELECTRONIC AND PAPER COPIES OF THE AS-BUILT SURVEY SHALL BE PROVIDED TO THE ENGINEER OF RECORD. THE "AS-BUILT" SHALL BE SIGNED AND SEALED BY A FLORIDA REGISTERED PROFESSIONAL LAND SURVEYOR.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING VEHICULAR AND PEDESTRIAN TRAFFIC SAFELY THROUGH THE WORK ZONE AT ALL TIMES, IF APPLICABLE. ANY SIDEWALK, LANE OR ROAD CLOSURE REQUIRES REVIEW AND APPROVAL IN ADVANCE AND A SEVEN (7) DAY MINIMUM NOTICE TO THE CITY OF PORT ORANGE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REQUIRED COORDINATION.
10. MAINTENANCE OF TRAFFIC WILL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAY CONSTRUCTION, MAINTENANCE AND UTILITY OPERATIONS AND THE FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD PLANS, LATEST EDITIONS.
11. CONTRACTOR TO NOTIFY THE REGULATORY AGENCIES FORTY EIGHT (48) HOURS PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR SHALL SEND COPIES OF ALL TESTING REPORTS TO THE REGULATORY AGENCIES AND THE ENGINEER OF RECORD.
12. SURVEY INFORMATION PROVIDED BY SLIGER & ASSOCIATES DATED 01-31-2022. ALL ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) AND ARE SHOWN IN FEET. STATE PLANE COORDINATES ARE BASED UPON NAD 83.
13. ALL PUBLIC LAND CORNERS AND MONUMENTS WITHIN THE LIMITS OF CONSTRUCTION ARE TO BE PROTECTED. THE CONTRACTOR SHALL EMPLOY A SURVEYOR, REGISTERED IN THE STATE OF FLORIDA, TO REPLACE/RESTORE ANY PROPERTY OR LAND MARKERS DISTURBED BY CONSTRUCTION ACTIVITIES.
14. NO LAND SHALL BE CLEARED, EXCAVATED OR FILLED AND NO STRUCTURES SHALL BE ERECTED, REPAIRED OR DEMOLISHED WITHOUT PROPER PERMIT(S).
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS AS WELL AS THE REQUIREMENTS OF ST. JOHNS RIVER WATER MANAGEMENT DISTRICT AND E.P.A. (NPDES). CONTRACTOR SHALL ESTABLISH BEST MANAGEMENT PRACTICES AND EROSION CONTROL METHODS PRIOR TO COMMENCING ANY SITE CLEARING OR DEMOLITION AND SHALL MAINTAIN THOSE BARRIERS UNTIL FINAL ACCEPTANCE OF THE PROJECT.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROJECT'S NPDES PERMITTING, INSPECTION AND REPORTING, IF APPLICABLE.
17. ALL DELINEATED WETLAND AREAS SHALL BE STAKED AND FENCED WITH TYPE III SILT FENCING PRIOR TO CONSTRUCTION. FENCING SHALL NOT BE REMOVED UNTIL ALL CONSTRUCTION IS COMPLETED. LIMITS OF SILT FENCE SHOWN ON PLANS ARE APPROXIMATE AND ARE TO BE ADJUSTED AS NECESSARY TO MEET FIELD CONDITIONS AND/OR AS DIRECTED BY THE ENGINEER.
18. THE EROSION, SEDIMENT AND TURBIDITY CONTROL MEASURES DELINEATED HEREON ARE THE MINIMUM REQUIRED. ADDITIONAL CONTROLS MAY BE NEEDED, DEPENDING UPON THE ACTUAL SITE CONDITIONS, JURISDICTIONAL AGENCY PERMIT REQUIREMENTS AND CONSTRUCTION OPERATIONS. STAKED SILT FENCE SHALL BE UTILIZED TO CONTROL EROSION AND RELEASE OF SUSPENDED SOLIDS. SEDIMENT TRACKING CONTROL DEVICES SHALL BE USED TO PREVENT THE OFFSITE TRANSPORT OF SEDIMENT BY MOTORIZED VEHICLES. IF CONTROL MEASURES DO NOT PROVE SATISFACTORY, WORK SHALL CEASE UNTIL NEW MEASURES ARE ADOPTED WITH SATISFACTORY RESULTS.
19. ALL EROSION AND SEDIMENT TRACKING CONTROL DEVICES SHALL BE INSPECTED DAILY AND IMMEDIATELY FOLLOWING A RAINFALL EVENT, REFER TO PROJECT'S STORMWATER POLLUTION PREVENT PLAN (SWPPP). ANY DEFICIENCIES FOUND IN THE EROSION CONTROL MEASURES SHALL BE REPAIRED IMMEDIATELY. THE CONTRACTOR SHALL KEEP A LOG BOOK DOCUMENTING THESE DAILY INSPECTIONS, DEFICIENCIES AND REMEDIAL ACTIONS.
20. ALL UNSUITABLE SOILS AND UNSUITABLE MATERIALS (SUCH AS CLAY, ORGANICS, ROCK, CEMENTED COQUINA, DEBRIS, ETC.) SHALL BE REMOVED, DISPOSED OF IN A LEGAL MANNER AND REPLACED WITH DRY COMPACTED GRANULAR MATERIAL SATISFACTORY TO THE THE CITY OF PORT ORANGE. THE COST OF ALL WORK AND MATERIALS IS TO BE INCLUDED IN THE UNIT PRICE OF THE ASSOCIATED CONSTRUCTION ITEMS UNLESS OTHERWISE SHOWN IN THE PLANS.
21. IN THE EVENT THAT WATER IS ENCOUNTERED DURING CONSTRUCTION, DEWATERING SHALL BE PERFORMED AS NEEDED. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN, PERMITTING, INSTALLATION, OPERATION AND SUBSEQUENT REMOVAL OF DEWATERING SYSTEMS AND THEIR SAFETY AND CONFORMITY WITH APPLICABLE CODES AND REGULATIONS.
22. PRIOR TO COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE ELECTRIC, TELEPHONE, GAS, CABLE TELEVISION, COMMUNICATIONS, ETC. COMPANIES TO DETERMINE THE TYPE AND LOCATION OF ALL UNDERGROUND FACILITIES IN THE AREA OF CONSTRUCTION.
23. ALL UNDERGROUND UTILITIES HAVE BEEN LOCATED HORIZONTALLY AND VERTICALLY BASED ON THE BEST INFORMATION AVAILABLE AND SHOULD BE CONSIDERED APPROXIMATE ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND VERIFYING ALL ELEVATIONS OF EXISTING UTILITIES (PUBLIC AND PRIVATE) SHOWN OR NOT SHOWN PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE VARIOUS UTILITY COMPANIES TO MAKE THE NECESSARY ARRANGEMENTS FOR ANY RELOCATION, DISRUPTION OF SERVICE OR CLARIFICATION OF ACTIVITY REGARDING SAID UTILITY. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN WORKING NEAR OR CROSSING A UTILITY, WHETHER SHOWN ON THESE PLANS OR FIELD LOCATED. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE AND NOTIFY THE UTILITY COMPANIES FOR UTILITIES WHICH NEED TO BE RELOCATED FOR THE PROPOSED CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE TO PAY FOR ANY REPAIR, RELOCATION OR TEMPORARY MEASURES NEEDED FOR EXISTING OR PROPOSED UTILITIES.
24. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE AND AVOID ALL UTILITIES, OTHER STRUCTURES AND OBSTRUCTIONS BOTH ABOVE AND BELOW GROUND. ALL DAMAGE RESULTING FROM THE CONTRACTOR'S FAILURE TO COMPLY WITH THIS REQUIREMENT SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
25. THE CONTRACTOR SHALL NOTIFY ALL UTILITY PROVIDERS AT LEAST TWO (2) BUSINESS DAYS PRIOR TO ANY CONSTRUCTION.
26. THE CONTRACTOR SHALL MAINTAIN UNINTERRUPTED SERVICE AT ALL SERVICE CONNECTIONS. THE MANNER IN WHICH THIS IS ACCOMPLISHED SHALL BE LEFT TO THE DISCRETION OF THE CONTRACTOR, SUBJECT TO THE REQUIREMENTS OF THE CONTRACT SPECIFICATIONS.
27. ALL EXISTING DRAINAGE STRUCTURES AND UTILITIES WITHIN THE CONSTRUCTION LIMITS SHALL REMAIN, UNLESS OTHERWISE NOTED IN PLANS.
28. THE LENGTH OF ALL DRAINAGE PIPES AND LOCATION OF ALL DRAINAGE STRUCTURES ARE APPROXIMATE. THE LOCATION OF THE DRAINAGE STRUCTURE SHALL DETERMINE THE LENGTH OF PIPE.
29. THE TOP OF CASTING ELEVATIONS (TC) OF ALL STRUCTURES ARE SHOWN. HOWEVER, THE CONTRACTOR SHALL INSTALL ALL FRAMES SO AS TO PROVIDE A SMOOTH SURFACE FOR VEHICULAR AND/OR PEDESTRIAN TRAFFIC.
30. CONTRACTOR SHALL CONFIRM PROPOSED TOP OF CASTING (TC) ELEVATIONS WILL ALLOW POSITIVE DRAINAGE TO PROPOSED INLETS. IF POSITIVE DRAINAGE DOES NOT EXIST, CONTRACTOR TO COORDINATE WITH ENGINEER OF RECORD FOR SOLUTION AND ADJUST PROPOSED INLETS AS NECESSARY AT NO COST.
31. CONTRACTOR SHALL CONFIRM ELEVATION OF EXISTING GRADE PRIOR TO PLACING DRAINAGE OUTFALL STRUCTURES. CONTRACTOR SHALL NOTIFY ENGINEER OF RECORD IF EXISTING GRADE DOES NOT MATCH PROPOSED OUTFALL INVERT. CONTRACTOR SHALL ADJUST OUTFALL STRUCTURE INVERT AND/OR STRUCTURE LOCATION AS DIRECTED BY ENGINEER OF RECORD AT NO COST.
32. ANY DRAINAGE PROBLEMS CREATED BY CONSTRUCTION, OR EXISTING BEFORE CONSTRUCTION AND NOT ALLEVIATED, SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD AT THE TIME OF DISCOVERY.
33. ALL STORMWATER PIPES AND INLETS SHALL BE CLEANED OF DEBRIS AND ERODED MATERIALS AT LAST STAGES OF AND PRIOR TO COMPLETION OF CONSTRUCTION.

GENERAL NOTES

34. SPECIAL ATTENTION IS DIRECTED TO THE FACT THAT PORTIONS OF SOME DRAINAGE STRUCTURES MAY EXTEND INTO THE STABILIZED PORTION OF THE ROADBED. EXTREME CAUTION WILL BE NECESSARY DURING COMPACTION AND STABILIZATION OPERATIONS AT THESE LOCATIONS TO AVOID DAMAGE AND ACHIEVE THE REQUIRED COMPACTION.
35. DURING CONSTRUCTION, AN ALL-WEATHER ACCESSIBLE ROADWAY SHALL BE MAINTAINED AT ALL TIMES FOR FIRE ACCESS.
36. ALL REQUIRED FIRE LINES & HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL & STATE REQUIREMENTS AND OPERATIONAL PRIOR TO THE START OF VERTICAL CONSTRUCTION.
37. EXISTING DRIVEWAYS WITHIN THE LIMITS OF THIS PROJECT ARE TO BE REPLACED AT THE SAME LOCATION AND WIDTH WITH THE SAME TYPE OF MATERIAL, UNLESS OTHERWISE SHOWN IN THE PLANS.
38. ALL RAMPS, SIDEWALKS AND ACCESSIBLE ROUTES ARE TO BE IN COMPLIANCE WITH CURRENT A.D.A. REQUIREMENTS.
39. SIGNS THAT ARE REMOVED AND ARE TO BE RELOCATED SHALL BE STOCK PILED BY THE CONTRACTOR. ANY EXISTING SIGNS DAMAGED DURING CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR AT HIS COST.
40. ROADWAY AND PARKING SIGNAGE AND MARKINGS SHALL BE IN CONFORMANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION.
41. UNLESS OTHERWISE NOTED, PROPOSED GRADES SHOWN ARE FINISHED GRADES.
42. OPERATION AND MAINTENANCE OF THE STORMWATER SYSTEM WILL BE PROVIDED BY THE OWNER OF PROPERTY. MAINTENANCE IS TO INCLUDE BI-WEEKLY MOWING OF SIDE SLOPES FOR VEGETATION CONTROL AND MONTHLY INSPECTION/CLEANING OF CULVERTS & STORM SYSTEMS.
43. ALL DISTURBED AREAS SHALL BE SODDED, UNLESS OTHERWISE SHOWN, AND SHALL HAVE SOD/ VEGETATED COVER ESTABLISHED PRIOR TO THE INSPECTION FOR THE CERTIFICATE OF OCCUPANCY.
44. INSTALLATION OF THE REQUIRED STREET SIGNS, TRAFFIC SIGNS, PAVEMENT STRIPING, STREET LIGHTS AND SIDEWALKS ALONG WITH THE PAINTING OF THE FIRE HYDRANTS MUST BE COMPLETED PRIOR TO THE ISSUANCE OF THE CERTIFICATE OF COMPLETION.
45. CONTRACTOR IS RESPONSIBLE FOR INSPECTING AND PRE-TESTING PRIOR TO SCHEDULING A TEST OR WALK-THROUGH WITH THE UTILITY REPRESENTATIVES, MUNICIPAL REPRESENTATIVES AND ENGINEER OF RECORD. ANY COST ASSOCIATED WITH RETESTING SHALL BE PAID FOR BY THE CONTRACTOR.
46. THE ENGINEER OF RECORD AND LOCAL UTILITY SHALL BE GIVEN SEVENTY-TWO (72) HOURS NOTICE OF ALL REQUESTED MEETINGS AND/OR TESTING MEASURES.
47. CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH THE REGULATORY REPRESENTATIVES TO DETERMINE THE INSPECTIONS NEED FOR THE PROJECT. CONTRACTOR SHALL PROVIDE PROPER NOTIFICATION TO INSPECTING AUTHORITIES BEFORE AND DURING CONSTRUCTION.
48. ZEV COHEN AND ASSOCIATES, INC (ZCA) LIABILITY SHALL BE LIMITED TO THE COMPANY'S DESIGN OF SPECIFIC IMPROVEMENTS AS DEPICTED ON THE SITE INFRASTRUCTURE CONSTRUCTION DOCUMENTS.

1. WATER DISTRIBUTION SYSTEM SHALL BE DESIGNED TO COMPLY WITH THE CITY'S LATEST FIRE/WATER FLOW CODE. ALL DEDICATED FIRE LINES SHALL BE INDEPENDENT OF ALL OTHER DOMESTIC WATER SERVICES.
2. ALL SINGLE AND DOUBLE RESIDENTIAL WATER SERVICES SHALL BE ENDOT ENDOPURE 1". COMMERCIAL SERVICES SHALL BE 1" OR 2" - NO 1-1/2" SERVICES ARE ALLOWED. POLYETHYLENE TUBING SHALL BE USED, IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:
   A. POLYETHYLENE TUBING SHALL BE CTS 3408 HIGH DENSITY TUBING, BLUE IN COLOR, AND RATED FOR A MINIMUM OF 200 PSI WITH SDR OF 9 (CTS)
   B. THE TUBING SHALL COME WITH A LIFETIME WARRANTY
   C. THE TUBING SHALL HAVE A VIRGIN HIGH DENSITY POLYETHYLENE CENTER FOR WHICH THE MANUFACTURER SHALL FURNISH A CERTIFICATE OF PURITY
   D. THE TUBING SHALL HAVE UV PROTECTION AND SHALL NOT BE AFFECTED BY DIRECT SUNLIGHT. THE TUBING SHALL COMPLY WITH OR EXCEED THE APPLICABLE STANDARDS OF ASTM D1248, D3350, D2239, D2737, NSF 14 AND AWWA C901
3. WATER SERVICES SHALL BE NORMALLY DOUBLE 1" SERVICES LOCATED AT SIDE LOT LINES. AT LOCATIONS WHERE SERVICES NEED TO BE OFFSET, SUCH AS AT FIRE HYDRANTS, FPL TRANSFORMERS, ETC., 1" SINGLE SERVICES SHALL BE SPECIFIED. THESE SERVICES MAY BE OFFSET A MAXIMUM OF 2' FROM SIDE LOT LINES.
4. APPROVED WATER VALVE TYPES ARE THE FOLLOWING:
   - RESILIENT SEATED GATE VALVES EQUAL TO OR LESS THAN 24" DIAMETER, PER AWWA C-515
   - BUTTERFLY VALVES GREATER THAN 24" DIAMETER, PER AWWA C-504
   - TAPPING VALVES WITH MECHANICAL TAPPING SLEEVE
5. WATER VALVES SHALL BE PLACED AT ALL STREET INTERSECTIONS AND AT MAXIMUM SPACINGS OF 1,000'.
6. AT ALL WATER MAIN TEES AND CROSSES, VALVES SHALL BE INSTALLED ON ALL LEGS EXCEPT ONE.
7. WATER MAINS SHALL BE C-900 PVC, BLUE IN COLOR, OR DIP PRESSURE CLASS 350 STANDARD CEMENT LINED UNLESS OTHERWISE APPROVED BY THE CITY. WATER MAINS 10" OR GREATER SHALL BE DIP.
8. PVC FITTINGS 4-INCH THROUGH 36-INCH SHALL BE PVC (OR DIP WITH PROTECTO 401) INJECTION-MOLDED OR FABRICATED AS SPECIFIED, MADE OF MATERIALS MEETING OR EXCEEDING THE REQUIREMENTS OF CELL CLASS 12454-B MATERIAL AS DEFINED IN ASTM D1784. FABRICATED FITTINGS SHALL BE MANUFACTURED WITH PIPE THAT MEETS OR EXCEEDS AWWA C900 STANDARDS. FITTINGS SHALL BE FIBERGLASS REINFORCED TO A PRESSURE RATING EQUAL TO THE ASSOCIATED PVC OR MECHANICAL JOINT FITTINGS MUST COMPLY WITH OR EXCEED ANSI/AWWA C907, UNI-B-14 STANDARDS AS THEY APPLY TO THE APPROPRIATE SIZE RANGE AND METHOD OF MANUFACTURE.
9. ALL HDPE PIPE UTILIZED FOR WATER, FORCE MAIN AND/OR RECLAIMED WATER MAIN EXTENSIONS SHALL BE SDR 11 WITH #10 COPPERHEAD TRACER WIRE UNLESS SPECIFICALLY NOTED OTHERWISE. THE HDPE PIPE SHALL BE SIZED TO MATCH THE EXTERNAL DIMENSION OF THE PVC OR DIP PIPE TO WHICH IT IS ATTACHED.
10. ALL VALVES 2" AND LARGER SHALL BE RESILIENT SEATED GATE VALVES (COMP STOPS ARE NOT ACCEPTABLE).
11. MEGALUGS, BOLTLESS RESTRAINED JOINTS OR GRIPPER GASKETS SHALL BE USED ON ALL RESTRAINED JOINT INSTALLATIONS. MINIMUM DEPTH OF BURY ON PIPES NOT MEETING REQUIRED COVER REQUIREMENTS SHALL FOLLOW THE MOST RECENT DIPRA THRUST RESTRAINT DESIGN GUIDELINES USING TORQUE WRENCHES PER MANUFACTURERS RECOMMENDATION.
12. WATER MAINS SHALL HAVE A MINIMUM COVER OF 36 INCHES AND A MAXIMUM DEPTH OF 48 INCHES FROM FINAL GRADE. CONFLICT LOCATIONS OR SPECIAL CIRCUMSTANCES NOT MEETING THESE REQUIREMENTS MAY BE APPROVED WHEN IT IS DETERMINED TO BE IN THE BEST INTEREST OF THE CITY.

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13. WATER MAINS SHALL BE INSTALLED APPROXIMATELY 6' OFF THE BACK OF CURB OR AS APPROVED BY THE CITY. FOR CONSTRUCTION PURPOSES, THE PLANS SHALL DIMENSION THE PROPOSED LOCATIONS OF ALL WATER MAINS MEASURED FROM THE BACK OF CURB (OR EDGE OF PAVEMENT, IF NO CURB IS USED).
14. 3" METALLIZED PIPE LOCATION TAPE SHALL BE LOCATED BETWEEN 15" AND 24" BELOW FINISHED GRADE OR AS SPECIFIED BY MANUFACTURER FOR ALL PVC LINES. MARKER TAPE SHALL BE USED ON ALL DUCTILE IRON PIPE, AS WELL.
15. LANDSCAPE PLANS SHALL CLEARLY DEPICT THE DESIGN LOCATION OF PLANTINGS RELATIVE TO THE LOCATION OF PUBLIC UTILITIES AND STORMWATER INFRASTRUCTURE IN ORDER TO EVALUATE POTENTIAL CONFLICTS.
16. THE FIRE DEPARTMENT CONNECTION (FDC) FOR BUILDINGS WITH A FIRE PROTECTION SPRINKLER SYSTEM MUST BE WITHIN 50' OF UNOBSTRUCTED PATH TO A FIRE HYDRANT LOCATION APPROVED BY THE FIRE MARSHALL AND/OR PUBLIC UTILITIES ENGINEER.
17. A MINIMUM OF ONE FIRE HYDRANT SHALL BE LOCATED AT EVERY INTERSECTION. OTHER FIRE HYDRANTS SHALL BE LOCATED SO AS TO PRODUCE A MAXIMUM 350' FEET AND/OR METTING THE LATEST NFPA CODE HOSE LAY REQUIREMENT ALONG THE STREET FOR ALL RESIDENTIAL BUILDINGS. FIRE HYDRANTS MAY NOT BE INSTALLED WITHIN 20' OF ANY ELECTRICAL TRANSFORMER.
18. NEW OR RELOCATED, UNDERGROUND MAINS SHALL BE LAID TO PROVIDE THE FOLLOWING MINIMUM HORIZONTAL SEPARATIONS (OUTSIDE TO OUTSIDE):

	WATER	STORM GRAVITY	STORM FORCE	RECLAIM	SANITARY GRAVITY	SANITARY FORCE
WATER		3'	3'	3'	6', PREFERRED 10'	6', PREFERRED 10'
STORM GRAVITY	3'		3'	3'	6', PREFERRED 10'	6', PREFERRED 10'
STORM FORCE	3'	3'		3'	6', PREFERRED 10'	6', PREFERRED 10'
RECLAIM	3'	3'	3'		3'	3'
SANITARY GRAVITY	6', PREFERRED 10'	6', PREFERRED 10'	6', PREFERRED 10'	3'		6', PREFERRED 10'
SANITARY FORCE	6', PREFERRED 10'	6', PREFERRED 10'	6', PREFERRED 10'	3'	6', PREFERRED 10'	

19. A 3' MINIMUM HORIZONTAL SEPARATION BETWEEN THE WATER AND SANITARY GRAVITY MAINS SHALL BE ALLOWED WHERE THE WATER MAIN IS INSTALLED IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF AT LEAST 6' ABOVE THE SANITARY GRAVITY MAIN.

STANDARD CONSTRUCTION DETAIL
POTABLE WATER DESIGN NOTES
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20. NEW OR RELOCATED, UNDERGROUND MAINS SHALL BE LAID TO PROVIDE THE FOLLOWING MINIMUM CROSSING/VERTICAL SEPARATIONS (OUTSIDE TO OUTSIDE):

	WATER	STORM GRAVITY	STORM FORCE	RECLAIM	SANITARY GRAVITY	SANITARY FORCE
WATER		OVER STORM GRAVITY 6", PREFERRED 12"	OVER STORM FORCE 12"	OVER RECLAIM 12"	OVER SANITARY GRAVITY 6", PREFERRED 12"	OVER SANITARY FORCE 12"
STORM GRAVITY	UNDER WATER 6", PREFERRED 12"		UNDER STORM FORCE 12"	UNDER RECLAIM 12"	UNDER SANITARY GRAVITY 12"	UNDER SANITARY FORCE 12"
STORM FORCE	OVER WATER 12"	OVER STORM GRAVITY 6"		OVER RECLAIM 6", PREFERRED 12"	OVER SANITARY GRAVITY 6", PREFERRED 12"	OVER SANITARY FORCE 6", PREFERRED 12"
RECLAIM	UNDER WATER 6", PREFERRED 12"	UNDER STORM FORCE 6"	UNDER STORM FORCE 6"		UNDER SANITARY GRAVITY 12"	UNDER SANITARY FORCE 12"
SANITARY GRAVITY	OVER WATER 12"	OVER STORM GRAVITY 6"		OVER RECLAIM 12"		OVER SANITARY FORCE 12"
SANITARY FORCE	UNDER WATER 12"	UNDER STORM GRAVITY 12"	UNDER STORM FORCE 12"	UNDER RECLAIM 12"	UNDER SANITARY GRAVITY 12"	

STANDARD CONSTRUCTION DETAIL
POTABLE WATER DESIGN NOTES
(CONTINUED)
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FILE NAME W1.DOC
DETAIL REF: W-1.2

1. THE CITY'S PUBLIC UTILITIES DEPARTMENT (386) 506-5750 SHALL BE GIVEN A MINIMUM OF 2 BUSINESS DAYS ADVANCE NOTICE (NOT INCLUDING HOLIDAYS OR WEEKENDS) PRIOR TO BEGINNING ANY POTABLE WATER SYSTEM CONSTRUCTION.
2. ALL WORK PERFORMED ON THE POTABLE WATER FACILITIES OWNED OR PROPOSED TO BE OWNED BY THE CITY SHALL BE CONSTRUCTED BY A STATE CERTIFIED UNDERGROUND UTILITY CONTRACTOR OR GENERAL CONTRACTOR LICENSED IN THE STATE OF FLORIDA AND REGISTERED WITH THE CITY.
3. NEWLY CONSTRUCTED POTABLE WATER SYSTEMS SHALL NOT BE USED PRIOR TO FINAL TESTING, CLEARANCE AND ACCEPTANCE BY THE CITY OF PORT ORANGE. THIS INCLUDES CONSTRUCTION WATER REQUIRED FOR SEWER LINE CLEANING OR RELATED USES.
4. ALL TAPPING OF MAINS SHALL BE PERFORMED BY THE CITY AND BILLED IN ACCORDANCE WITH THE ADOPTED FEE RESOLUTION. SCHEDULING OF THESE CONNECTIONS OR TAPPINGS SHALL REQUIRE A MINIMUM OF 2 BUSINESS DAYS, DIRECTED TO THE CITY'S DESIGNATED SITE INSPECTOR WHO SHALL COORDINATE THE WORK DIRECTLY WITH THE PUBLIC UTILITIES DEPARTMENT. SUBSEQUENTLY, THE CONNECTION SHALL BE SCHEDULED TO COMMENCE BETWEEN 8:00 A.M. AND NOON ON THE APPROPRIATE DAY.
5. CONTRACTOR SHALL PREPARE A SAFE, SECURE AND DRY EXCAVATION FOR THE TAPPING OF MAINS BY THE CITY. THE BOTTOM OF THE EXCAVATION SHALL HAVE A MINIMUM OF 6" THICK BEDDING OF #57 STONE. ALL EXCAVATIONS GREATER THAN 5 FEET IN DEPTH SHALL COMPLY WITH OSHA TRENCH SAFETY ACT.
6. THE CITY RESERVES THE RIGHT TO REQUIRE TIE-IN CONNECTIONS TO BE PERFORMED DURING PERIODS OF LOW FLOW (MIDNIGHT TO 6:00 A.M.) IN ORDER TO MINIMIZE SERVICE DISRUPTION TO EXISTING CUSTOMERS. THE INSTALLATION OF LINE STOPPING DEVICES ON PRESSURE MAIN (POTABLE WATER, RECLAIM WATER AND SANITARY FORCE MAINS) MAY BE REQUIRED ON ANY REQUESTED UTILITY OUTAGE AT THE DISCRETION OF PUBLIC UTILITIES DEPARTMENT TO MINIMIZE INTERRUPTION TO EXISTING UTILITY CUSTOMERS.
7. ALL METERS SHALL BE PROVIDED BY THE CITY PRIOR TO THE START OF CONSTRUCTION. METERS AND VAULTS FOR METERS 2" OR LESS WILL BE PROVIDED AND INSTALLED BY THE CITY. METERS 4" OR GREATER WILL BE PROVIDED BY THE CITY AND INSTALLED/VAULTED BY THE OWNER/DEVELOPER/CONTRACTOR. ALL UNDERGROUND VAULTS FOR METERS 4" OR GREATER WILL BE PROVIDED AND INSTALLED BY THE OWNER/DEVELOPER/CONTRACTOR. NOTE: LARGE COMPOUND METERS GREATER THAN 4" TAKE A MINIMUM OF 6 WEEKS FOR DELIVERY AFTER FEES ARE PAID TO THE CITY.
8. DEWATERING SHALL BE PROVIDED TO KEEP GROUNDWATER ELEVATION A MINIMUM OF 6 INCHES BELOW WATER MAIN BEING LAID.
9. ALL WATER MAINS SHALL BE LAID ON A FIRM FOUNDATION WITH ALL UNSUITABLE MATERIAL (MUCK, ROCK, COQUINA, ETC.) REMOVED AND REPLACED WITH CLEAN GRANULAR MATERIAL.
10. TRENCHES SHALL BE BACKFILLED WITH MATERIAL ACCEPTABLE TO THE CITY WITH A MINIMUM COMPACTION OF 98% IN PAVED AREAS AND 95% IN UNPAVED AREAS IN ACCORDANCE WITH AASHTO T-180.
11. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO ENSURE THAT TRENCH COMPACTION TESTS BE PROVIDED AT POINTS 1 FOOT ABOVE THE PIPE AND AT 1 FOOT VERTICAL INTERVALS TO FINISH GRADE, AT A MINIMUM SPACING OF EVERY 300 FEET.
12. ALL PVC PIPE SHALL BE STORED IN SUCH A WAY AS TO PREVENT WARPING, DEFLECTION, OR ANY DEFORMATION.
13. NO USED, RE-USED, RUSTED, SECOND HAND, OR ANY MATERIAL THAT IS NOT NEW SHALL BE USED IN ANY UTILITY IMPROVEMENT PROJECTS WITHIN THE CITY'S SERVICE AREA.
14. ALL POTABLE WATER MAINS SHALL USE A THRUST RESTRAINT JOINT METHOD IN COMPLIANCE WITH THE DUCTILE IRON PIPE RESEARCH ASSOCIATION (DIPRA) GUIDELINES. IN THE EVENT THAT PVC PIPE IS SPECIFIED, THE RESTRAINT JOINT SHALL BE MODIFIED IN ACCORDANCE WITH THE RECOMMENDED ADDITIONAL RESTRAINT LENGTH REQUIRED FOR PIPE WRAPPED WITH POLYETHYLENE.

STANDARD CONSTRUCTION DETAIL
POTABLE WATER CONSTRUCTION NOTES
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FILE NAME W2.DOC
DETAIL REF: W-2

15. AT THE UTILITY CROSSINGS, ONE FULL LENGTH OF WATER MAIN PIPE SHALL BE CENTERED ABOVE OR BELOW THE OTHER PIPELINE SO THE WATER MAIN JOINTS WILL BE AS FAR AS POSSIBLE FROM THE OTHER PIPELINE. ALTERNATIVELY, AT SUCH CROSSINGS, THE PIPES SHALL BE ARRANGED SO THAT ALL WATER MAIN JOINTS ARE AT LEAST THREE FEET FROM ALL JOINTS IN VACUUM-TYPE SANITARY SEWERS, STORM SEWERS, STORMWATER FORCE MAINS OR PIPELINES CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62-610 FAC AND AT LEAST SIX FEET FROM ALL JOINTS IN GRAVITY- OR PRESSURE-TYPE SANITARY SEWERS, WASTEWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62-610, FAC.
16. ALL WATER SERVICE ENDINGS SHALL BE MARKED WITH A 2"X 4" LUMBER (PRESSURE TREATED) EXTENDING 4 FEET ABOVE GRADE, WITH WATER SERVICES SECURED 12" MINIMUM ABOVE THE GROUND. ALL SERVICES SHALL BE LOCKED AT THE TIME OF FINAL INSPECTION BY THE CONTRACTOR IN THE PRESENCE OF THE CITY INSPECTOR OR CITY PERSONNELL, AFTER THEY HAVE BEEN INSPECTED AND VERIFIED TO OPERATE PROPERLY.
17. ALL WATER VALVES SHALL BE ADJUSTED TO FINISHED GRADE AND THE CAPS PAINTED BLUE TO MARK THEM PLAINLY VISIBLE.
18. WATER SYSTEMS SHALL BE PRESSURE TESTED AT 150 PSI STATIC PRESSURE FOR A PERIOD OF 2

THE CITY'S PUBLIC UTILITIES DEPARTMENT ((800) 506-5750 SHALL BE GIVEN A MINIMUM OF 48 HOURS ADVANCE NOTICE (NOT INCLUDING HOLIDAYS OR WEEKENDS) PRIOR TO BEGINNING ANY SANITARY SEWER CONSTRUCTION.

CONSTRUCTION:

1. ALL WORK PERFORMED ON SANITARY SEWER FACILITIES OWNED OR PROPOSED TO BE OWNED BY THE CITY SHALL BE CONSTRUCTED BY AN UNDERGROUND UTILITY CONTRACTOR, OR FLORIDA LICENSED GENERAL CONTRACTOR REGISTERED WITH THE CITY.
2. THE PLANS SHALL DIMENSION THE LOCATION, OF ALL MAINS MEASURED FROM THE BACK OF CURB (OR EDGE OF PAVEMENT, IF NO CURBING EXISTS, LANDSCAPE PLANS SHALL CLEARLY DEPICT THE DESIGN LOCATION OF PLANTINGS RELATIVE TO THE LOCATION OF PROPOSED AND EXISTING PUBLIC UTILITIES AND STORMWATER INFRASTRUCTURE.
3. PROFILE VIEWS SHALL BE PROVIDED FOR ALL SEWER MAINS. PROFILE VIEWS SHALL BE ON THE SAME SHEET AS THE ASSOCIATED PLAN VIEW AND SHALL INCLUDE THE FOLLOWING INFORMATION:
   A. SIZE, SLOPE, LENGTH AND CLASS OF PIPE
   B. MANHOLE RIM AND INVERT ELEVATIONS
   C. UTILITY CROSSINGS WITH VERTICAL SEPARATION
   D. SHOW PROPOSED SEWER AND EXISTING UTILITY
   E. EXISTING GROUND PROFILE
   F. MATCH LINE
   G. VICINITY MAP
   H. PROFILE VIEW STATIONS TO COINCIDE WITH PLAN VIEW STATIONS
4. GREASE INTERCEPTORS ARE REQUIRED FOR ALL COMMERCIAL BUILDINGS HAVING KITCHEN, FOOD PREPARATION OR SERVING FACILITIES AND / OR MISCELLANEOUS USES. GREASE INTERCEPTORS CONSTRUCTED EXTERNAL TO BUILDINGS SHALL BE SIZED IN ACCORDANCE WITH FAC 64-E-6. CALCULATIONS TO DETERMINE SIZING REQUIREMENTS SHALL BE SUBMITTED AS PART OF BUILDING PERMITTING. AN INSPECTION MANHOLE MAY BE REQUIRED IMMEDIATELY DOWN STREAM OF THE GREASE INTERCEPTOR FOR INSPECTION PURPOSES, AS DEEMED APPROPRIATE BY THE CITY.
5. ON ALL EXCAVATION AND BACKFILLING, THE CONTRACTOR SHALL PROVIDE ADEQUATE SHEETING AND BRACING IN ACCORDANCE TO OSHA GUIDELINE IN ORDER TO PROVIDE FOR THE SAFETY OF WORKMEN, AS WELL AS REPRESENTATIVES OF THE CITY, THE DESIGN ENGINEER, AND THE DEVELOPER.
6. ALL PVC. PIPE SHALL BE STORED IN SUCH A WAY AS TO PREVENT WARPING, DEFLECTION, OR DEFORMATION. ANY PIPE DEEMED TO BE MISSHAPED IN ANY WAY FOR ANY REASON SHALL BE REJECTED.
7. NO USED, RE-USED, RUSTED, SECOND HAND, OR ANY MATERIAL THAT IS NOT NEW SHALL BE USED IN ANY UTILITY IMPROVEMENTS PROJECTS WITHIN THE CITY SERVICE AREA.
8. THE CONTRACTOR SHALL AT ALL TIMES, DURING PIPE LAYING OPERATIONS DIVERSATE THE GROUND SUFFICIENTLY TO KEEP THE GROUNDWATER ELEVATION A MINIMUM OF 6" BELOW THE PIPE BEING LAID WITHIN THE AREA OF THE TRENCH.
9. ALL PIPES SHALL BE LAID ON A FIRM FOUNDATION. SOFT OR SPONGY BEDDING FOR PIPES IS NOT ACCEPTABLE. ANY UNSUITABLE MATERIAL SHALL BE REMOVED AND REPLACED WITH A DRY, COMPACTED, GRANULAR MATERIAL SATISFACTORY TO THE CITY. MORTAR TO CONTAIN "HYDRATITE" OR APPROVED EQUAL, TO PREVENT SHRINKAGE. CEMENT USED IN CONCRETE MIX FOR PRECAST STRUCTURES SHALL BE TYPE II, ACID RESISTANT AND SULFIDE RESISTANT CONCRETE.
10. MORTAR TO CONTAIN "HYDRATITE" OR APPROVED EQUAL, TO PREVENT SHRINKAGE. CEMENT USED IN CONCRETE MIX FOR PRECAST STRUCTURES SHALL BE TYPE II, ACID RESISTANT AND SULFIDE RESISTANT CONCRETE.

STANDARD CONSTRUCTION DETAIL
SANITARY SEWER NOTES
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11. THE CITY MAY REQUIRE ALL NEW SANITARY SEWER GRAVITY SYSTEMS TO BE SMOKE TESTED PRIOR TO FINAL ACCEPTANCE. ALL TESTING MUST BE DONE IN THE PRESENCE OF THE CITY'S DESIGNATED SITE INSPECTOR.
12. THE CITY OF PORT ORANGE RESERVES THE RIGHT TO REQUIRE THE DEVELOPER TO PERFORM VACUUM TESTING OF ALL SANITARY MANHOLES, AIR TEST SEWER MAINS, AND REQUIRES THAT ALL SANITARY SEWER MAIN LINES BE TELEVISED PRIOR TO FINAL ACCEPTANCE. LATERALS SHALL BE TELEVISED UPON DEMAND BY THE CITY PRIOR TO FINAL ACCEPTANCE WHEN IT IS SUSPECTED THAT A PROBLEM EXISTS.
13. ALL TAPPING OF PRESSURE MAINS AND CORING OF MANHOLES SHALL BE PERFORMED BY THE CITY AND BILLED IN ACCORDANCE WITH THE ADOPTED FEE RESOLUTION. SCHEDULING OF THESE CONNECTIONS SHALL REQUIRE A MINIMUM 48 HOURS NOTIFICATION DIRECTED TO THE CITY'S DESIGNATED SITE INSPECTOR WHO SHALL COORDINATE THE WORK DIRECTLY WITH THE PUBLIC UTILITIES DEPARTMENT. SUBSEQUENTLY, THE CONNECTION SHALL BE SCHEDULED TO COMMENCE BETWEEN 8:00 A.M. AND NOON ON THE APPROPRIATE DAY ESTABLISHED BY CITY. WITH RESPECT TO TIE-IN CONNECTIONS AND CORING OPERATIONS, THE CITY RESERVES THE RIGHT TO REQUIRE CONNECTIONS TO BE PERFORMED DURING PERIODS OF LOW FLOW (MIDNIGHT TO 6:00 A.M.) IN ORDER TO MINIMIZE SERVICE DISRUPTION TO EXISTING CUSTOMERS. CONTRACTORS HAVING EXPERIENCE AND PROPER EQUIPMENT MAY BE GRANTED PERMISSION TO CORE MANHOLE BY PUBLIC UTILITIES DEPARTMENT.
14. NEW OR RELOCATED, UNDERGROUND MAINS SHALL BE LAID TO PROVIDE THE FOLLOWING MINIMUM HORIZONTAL SEPARATIONS (OUTSIDE TO OUTSIDE):

	WATER	STORM GRAVITY	STORM FORCE	RECLAIM	SANITARY GRAVITY	SANITARY FORCE
WATER		3'	3'	3'	6', PREFERRED 10'	6', PREFERRED 10'
STORM GRAVITY	3'		3'	3'	6', PREFERRED 10'	6', PREFERRED 10'
STORM FORCE	3'	3'		3'	6', PREFERRED 10'	6', PREFERRED 10'
RECLAIM	3'	3'	3'		3'	3'
SANITARY GRAVITY	6', PREFERRED 10'	6', PREFERRED 10'	6', PREFERRED 10'	3'		6', PREFERRED 10'
SANITARY FORCE	6', PREFERRED 10'	6', PREFERRED 10'	6', PREFERRED 10'	3'	6', PREFERRED 10'	

15. A 3' MINIMUM HORIZONTAL SEPARATION BETWEEN THE SANITARY GRAVITY AND WATER MAINS SHALL BE ALLOWED WHEN THE WATER MAIN IS INSTALLED IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF AT LEAST 6" ABOVE THE SANITARY GRAVITY MAIN. ALTERNATIVELY, THE 3' MINIMUM HORIZONTAL SEPARATION SHALL BE ALLOWED WHEN THE SEWER MAIN IS ENCASED WITH CONCRETE OR ENCLOSED IN A WATER TIGHT CARRIER PIPE OR UPGRADED TO PRESSURE RATED PVC PIPE (MEETING AWWA C-900 OR C-905 SPECIFICATION AND PRESSURE TESTED AT 150 PSI TO ASSURE WATER TIGHTNESS PRIOR TO BACKFILLING).

STANDARD CONSTRUCTION DETAIL
SANITARY SEWER NOTES
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16. NEW OR RELOCATED, UNDERGROUND MAINS SHALL BE LAID TO PROVIDE THE FOLLOWING MINIMUM CROSSING/VERTICAL SEPARATIONS (OUTSIDE TO OUTSIDE):

	WATER	STORM GRAVITY	STORM FORCE	RECLAIM	SANITARY GRAVITY	SANITARY FORCE
WATER		OVER STORM GRAVITY 6", PREFERRED 12"	OVER STORM FORCE 12"	OVER RECLAIM 12"	OVER SANITARY GRAVITY 6", PREFERRED 12"	OVER SANITARY FORCE 12"
		UNDER STORM GRAVITY 12"	UNDER STORM FORCE 12"	UNDER RECLAIM 12"	UNDER SANITARY GRAVITY 12"	UNDER SANITARY FORCE 12"
STORM GRAVITY	OVER WATER 12"		OVER STORM FORCE 6"	OVER RECLAIM 6", PREFERRED 12"	OVER SANITARY GRAVITY 6", PREFERRED 12"	OVER SANITARY FORCE 6", PREFERRED 12"
	UNDER WATER 6", PREFERRED 12"		UNDER STORM FORCE 6"	UNDER RECLAIM 12"	UNDER SANITARY GRAVITY 12"	UNDER SANITARY FORCE 12"
STORM FORCE	OVER WATER 12"	OVER STORM GRAVITY 6"		OVER RECLAIM 12"	OVER SANITARY GRAVITY 6"	OVER SANITARY FORCE 12"
	UNDER WATER 12"	UNDER STORM GRAVITY 12"		UNDER RECLAIM 12"	UNDER SANITARY GRAVITY 12"	UNDER SANITARY FORCE 12"
RECLAIM	OVER WATER 12"	OVER STORM GRAVITY 12"	OVER STORM FORCE 12"		OVER SANITARY GRAVITY 12"	OVER SANITARY FORCE 12"
	UNDER WATER 12"	UNDER STORM GRAVITY 12"	UNDER STORM FORCE 12"		UNDER SANITARY GRAVITY 12"	UNDER SANITARY FORCE 12"
SANITARY GRAVITY	OVER WATER 12"	OVER STORM GRAVITY 12"	OVER STORM FORCE 12"	OVER RECLAIM 12"		OVER SANITARY FORCE 12"
	UNDER WATER 6", PREFERRED 12"	UNDER STORM GRAVITY 6", PREFERRED 12"	UNDER STORM FORCE 12"	UNDER RECLAIM 12"		UNDER SANITARY FORCE 12"
SANITARY FORCE	OVER WATER 12"	OVER STORM GRAVITY 12"	OVER STORM FORCE 12"	OVER RECLAIM 12"	OVER SANITARY GRAVITY 12"	
	UNDER WATER 12"	UNDER STORM GRAVITY 6", PREFERRED 12"	UNDER STORM FORCE 12"	UNDER RECLAIM 12"	UNDER SANITARY GRAVITY 12"	

STANDARD CONSTRUCTION DETAIL
SANITARY SEWER NOTES
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17. SEWER LATERAL LOCATIONS SHALL BE MARKED ALONG THE OUTSIDE OF THE CURB WITH A SAW CUT "V", OR BY A METAL TAB SET INTO THE PAVEMENT.
18. THE CONTRACTOR SHALL INSTALL A METALLIZED FOIL LOCATOR TAPE, OR SIMILAR DEVICE AS MAY BE APPROVED BY THE CITY FOR THE FULL LENGTH OF ALL PVC SEWAGE FORCE MAINS. THIS PIPE LOCATOR AID SHALL BE INSTALLED BETWEEN 15" AND 24" BELOW FINISHED GRADE OR AS DIRECTED BY THE MANUFACTURER. TAPE SHALL BE COLOR CODED GREEN FOR SANITARY SEWER AND FORCE MAIN. A CONTINUOUS NO. 10 COPPER HEAD WIRE SHALL BE INSTALLED WITH WIRE BROUGHT UP AT ALL VALVES.

FORCE MAIN SANITARY SEWER:

1. PVC SANITARY SEWER FORCE MAINS, INCLUDING FITTINGS, SHALL BE GREEN PVC AWWA C-900, OR C-905, UNLESS SPECIFICALLY NOTED OTHERWISE. PRESSURE FITTINGS SHALL BE PRESSURE CLASS 150 OR C-907.
2. HDPE SANITARY SEWER FORCE MAINS SHALL BE SDR11 (OR THICKER) UNLESS SPECIFICALLY NOTED OTHERWISE. THE HDPE PIPE SHALL BE SIZED TO MATCH THE EXTERNAL DIAMETER OF THE PVC TO WHICH IT IS ATTACHED. PRESSURE FITTINGS SHALL BE PRESSURE CLASS 150 OR C-907.
3. ALL SANITARY SEWER FORCE MAINS SHALL USE A THRUST RESTRAINT JOINT METHOD IN COMPLIANCE WITH THE DUCTILE IRON PIPE RESEARCH ASSOCIATION GUIDELINES SPECIFICALLY TO ACCOMMODATE PVC PIPE BY FOLLOWING THE RECOMMENDED INCREASE IN RESTRAINT LENGTH CORRESPONDING TO THE INSTALLATION OF POLYETHYLENE WRAP. IN NO INSTANCE SHALL THRUST BLOCKS BE PERMITTED.
4. ALL IN-LINE SANITARY SEWER FORCE MAIN VALVES SHALL BE AWWA C-509 OR C-515 COMPLIANT RESILIENT SEAT VALVES FEATURING AN EPOXY COATED DUCTILE IRON BODY.
5. FORCE MAIN SYSTEMS SHALL BE PRESSURE TESTED AT 150 PSI STATIC PRESSURE FOR A PERIOD OF 2 HOURS PER AWWA STANDARDS.
6. FORCE MAINS SHALL BE FLUSHED, PRESSURE TESTED, PIGGED AND CLEARED FOR SERVICE IN ACCORDANCE WITH THE LATEST AWWA STANDARDS AND THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION REQUIREMENTS. THE CONTRACTOR SHALL NOTIFY THE CITY'S DESIGNATED SITE INSPECTOR WHO SHALL COORDINATE WITH CITY PERSONNEL AT THE WATER OR WASTEWATER TREATMENT PLANT (AS APPROPRIATE) AT LEAST 48 HOURS PRIOR TO BEGINNING A FULL-DIAMETER FLUSH OF THE MAINS AND PRIOR TO THE COMMENCEMENT OF PRESSURE TESTING (SUBJECT TO AVAILABILITY).
7. THE CONTRACTOR SHALL BE REQUIRED TO PIG ALL FORCE MAINS AND PRIMARY TRANSMISSION MAINS LOCATED ON COLLECTOR AND ARTERIAL ROADWAYS. LAUNCHING AND EXTRACTION POINTS SHALL BE DETERMINED BY THE CONTRACTOR. ALL PIGGING OPERATIONS SHALL BE WITNESSED BY A PORT ORANGE REPRESENTATIVE.

GRAVITY SANITARY SEWER:

1. ALL GRAVITY SANITARY SEWER LINES IN PUBLIC RIGHTS-OF-WAY SHALL BE GREEN PVC SDR26, ASTM D-3034. SEWER LINES CONSTRUCTED OUTSIDE OF PUBLIC RIGHTS-OF-WAY, WITHIN SIDE YARDS, BACKYARDS, AND OTHER POORLY ACCESSIBLE AREAS SHALL BE CONSTRUCTED OF GREEN AWWA C-900 PVC SDR25. USE OF PLASTIC STYRENE FITTINGS SHALL NOT BE ALLOWED.
2. IN PLACES WHERE A MINIMUM COVER OF 36" CANNOT BE MAINTAINED, AWWA C-900 GREEN PVC SDR25 OR CONCRETE ENCASEMENT SHALL BE USED. WATER LINES, RECLAIMED LINES, AND STORM DRAINAGE CROSSINGS SHALL ALSO FOLLOW THE CONCRETE ENCASEMENT REQUIREMENT PER THESE GENERAL NOTES AND PER A REGULATORY REQUIREMENT.
3. GRAVITY SANITARY SEWER SIZES SHALL BE:
   SANITARY 6" DIAMETER MINIMUM
   COMMERCIAL SERVICE LATERALS WITH MULTIPLE CONNECTIONS - 6" DIAMETER MINIMUM
   SINGLE FAMILY RESIDENTIAL SERVICE LATERALS - 4" DIAMETER
   MULTI-FAMILY RESIDENTIAL SERVICE LATERALS - 6" DIAMETER MINIMUM

STANDARD CONSTRUCTION DETAIL
SANITARY SEWER NOTES
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4. SINGLE FAMILY RESIDENTIAL SERVICE LATERALS SHALL BE CONSTRUCTED AT EACH LOT OR UNIT AND LOCATED ON THE DOWNSTREAM SIDE OF THE LOT CENTER LINE. THESE SERVICES SHALL BE EXTENDED 48" ABOVE GROUND AT THE PROPERTY LINE WITH A PVC RISER AND PLUG BEING EASILY VISIBLE FROM THE ROAD. RUBBER SEAL FITTINGS SHALL BE USED ON ALL LINES. NO GLUED JOINTS ARE PERMITTED ON LATERALS.
5. GRAVITY SANITARY SEWER LINE CONSTRUCTION SHALL BE ACCOMPLISHED BY THE USE OF A LASER INSTRUMENT UNLESS ANOTHER METHOD IS PREVIOUSLY APPROVED BY THE CITY.
6. MINIMUM GRAVITY SANITARY SEWER SLOPES ARE AS FOLLOWS:
   8" PIPE - 0.40 %
   10" PIPE - 0.30 %
   12" PIPE - 0.22 %
7. GRAVITY SANITARY SEWER LINES SHALL BE INSTALLED WHENEVER POSSIBLE UNDER PAVED AREAS WITHIN PUBLIC RIGHTS-OF-WAY. UTILITY EASEMENTS SHALL BE PROVIDED WHENEVER PUBLICLY-OWNED SEWER LINES ARE CONSTRUCTED OUTSIDE OF A PUBLIC RIGHT-OF-WAY.
8. AS A GENERAL RULE, THE NUMBER OF JOINTS SHALL BE LIMITED WHENEVER POSSIBLE. IN SPECIAL CASES WHERE A POINT REPAIR TO AN 8" TO 12" PVC SEWER MAIN IS REQUIRED, THE PROPER RIGID WRAP AROUND SLEEVE SUCH AS A JCM-210 OVERSIZED DUCTILE IRON COUPLING OR AN APPROVED EQUAL MAY BE ALLOWED BY SPECIAL APPROVAL BY THE CITY.
9. SEWER MAINS SHALL BE FLUSHED, PRESSURE TESTED, PIGGED AND CLEARED FOR SERVICE IN ACCORDANCE WITH THE LATEST AWWA STANDARDS AND THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION REQUIREMENTS. THE CONTRACTOR SHALL NOTIFY THE CITY'S DESIGNATED SITE INSPECTOR WHO SHALL COORDINATE WITH CITY PERSONNEL AT THE WATER OR WASTEWATER TREATMENT PLANT (AS APPROPRIATE) AT LEAST 48 HOURS PRIOR TO BEGINNING A FULL-DIAMETER FLUSH OF THE MAINS AND PRIOR TO THE COMMENCEMENT OF PRESSURE TESTING (SUBJECT TO AVAILABILITY).
10. THE CONTRACTOR SHALL BE REQUIRED TO PIG ALL MAINS AND PRIMARY TRANSMISSION MAINS LOCATED ON COLLECTOR AND ARTERIAL ROADWAYS. LAUNCHING AND EXTRACTION POINTS SHALL BE DETERMINED BY THE CONTRACTOR. ALL PIGGING OPERATIONS SHALL BE WITNESSED BY A PORT ORANGE REPRESENTATIVE.

SANITARY MANHOLES:

1. STANDARD MANHOLES SHALL BE LOCATED AT INTERVALS NOT EXCEEDING 350', SHOP DRAWINGS FOR ALL STRUCTURES SHALL BE SUBMITTED TO AND APPROVED BY THE CITY'S DESIGN ENGINEER PRIOR TO INSTALLATION WITH TWO COPIES FORWARDED BY THE DESIGN ENGINEER TO THE CITY.
2. MAXIMUM DEPTH OF SANITARY MANHOLES SHALL BE 15'.
3. LOCAL COLLECTION SANITARY SEWER MANHOLES SHALL BE PRECAST WITH A MINIMUM INSIDE DIAMETER OF 48".
4. THICKER MANHOLE WALLS AND BASES MAY BE REQUIRED TO PREVENT FLOATATION BASED ON HIGH GROUND WATER TABLE ELEVATIONS AS DETERMINED USING ACCEPTED ENGINEERING PRACTICES AND/OR PUBLIC UTILITIES DEPARTMENT.
5. ALL SANITARY SEWER MANHOLES SHALL HAVE ALL INTERIOR SURFACES COATED WITH THREE (3) COATS OF WHITE/GRAY OVER RED OVER BLACK EPOXY PAINT WITH A TOTAL OF 12 MILS THICKNESS OR BLACK COAL-TAR EPOXY WITH A TOTAL OF 16 MILS THICKNESS. OUTSIDE SURFACE TO BE COATED WITH TWO (2) COATS OF BLACK OVER BLACK EW-1 EPOXY PAINT WITH A TOTAL OF 8 MILS AND ONE (1) COAT OF BLACK BITUMASTIC AND PAINT WITH A TOTAL OF 8 MILS. ALL COATS SHALL BE APPLIED AT THE FACTORY EXCEPT MINOR FIELD TOUCH UP AT JOB SITE AS NECESSARY.
6. ALL MANHOLES LOCATED WITHIN SIDE YARDS, BACKYARDS, AND EASEMENTS OUTSIDE OF THE RIGHT-OF-WAY SHALL BE OUTFITTED WITH FIBERGLASS OR EPOXY LINERS IN COMPLIANCE WITH ASTM-3753 OR OTHER TYPES OF LINERS APPROVED BY THE CITY. IN ADDITION, THE CITY MAY REQUIRE LINERS TO BE INSTALLED IN OTHER AREAS WHERE THE PUBLIC UTILITIES DEPARTMENT BELIEVES THE NEED IS JUSTIFIED SUCH AS IMMEDIATELY UPSTREAM OF FORCE MAINS CONNECTING TO GRAVITY MAINS.

STANDARD CONSTRUCTION DETAIL
SANITARY SEWER NOTES
(CONTINUED)
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7. MANHOLE RIMS SHALL MATCH FLUSH WITH THE FINISH GRADE ELEVATION IN PAVED AREAS AND A MINIMUM OF 0.2' AND MAXIMUM OF 0.5' ABOVE GRADE ELEVATION IN UNPAVED AREAS.
8. ALL SANITARY SEWER MANHOLE COVERS SHALL HAVE THE WORDS "PORT ORANGE FLORIDA SANITARY SEWER" CAST INTO THEM.
9. THE CONTRACTOR SHALL CONSTRUCT SANITARY SEWER MANHOLES IN SUCH A WAY THAT SEWER LINES DO NOT INTERSECT SEALED JOINTS BETWEEN SECTIONS OF THE MANHOLE.
10. NO BUG HOLES OR HONEYCOMB WILL BE ACCEPTED.
11. INDIVIDUAL SANITARY SERVICE ON NEW CONSTRUCTION SHALL NOT BE CONNECTED DIRECTLY INTO MANHOLES. THE SERVICE CONNECTION WILL BE BY USE OF WYE CONNECTIONS, UNLESS OTHERWISE APPROVED BY THE CITY.
12. RUBBER BOOTS WITH 316 STAINLESS STEEL BANDS SHALL BE UTILIZED IN THE CONNECTION OF THE SEWER MAIN TO THE MANHOLES. COMPLETELY COVER RUBBER BOOTS AT OUTSIDE CONNECTION AND SEAL INSIDE PROTRUSION WITH HYDRAULIC CEMENT.
13. EZ-WRAP PLASTIC, AS MANUFACTURED BY PRESS SEAL GASKET CORPORATION, SHALL BE USED ON THE OUTSIDE OF ALL MANHOLE AND WET WELL JOINTS. APPLY ONE LAYER OF 9" WRAP CENTERED ON EACH JOINT. A CITY INSPECTOR SHALL PERSONALLY INSPECT ALL JOINT SEALS PRIOR TO BACKFILLING OPERATIONS.

TESTING:

1. ALL TESTING REQUIRED BY THE CITY SHALL BE PAID FOR BY THE CONTRACTOR / DEVELOPER. THE CONTRACTOR SHALL EMPLOY AN INDEPENDENT TESTING LABORATORY AT HIS OWN EXPENSE.
2. TO ENSURE THAT COMPACTION OF ALL FILL MATERIAL IS COMPLETED PROPERLY, TESTS SHALL BE DONE 12" ABOVE THE PIPE AND THEN AT 12" VERTICAL INTERVALS UNTIL FINAL GRADE IS REACHED.
3. ALL TRENCHES SHALL BE BACKFILLED WITH ACCEPTABLE MATERIAL AND COMPACTED TO MINIMUM 95% IN UNPAVED AREAS AND 98% IN PAVED AREAS OF THE MAXIMUM DENSITY BASED ON ASHHTO T-180 MODIFIED PROCTOR TEST.
4. TEST RESULTS SHALL BE SUBMITTED TO THE CITY AT A MINIMUM FREQUENCY OF ONE SET OF TESTS BETWEEN EACH MANHOLE AND ONE ADDITIONAL SET OF TESTS AT EVERY MANHOLE. IDENTIFICATION OF TEST LOCATIONS SHALL BE CLEARLY INDICATED ON TEST REPORTS. TEST RESULTS SHALL BE FORWARDED PROMPTLY TO THE CITY'S DESIGNATED SITE INSPECTOR.

CLOSE-OUT:

1. ALL SEWER MAINS, PRIOR TO FINAL ACCEPTANCE BY THE CITY AND PRIOR TO ANY FINAL PAVING OPERATIONS, SHALL BE TELEVISED AND SUBMITTED TO THE CITY USING A "PAN AND TILT CAMERA" WITH DEPTH GAUGE IN FRONT OF THE CAMERA BY A CITY APPROVED CONTRACTOR. THE CAMERA SHALL RUN FROM DOWN STREAM MANHOLE TO UP STREAM MANHOLE. CITY INSPECTOR SHALL BE NOTIFIED IN ADVANCE AND BE PRESENT DURING THE TELEVISING OF THE SEWER SYSTEM. THE VIDEO SHALL BE NON-STOP WITH AUDIO DESCRIBING WHAT IS BEING REVIEWED. WRITTEN VIDEO LOGS DESCRIBING THE CONDITION OF THE LINES SHALL ACCOMPANY THE VIDEO SUBMISSION TO THE CITY 48 HOURS PRIOR TO COMMENCING ANY INSTALLATION OF ASPHALT OR CONCRETE PAVEMENT. THE CITY MAY REQUIRE ADDITIONAL VIDEO TAPING, VIDEO TAPING OF LATERALS, AND/OR INFILTRATION/EXFILTRATION TESTS IF DEFECTS ARE APPARENT OR WORKMANSHIP IS QUESTIONABLE.
2. UPON CONSTRUCTION COMPLETION AND ACCEPTANCE OF THE SYSTEM, IT SHALL BE THE DESIGN ENGINEER'S RESPONSIBILITY TO ENSURE THAT THE SYSTEM IS PROPERLY CERTIFIED AND ACCEPTED BY THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND AS-BUILTS ARE PROVIDED TO THE CITY PRIOR TO ANY USE OF THE SYSTEM.

STANDARD CONSTRUCTION DETAIL
SANITARY SEWER NOTES
(CONTINUED)
REV. 12/18

FILE NAME S1.DOC
DETAIL REF: S-1.5

AIR RELEASE VALVES

MANUFACTURER	MODEL #
ARI	D-025F (Plastic)

GATE VALVES AND TAPPING VALVES – RESILIENT SEATED (AWWA C509 AND C515) 24" OR SMALLER

MANUFACTURER	SERIES OR MODEL #
American AVK Co.	3, 18, 25, 45, 55, & 66
Clow	2638 and 2639
Mueller	A-2360, A-2361, T-2360, T-2361
American Flow Control	2500

JOINTS RESTRAINED – PVC ONLY

MANUFACTURER	MODEL #
EBBA Iron Inc	Series 1500/1600/2000/2500/2800
Star Pipe	Stargrip Series 1000/1100/1200/4000
Sigma	One-Lock SLC, PV-Lok for PVC
Smith-Blair	Cam-Lock (111 & 120), Bell-Lock (115 & 165)

FORCE MAIN FITTINGS – PVC AND DIP CLASS 350 (WITH PROTECTO 401 CERAMIC EPOXY), C-900, C-905 OR C-907

MANUFACTURER	MODEL #
EBBA Iron Inc	Harco, Multi-Fittings, Plastic Trends, Head, Tyler/Union

MANHOLE AND LIFT STATION WET WELL REHABILITATION LINER

MANUFACTURER	MODEL #
Raven 405, ½" minimum thick fiberglass liner (cylinder)	

STANDARD CONSTRUCTION DETAIL
SANITARY SEWER AND FORCE MAIN
APPROVED PRODUCTS
REV. 12/18

FILE NAME S3.DOC
DETAIL REF: S-3

ALL MATERIALS AND INSTALLATION METHODS USED FOR LAND DEVELOPMENT CODE REQUIRED IMPROVEMENTS FOR SUBDIVISIONS AND SITE PLANS SHALL BE IN CONFORMANCE WITH THE CITY, FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST EDITION) AND THE FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS (LATEST EDITION).

1. ALL STORM PIPES AND CULVERTS LOCATED IN ROADWAY RIGHTS-OF-WAY AND ROADWAY EASEMENTS SHALL BE:
   A. CLASS-III (MIN.) REINFORCED CONCRETE PIPE (RCP), IN ACCORDANCE WITH ASTM C76, C655, C506 AND C507. ALL RCP JOINTS SHALL BE ENTIRELY WRAPPED WITH FILTER FABRIC WITH A MINIMUM WIDTH OF 24" AND A MINIMUM OF 24" OVERLAP SECURED WITH PLASTIC OR STAINLESS BANDS. GASKETS ALONE ARE NOT PERMITTED AS AN EQUIVALENT SUBSTITUTE FOR MEETING THIS REQUIREMENT. ALL JOINTS SHALL BE RUBBER GASKETED FOR BOTH ROUND AND ELLIPTICAL PIPE.
   B. CORRUGATED, SMOOTH INTERIOR WALL, HIGH DENSITY POLYETHYLENE (HDPE), UP TO 60" DIAMETER, IN ACCORDANCE WITH ASTM F2306. ALL JOINTS WILL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
   C. CORRUGATED, SMOOTH INTERIOR WALL, POLYPROPYLENE (PP), UP TO 60" DIAMETER, IN ACCORDANCE WITH ASTM F2881 ALL JOINTS WILL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
   D. CORRUGATED, SMOOTH INTERIOR WALL, PVC, UP TO 36" DIAMETER, IN ACCORDANCE WITH ASTM F949 ALL JOINTS WILL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. STORM SEWERS AND CULVERTS LOCATED OUTSIDE OF ROADWAY RIGHTS-OF-WAY AND ROADWAY EASEMENTS MAY BE MADE OF ALTERNATE MATERIALS, INCLUDING SDR26 TO SDR35 PVC IN ACCORDANCE WITH ASTM D-3034.
3. DEPTH OF COVER MEASURED TO THE TOP OF PIPE (NOT INCLUDING THE BELL JOINT) SHALL BE A MINIMUM OF 12". DEVIATION FROM THIS REQUIREMENT MAY BE ALLOWED BY INCREASING THE PIPE'S STRUCTURAL CAPACITY. THIS DEVIATION MUST BE SPECIFIED ON THE PLANS APPROVED FOR CONSTRUCTION AND SUBSEQUENTLY REFLECTED ON THE SHOP DRAWINGS AND AS-BUILT PLANS.
4. ALL STORM DRAINAGE PIPES LOCATED IN ROADWAY RIGHTS-OF-WAY AND ROADWAY EASEMENTS SHALL BE A MINIMUM OF 15" DIAMETER EQUIVALENT AND BE DESIGNED FOR A MINIMUM OF A 25 YEAR - 24 HOUR STORM. STORM DRAINAGE PIPES SMALLER THAN 15" ARE PERMITTED ON PRIVATE SITE PLANS PROVIDED MAINTENANCE IS PERFORMED BY THE OWNER.
5. STORM INLETS, MANHOLES, AND CATCH BASINS SHALL BE EITHER POURED IN PLACE OR PRECAST REINFORCED CONCRETE. STRUCTURES SHALL BE DESIGNED FOR A MINIMUM OF A 25 YEAR - 24 HOUR STORM EVENT WITHOUT FLOODING. ALL STRUCTURES SHALL BE IN COMPLIANCE WITH FDOT DRAINAGE INDEX 200. CAST-IN PLACE STRUCTURES SHALL HAVE 8" THICK WALLS AND PRECAST STRUCTURES SHALL HAVE 6" THICK WALLS. THESE STRUCTURES MUST BE REFLECTED ON BOTH SHOP AND AS-BUILT DRAWINGS.
6. CULVERTS SHALL BE DESIGNED UTILIZING A MAXIMUM SELF-CLEANING VELOCITY OF 3' PER SECOND USING MANNING'S "n" CORRESPONDING TO THE PIPE MATERIAL.
7. FOR SITE PLANS, STORM INLET SPACING SHALL BE DESIGNED TO ACCEPT 100% OF THE RUNOFF FROM A RAINFALL INTENSITY OF 4" PER HOUR WITHOUT RESULTING IN PONDING OF WATER AROUND THE INLET.
8. FOR SUBDIVISION PLANS, STORM INLET SPACING, WITH PIPING 15" IN DIAMETER OR LESS, SHALL BE DESIGNED WITH THE MAXIMUM DISTANCE OF 300' BETWEEN INLETS AND/OR CLEAN-OUT JUNCTION BOXES. FOR ROADWAY SECTIONS HAVING CURB AND GUTTER AND DESIGN SPEEDS OF 40 MPH OR LESS, SPREAD RESULTING FROM A RAINFALL INTENSITY OF 4" PER HOUR SHALL NOT EXCEED ONE-HALF OF THE TRAVEL LANE ADJACENT TO THE GUTTER.
9. RETENTION AREA WATER DEPTHS SHALL BE 4' MINIMUM TO 12' MAXIMUM, MEASURED FROM THE NORMAL WATER LEVEL.

STANDARD CONSTRUCTION DETAIL
STORM DRAINAGE DESIGN
AND CONSTRUCTION NOTES
REV. 12/18

FILE NAME ST1.DOC
DETAIL REF: ST-1

10. THE MAXIMUM PERMISSIBLE SLOPE OF ANY NEW POND BANKS IS 4:1 (HORIZONTAL:VERTICAL). THIS LIMIT SHALL BE APPLIED TO ALL AREAS EXCEPT BELOW THE WATER TABLE WHERE SHARPER SLOPES ARE PERMISSIBLE.
11. PIPED STORMWATER SYSTEMS SHALL HAVE A MINIMUM 20' MAINTENANCE EASEMENT WIDTH OF 20', CENTERED OVER PIPE/STRUCTURE, AND SHALL BE INCREASED DEPENDING UPON CONDITIONS, SUCH AS OSHA UNSHIELDED TRENCH COMPLIANCE.
12. NORMAL ROADSIDE SWALES ARE PERMITTED TO BE CONSTRUCTED TO A MAXIMUM DEPTH OF 18" BELOW THE OUTSIDE EDGE OF PAVEMENT OR CONCRETE CURB.
13. CONCRETE EROSION CONTROL HAVE NOT BEEN PROVIDED WHERE SWALES OR CULVERTS INTERCEPT DRAINAGE DITCHES.
14. IN GENERAL, ALL RETENTION / DETENTION

13. SANITARY SEWER STRUCTURES SHALL BE LOCATED AND DIMENSIONED FROM STREET/ROADWAY CENTERLINES OR LOT LINES, AS APPROPRIATE. SANITARY SEWER STRUCTURE RIMS, PIPE INVERTS AND BOTTOM ELEVATIONS SHALL BE RECORDED AND CLEARLY NOTED AS AS-BUILT INFORMATION.

14. SANITARY SEWER PIPE SHALL BE LOCATED AND DIMENSIONED FROM THE BACK OF CURB, OR EDGE OF PAVEMENT IF NO CURB IS PRESENT. SANITARY SEWER PIPE MATERIAL, LENGTH, AND SIZE SHALL BE RECORDED AND CLEARLY INDICATED AS BEING AS-BUILT INFORMATION.

15. SEWER LATERALS SHALL BE RECORDED AT THEIR CLEAN-OUT LOCATIONS. STATIONING AND OFFSET DISTANCES SHALL BE MEASURED FROM DOWNSTREAM MANHOLES TOWARD UPSTREAM MANHOLES.

16. LIFT STATIONS SHALL BE LOCATED AND DIMENSIONED FROM STREET/ROADWAY CENTERLINES OR LOT LINES, AS APPROPRIATE. LIFT STATION DIMENSIONAL AND ELEVATION INFORMATION INDICATED ON THE APPROVED FOR CONSTRUCTION PLANS SHALL BE VERIFIED AND AS-BUILT INFORMATION INDICATED. BURIED ELECTRICAL SERVICE LINE SHALL BE CLEARLY DIMENSIONED, LOCATED, AND LABELED. FORCE MAIN PIPE INVERT ELEVATIONS SHALL BE RECORDED AND CLEARLY DENOTED AS AS-BUILT INFORMATION.

17. FORCE MAIN PIPE SHALL BE LOCATED AND DIMENSIONED FROM THE BACK OF CURB, OR EDGE OF PAVEMENT IF NO CURB IS PRESENT. FORCE MAIN PIPE MATERIAL, LENGTH, AND SIZE SHALL BE RECORDED AND CLEARLY INDICATED AS BEING AS-BUILT INFORMATION.

18. TIE-IN DIMENSIONS TO THREE (3) PERMANENT ABOVE GRADE FEATURES SHALL BE SHOWN ON THE AS-BUILTS FOR ALL VALVES, TEES, BENDS, CROSSES, SERVICE CONNECTION TEES, FIRE HYDRANTS AND APPLICABLE FIXTURES AT THE POTABLE WATER, RECLAIMED WATER AND FORCE MAIN SERVICES.

19. A TABLE SHALL BE SHOWN ON THE AS-BUILTS LISTING THE NORTHING, EASTING, TOP ELEVATION, SIZE, MATERIAL, TYPE AND MODEL INFORMATION FOR ALL POTABLE WATER, RECLAIMED WATER AND FORCE MAIN VALVES, TEES, BENDS, CROSSES, SERVICE CONNECTION TEES, FIRE HYDRANTS AND APPLICABLE FIXTURES.

20. FOR PERPENDICULAR CROSSINGS OF STORMWATER, POTABLE WATER, RECLAIMED WATER, OR FORCE MAIN SERVICES, THE AS-BUILT PLANS SHALL CLEARLY INDICATE WHICH UTILITIES ARE LOCATED OVER OR UNDER OTHER UTILITIES.

21. ANY SPECIAL FEATURES SUCH AS, CONCRETE FLUMES, LAKE BANKS, WALLS, FENCING, ETC., WHICH WERE A PART OF THE APPROVED CONSTRUCTION DRAWINGS SHALL ALSO BE LOCATED AND DIMENSIONED.

22. IF AN APPROVED SUBDIVISION PLAT OR SITE PLAN SHOWS A CONSERVATION EASEMENT, THE PROJECT SURVEYOR SHALL PROVIDE THE EXACT LOCATION OF THE SPECIMEN TREE(S) FROM THE RIGHT-OF-WAY OR PROPERTY LINES AND PROPOSED EASEMENT BOUNDARIES ON THE AS-BUILT DRAWING. THE AS-BUILT LOCATION OF THESE TREES WILL HELP VERIFY THE SUFFICIENCY OF THE CONSERVATION EASEMENT PRIOR TO PLAT RECORDING OR CERTIFICATE OF OCCUPANCY.

23. WHEN STORMWATER, POTABLE WATER, RECLAIMED WATER OR SANITARY SEWER IMPROVEMENTS ARE LOCATED WITHIN AN EASEMENT, THE AS-BUILT SURVEY SHALL ACCURATELY DEPICT THE LOCATION OF THE IMPROVEMENTS AND THE EASEMENT. SUCH DOCUMENTATION AND THE ASSOCIATED PROPOSED EASEMENT DOCUMENT WITH LEGAL DESCRIPTION SHALL BE SUBMITTED FOR CITY REVIEW AND APPROVAL PRIOR TO RECORDING OF SAID EASEMENT. UPON CITY APPROVAL, THE EASEMENT SHALL BE RECORDED VIA A SEPARATE LEGAL INSTRUMENT.

STANDARD CONSTRUCTION DETAIL
REQUIREMENTS FOR AS-BUILTS DRAWINGS
(CONTINUED)
REV. 12/18

FILE NAME: MS.DOC
DETAIL REF: M-5.1

ALL MATERIALS AND INSTALLATION METHODS USED FOR LAND DEVELOPMENT CODE REQUIRED IMPROVEMENTS FOR SUBDIVISIONS AND SITE PLANS SHALL BE IN CONFORMANCE WITH THE CITY'S, FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST EDITION), AND THE FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS (LATEST EDITION).

1. ALL RIGHT-OF-WAY OTHER THAN ROADWAY AREAS SHALL BE SEEDED AND MULCHED OR SODDED, UNLESS OTHERWISE APPROVED BY THE CITY. WHERE SODDING IS REQUIRED, THE CITY RESERVES THE RIGHT TO REQUIRE SODDING IN SPECIAL AREAS WHERE EROSION IS A CONCERN.

2. THE FOLLOWING WILL BE THE STANDARD PROTECTION FOR DITCHES UNLESS DRAINAGE CALCULATIONS INDICATE OTHERWISE:

SWALE PROFILE GRADES	PROTECTION REQUIRED
0.2% – 1.0%	SEEDING AND MULCHING
1.0% – 4.0%	SODDING
4.0% +	DITCH PAVING

3. THE PAVEMENT, BASE, AND SUBGRADE THICKNESS PRESENTED ON DETAILS REPRESENTS THE MINIMUM REQUIREMENTS FOR LOCAL PUBLIC STREETS AND PRIVATE PARKING LOTS. AREAS SUBJECT TO HEAVY TRAFFIC, SUCH AS COLLECTOR ROADS AND COMMERCIAL PRIVATE PARKING LOTS, HAVE INCREASED REQUIREMENTS.

4. THE DEVELOPER SHALL PROVIDE, AT THEIR OWN EXPENSE, A CERTIFIED SOILS ENGINEERING LABORATORY TO PERFORM ALL FIELD AND LABORATORY TESTING REQUIRED TO VERIFY THAT THE CONSTRUCTION IS IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS. IT SHALL BE THE RESPONSIBILITY OF THE ENGINEER, THAT COPIES OF ALL TEST REPORTS ARE PROVIDED TO THE CITY'S DESIGNATED SITE INSPECTOR PRIOR TO THE PROJECT FINAL INSPECTION IN ORDER TO ALLOW PROJECT ACCEPTANCE BY THE CITY.

5. THE LIMITS OF STABILIZED SUBGRADE SHALL EXTEND TO A DEPTH OF 12" BELOW THE BOTTOM OF THE BASE AND OUTWARD TO 12" BEYOND THE CURB.

6. THE STABILIZING MATERIAL, IF REQUIRED, SHOULD BE A HIGH BEARING VALUE SOIL, SAND–CLAY, RECYCLED CONCRETE, OR LIMEROCK BASE MATERIAL. THE STABILIZING MATERIAL AS APPROVED BY THE CITY DESIGNATED SITE INSPECTOR AND A LICENSED SOILS ENGINEER.

7. THE SUBGRADE SHALL BE STABILIZED TO NO LESS THAN LBR 40 TO A 12" DEPTH AND COMPACTED TO NO LESS THAN 98% DENSITY BASED ON MODIFIED PROCTOR MAXIMUM DRY TEST PER AASHTO T–180, FOR ROADWAYS. TESTS FOR SUBBASE BEARING CAPACITY AND COMPACTION SHALL BE DONE AT A MINIMUM OF EVERY 300 FEET AND SHALL BE STAGGERED TO THE LEFT, RIGHT, AND AT CENTER LINE OF THE

8. ROADWAY FOR SITE PLANS, TEST SHALL BE PERFORMED FOR EVERY 600 SQUARE YARDS OF STABILIZED AREA, OR PORTIONS THEREOF.

9. BASES FOR ALL STREETS SHALL HAVE A MINIMUM 6" DEPTH. FLOWABLE FILL (FDOT SPECIFICATIONS SECTION 1211 BASES SHALL HAVE A MINIMUM STRENGTH OF 350 POUNDS PER SQUARE INCH AT 7 DAYS AND 500 POUNDS PER SQUARE INCH AT 28 DAYS. SHALL BE PLACED IN ACCORDANCE WITH FDOT SECTION 275 OF STANDARD FDOT SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST EDITION). RECYCLED CONCRETE OR LIMEROCK BASES SHALL BE COMPACTED TO 98% MAXIMUM DENSITY BASED ON AASHTO T–180 MODIFIED PROCTOR TEST.

STANDARD CONSTRUCTION DETAIL
ROADWAY AND PARKING AREA DESIGN
AND CONSTRUCTION NOTES
REV. 12/18

FILE NAME: R1.DWG
DETAIL REF: R-1

10. FLOWABLE FILL AND RECYCLED CONCRETE MIX DESIGNS SHALL BE SUBMITTED BY A LICENSED SOILS ENGINEER TO THE CITY'S DESIGNATED TESTING LABORATORY PRIOR TO THE START OF SUBGRADE PREPARATION. ALL MIX DESIGNS SHALL BE SUBJECT TO THE APPROVAL OF THE CITY.

11. CONCRETE DELIVERY TICKETS SHALL BE PROVIDED TO THE CITY'S DESIGNATED SITE INSPECTOR AT THE TIME OF PLACEMENT. IF THE INSPECTOR IS NOT ON SITE THROUGHOUT THE ENTIRE INSTALLATION, ACCUMULATED DELIVERY TICKETS CAN BE PROVIDED TO THE INSPECTOR BY THE CONTRACTOR ON THE FOLLOWING DAY.

12. TESTING OF THE IN–PLACE BASE SHALL BE DONE AT INTERVALS EQUIVALENT TO SUBGRADE TESTING AND SHALL CONSIST OF, AT A MINIMUM, ONE MOISTURE CONTENT AND ONE COMPACTION TEST.

13. PORTLAND CEMENT CONCRETE, LIMEROCK, RECYCLED CONCRETE, OR FULL DEPTH ASPHALT PAVEMENT MAY USED IN PLACE OF FLOWABLE FILL BASE. ALL ROADWAY DESIGNS SHALL BE SUBJECT TO APPROVAL BY THE CITY.

14. BASE COURSES SHALL HAVE LIQUID ASPHALT PRIME COAT APPLIED AT THE APPROPRIATE RATE SPECIFIED IN FDOT STANDARD SPECIFICATION 300.7 (LATEST EDITION) IF ASPHALT WILL NOT BE INSTALLED WITHIN 24 HOURS OF BASE COURSE IS OPEN TO ANY TRAFFIC.

15. FLOWABLE FILL BASE MATERIAL CONSTRUCTION SHALL BE CONTINUOUSLY SUPERVISED BY A SOILS TESTING LABORATORY AT THE DEVELOPER'S EXPENSE. THE TESTING LABORATORY SHALL PROVIDE AN ON–SITE TECHNICIAN EXPERIENCED IN SOIL CEMENT BLENDING.

16. FLOWABLE FILL BASE COURSES SHALL BE ALLOWED TO CURE A MINIMUM OF SEVEN (7) DAYS UNDER NO TRAFFIC PRIOR TO PLACING ANY ASPHALT SURFACE. TEST REPORTS ARE REQUIRED TO BE DELIVERED TO THE CITY'S DESIGNATED SITE INSPECTOR PRIOR TO TRAFFIC USAGE.

17. RECYCLED CONCRETE CAN BE USED AS A BASE MATERIAL PROVIDED THE MATERIAL IS A MINIMUM OF 80% CARBONATE OF CALCIUM AND MAGNESIUM. THE MATERIAL SHALL BE LIMITED TO MAXIMUM 3% OF WATER SENSITIVE CLAY MATERIAL. LIQUID LIMIT SHALL NOT EXCEED 35 AND BE NON–PLASTIC (PI=0). THE MATERIAL SHALL BE FREE OF ROOTS, WOOD, TRASH, ASPHALT, METAL, OR OTHER DELETERIOUS MATERIAL. CHUNKY OR OTHER EXTREMELY HARD PIECES, LUMPS, SLABS, OR CHUNKS OF SAND SIZE MATERIAL OF A QUANTITY AS TO BE DETRIMENTAL TO THE PROPER BONDING, FINISHING OR STRENGTH OF THE RECYCLED CONCRETE BASE. BASE APPLICATIONS, AT LEAST 97% (BY WEIGHT) OF THE MATERIAL SHALL PASS A 1" SIEVE AND FOR SUBBASE APPLICATIONS, AT LEAST 97% (BY WEIGHT) OF THE MATERIAL SHALL PASS A 3" SIEVE. THE RECYCLED CONCRETE SHALL BE FREE OF DUST AND GRADED DOWN TO DUST AND HAVE A MINIMUM 150 LBR VALUE, COARSE AGGREGATE, USED IN THE RECYCLED CONCRETE SHALL HAVE A MAXIMUM LOSS OF 45% PER LOS ANGELES ABRASION TEST. ALL MATERIALS SHALL BE WELL GRADED IN ACCORDANCE WITH REQUIREMENTS SET FORTH IN SECTION 204, FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST EDITION).

18. RECYCLED CONCRETE OR LIMEROCK FOR BASE OR SUBGRADE APPLICATIONS SHALL BE ALLOWED ON CITY ROADWAYS ONLY WHERE THE LOWEST ELEVATION OF THE ROADWAY SUBGRADE IS A MINIMUM OF 6" ABOVE THE SEASONAL HIGH GROUNDWATER TABLE AS CERTIFIED BY A FLORIDA LICENSED PROFESSIONAL SOILS ENGINEER AND SUBSEQUENTLY APPROVED BY THE CITY. IN AREAS NOT MEETING THESE STANDARDS, RECYCLED CONCRETE OR LIMEROCK BASES SHALL BE ALLOWED ONLY IF THE BOTTOM OF THE RECYCLED CONCRETE SHALL BE DONE PRIOR TO THE MATERIAL BEING PLACED UPON THE SITE. TESTING OF SOIL CEMENT BASE SHALL HAVE THE SAME REQUIREMENTS AND BE PERFORMED AT THE SAME LOCATION AND INTERVALS AS REQUIRED FOR LIMEROCK.

STANDARD CONSTRUCTION DETAIL
ROADWAY AND PARKING AREA DESIGN
AND CONSTRUCTION NOTES
(CONTINUED)
REV. 12/18

FILE NAME: R1.DWG
DETAIL REF: R-1.1

19. DESIGN MIXES AND PRODUCT GRADATION INFORMATION FOR ALL MATERIALS TO BE INSTALLED AS PART OF THE LAND DEVELOPMENT CODE REQUIRED IMPROVEMENTS SHALL BE SUBMITTED TO THE CITY'S ENGINEER FOR ACCEPTANCE BY THE CITY. THE INFORMATION SHALL BE SUBMITTED NO LESS THAN THREE (3) WORKING DAYS PRIOR TO ANY CONSTRUCTION. SUBMITTALS SHALL INCLUDE, BUT NOT BE LIMITED TO, INFORMATION TO EVALUATE THE MATERIALS PROPOSED FOR INSTALLATION AS SUBGRADE, BASE, AND PAVEMENT FOR ALL ROADWAY AND PARKING AREA SURFACES.

20. ASPHALT BINDER FOR WEARING COURSE HOT MIX AGGREGATES MAY BE VIRGIN MATERIAL OR UP TO 20% RECLAIMED ASPHALT PAVEMENT (RAP) IN ACCORDANCE WITH FDOT SPECIFICATIONS 334 (LATEST EDITION).

21. PRIOR TO PLACEMENT, FDOT CERTIFIED ASPHALT PLANTS MUST CERTIFY TO THE CITY'S PROJECT INSPECTOR THAT THE ASPHALT DELIVERED TO THE SITE IS IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS.

22. EXTRACTION AND GRADATION TESTS ON ASPHALT MIXES SHALL BE PROVIDED TO THE CITY'S DESIGNATED SITE INSPECTOR FOR EVERY 2500 SQUARE YARDS OF ASPHALT, OR PART THEREOF. TO ENSURE THAT DESIGN MIXES MEET THE CITY STANDARD SPECIFICATIONS.

23. FIELD TESTING OF THE ASPHALT PAVEMENT SHALL BE DONE AT INTERVALS EQUIVALENT TO SUBGRADE TESTING AND SHALL CONSIST OF, AS A MINIMUM, A COMPACTION TEST. ASPHALT PAVEMENT SHALL BE COMPACTED TO 98% DENSITY PER FM 1–T238 (METHOD B), NUCLEAR DENSITY TEST, "BACKSCATTER METHOD" AND/OR MINIMUM 90% MAXIMUM VOIDLESS SPECIFIC GRAVITY.

24. IN ADDITION TO THE FIELD DENSITY TESTS NOTED, THE CITY RESERVES THE RIGHT TO REQUIRE CORE SAMPLES OF PAVEMENT SECTIONS EXTRACTED AND TESTED BY A CERTIFIED SOILS ENGINEERING LABORATORY AT THE DEVELOPER'S EXPENSE. THE CITY'S DESIGNATED SITE INSPECTOR SHALL DESIGNATE THE LOCATIONS OF THE TEST CORE LOCATIONS.

25. THE ROADWAY CROWN SHALL HAVE A STANDARD ONE QUARTER INCH (1/4") PER FOOT SLOPE.

26. ALL ROADWAYS WITH CURB AND GUTTER SECTIONS SHALL HAVE AS A STANDARD A MINIMUM LONGITUDINAL SLOPE OF 0.30% THE ROADWAY CENTERLINE SHALL BE CLEARLY MARKED ON THE DESIGN PLANS AND PROFILES. DESIGN ROADWAY CENTERLINE ELEVATIONS SHALL BE NOTED AT ALL GRADE CHANGES AND AT 100' INTERVALS ALONG THE ROADWAY PROFILE ON BOTH THE DESIGN PLANS AND AS–BUILT DRAWINGS.

27. THE FINISHED PAVEMENT EDGE SHALL BE ONE QUARTER INCH (1/4") ABOVE THE ADJACENT CONCRETE GUTTER FOR GUTTERS COLLECTING AND CONVEYING STORMWATER.

28. CONCRETE CURBS SHALL BE PROVIDED ON BOTH SIDES OF ALL STREETS AND ALL CONCRETE CURBS SHALL BE CONSTRUCTED WITH MINIMUM 3,000 PSI CONCRETE AT 28 DAYS.

29. CONCRETE CURBING, SIDEWALKS, PAVEMENT AND SIMILAR CONCRETE AREAS SHALL BE SAW CUT WITHIN 4 TO 18 HOURS OF PLACEMENT. SAW CUTS SHALL BE 1/4" IN WIDTH TO A DEPTH OF 1/4 OF THE TOTAL DEPTH OF CONCRETE OR 1–1/2", WHICHEVER IS LESS. SAW CUTS SHALL BE LOCATED AT INTERVALS OF TEN FEET (10') WITH EXPANSION JOINTS AT STREET INTERSECTIONS, RADIUS POINTS, STRUCTURES, AND ALONG CURVES AT SIXTY FEET (60') INTERVALS. ALL EXPANSION JOINT MATERIAL IS REQUIRED TO BE INSTALLED THROUGH THE ENTIRE DEPTH OF THE CONCRETE CURB. FOR LINEAL SECTIONS OF CURBS, EXPANSION JOINTS SHALL BE LOCATED AT A MAXIMUM SPACING OF FIVE–HUNDRED FEET (500') AND SHALL BE 1/2" IN WIDTH.

STANDARD CONSTRUCTION DETAIL
ROADWAY AND PARKING AREA DESIGN
AND CONSTRUCTION NOTES
(CONTINUED)
REV. 12/18

FILE NAME: R1.DWG
DETAIL REF: R-1.2

30. THE FOLLOWING SYMBOLS SHALL BE CUT IN THE CURB TO MARK LOCATION OF SERVICES:

SYMBOL	SERVICE
"S"	SEWER
"R"	RECLAIMED WATER
"P"	POTABLE WATER
"V"	VALVE – POTABLE WATER

30. THREE (3) CONCRETE CYLINDERS SHALL BE TAKEN FOR EVERY SEVENTY–FIVE (75) CUBIC YARDS OF CONCRETE OR LESS PLACED. 1 CYLINDER WILL BE TESTED IN 14 DAYS, 1 IN 28 DAYS AND 1 SHALL BE RETAINED FOR 1 YEAR. RESULTS SHALL BE PROVIDED TO THE CITY'S DESIGNATED SITE INSPECTOR AS THEY BECOME AVAILABLE.

31. A CONCRETE SLUMP TEST SHALL BE REQUIRED WITHIN THE FIRST THIRTY (30) CUBIC YARDS OF CONCRETE. THEREAFTER, SLUMP TESTS SHALL BE REQUIRED FOR EVERY THIRTY (30) CUBIC YARDS OF CONCRETE, OR FRACTION THEREOF, WITH COPIES OF THE RESULTS PROVIDED TO THE CITY'S DESIGNATED SITE INSPECTOR. THE SLUMP TEST SHALL MEET THE REQUIRED MIX DESIGN ON EACH LOAD DELIVERED.

32. THE DEVELOPER SHALL PROVIDE ALL REQUIRED PAVEMENT MARKINGS ON ALL ROADWAYS PER CITY, COUNTY, AND STATE REQUIREMENTS. 6" WIDE FOG LINE SHALL BE INSTALLED WHERE NO CURB IS PRESENT. CENTERLINE STRIPES SHALL BE PROVIDED ON EXTENSIONS OF CITY COLLECTOR OR ARTERIAL ROADS, COUNTY ROADS, STATE HIGHWAYS AND ALONG LOCAL STREETS IN THE VICINITY OF THEIR INTERSECTION WITH THE ABOVE MENTIONED ROADWAYS.

33. A FDOT APPROVED 30" STOP SIGN AND A 24" WIDE WHITE THERMOPLASTIC STOP BAR ARE REQUIRED AT ALL ROADWAY INTERSECTIONS.

34. ALL TRAFFIC CONTROL DEVICES PLACED AT INTERSECTIONS, PRIVATE STREETS, PUBLIC STREETS, COUNTY ROADS AND STATE HIGHWAYS WITHIN THE CITY LIMITS SHALL BE INSTALLED ACCORDING TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION. THE MAINTENANCE OF TRAFFIC (MOT) INSTALLATION AND SUBSEQUENT OPERATION SHALL BE OVERSEEN BY A CONTRACTOR WHOSE JOBSITE PERSONNEL HOLD A CURRENT FDOT CERTIFICATION IN TEMPORARY TRAFFIC CONTROL COMMENSURATE WITH THEIR LEVEL OF RESPONSIBILITY (DI, FLAGGER, INTERMEDIATE, ADVANCED).

35. THE DEVELOPER IS RESPONSIBLE FOR PAYING FEES FOR TRAFFIC CONTROL DEVICES. STREET SIGNS AND STOP SIGNS SHALL BE PLACED AT ALL INTERSECTIONS, INCLUDING, BUT NOT LIMITED TO, TO PRIVATE STREETS, PUBLIC STREETS, COUNTY ROADS AND STATE HIGHWAYS WITHIN THE CITY LIMITS.

36. THE DEVELOPER IS RESPONSIBLE FOR PAYING FEES FOR ALL STREET LIGHTS TO FPL PRIOR TO ACCEPTANCE OF THE PROJECT BY THE CITY.

37. FOUR FOOT (4') WIDE SIDEWALKS SHALL BE PROVIDED ON BOTH SIDES OF ALL RESIDENTIAL STREETS.

38. BIKE PATHS SHALL BE CONSTRUCTED EIGHT FEET (8') IN WIDTH ALONG ARTERIAL AND OTHER SELECTED HIGHWAYS AS DIRECTED BY THE CITY.

STANDARD CONSTRUCTION DETAIL
ROADWAY AND PARKING AREA DESIGN
AND CONSTRUCTION NOTES
(CONTINUED)
REV. 12/18

FILE NAME: R1.DWG
DETAIL REF: R-1.3

39. STANDARD TURNING RADII FOR INTERSECTIONS:

RESIDENTIAL STREETS INTERSECTING STATE OR COUNTY ROADWAYS OR MAJOR THOROUGHFARES WITHIN THE CITY:	35–50 FEET
CITY STREETS INTERSECTING ENTRANCES TO COMMERCIAL SITES	35 FEET
INTERSECTIONS INTERIOR IN SUBDIVISIONS	35 FEET

NOTE: SHOULD VOLUSIA COUNTY OR THE FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) DETERMINE THAT LARGER RADII ARE WARRANTED WITHIN THEIR RIGHT–OF–WAY, THE LARGER RADII SHALL APPLY.

40. STANDARD TURNING RADII AND WIDTHS OF ACCESS DRIVES FOR SITE PLANS (NOT SUBDIVISIONS) SHALL BE IN ACCORDANCE WITH LDC, CH. 12, SEC. 3(3).

41. CONSTRUCTION METHODS AND DESIGN FOR CONCRETE PAVEMENT SHALL CONFORM TO FDOT STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.

42. ALL CONTRACTORS THAT ARE PERFORMING THE CONSTRUCTION OF LAND DEVELOPMENT CODE REQUIRED IMPROVEMENTS (INCLUDING WATER MAINS, SANITARY SEWER MAINS, RECLAIMED WATER MAINS, STORM WATER PIPES AND INLETS, ROADWAYS, AND PARKING FACILITIES) SHALL BE CERTIFIED WITH THE STATE OF FLORIDA CONSTRUCTION INDUSTRY LICENSING BOARD FOR THE TYPE OF WORK THAT THEY PERFORM.

43. ALL CONTRACTORS THAT ARE PERFORMING THE CONSTRUCTION WORK OF LAND DEVELOPMENT CODE REQUIRED IMPROVEMENTS SHALL BE LICENSED BY THE STATE OF FLORIDA CONSTRUCTION INDUSTRY LICENSING BOARD AND REGISTERED WITH VOLUSIA COUNTY. THE LICENSE AND REGISTRATION SHALL PERTAIN TO THE TYPE OF WORK BEING PERFORMED.

44. EXCEPT AS PROVIDED IN THE LAND DEVELOPMENT CODE, ALL ELECTRIC, TELEPHONE, TELEVISION, LINES AND SIMILAR UTILITIES ARE REQUIRED TO BE INSTALLED UNDERGROUND AT THE EXPENSE OF THE OWNER, DEVELOPER, AND BUILDER.

45. MINIMUM UTILITY DEPTHS:

POTABLE WATER, SANITARY SEWER AND RECLAIMED WATER MAINS	36 INCHES
HIGH VOLTAGE SUCH AS POWER FEEDER, SERVICE, AND DROPS	30 INCHES
LOW VOLTAGE SUCH AS PHONE AND CABLE TV FOR FEEDER AND SERVICE	18 INCHES
LOW VOLTAGE UTILITIES SUCH AS PHONE AND CABLE TV FOR DROPS	12 INCHES

NOTE: IN NO INSTANCE SHALL THE DEPTH OF COVER BE LESS THAN 36" FROM FINISHED GRADE TO THE TOP OF PIPE FOR POTABLE WATER MAINS, SANITARY SEWER MAINS AND RECLAIMED WATER MAINS. HOWEVER, IN THE EVENT THAT THIS CONDITION CANNOT BE MET DUE TO UNANTICIPATED CONFLICTS DURING THE CONSTRUCTION PROCESS, DUCTILE IRON PRESSURE CLASS 350 OR CONCRETE ENCASEMENT MAY BE USED AS APPROVED BY THE CITY PUBLIC UTILITIES DEPARTMENT.

46. LANDSCAPE PLANS SHALL CLEARLY DEPICT THE DESIGN LOCATION OF PLANTINGS RELATIVE TO THE LOCATION OF UNDERGROUND AND OVERHEAD PUBLIC UTILITIES AND STORMWATER INFRASTRUCTURE IN ORDER TO EVALUATE POTENTIAL CONFLICTS.

STANDARD CONSTRUCTION DETAIL
ROADWAY AND PARKING AREA DESIGN
AND CONSTRUCTION NOTES
(CONTINUED)
REV. 12/18

FILE NAME: R1.DWG
DETAIL REF: R-1.4

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NO	DATE	BY	SUBMITTALS / REVISIONS
1	08-25-22	BB/SM	SUBMITTAL TO CITY OF PORT ORANGE/SJRWMD
2	12-15-23	BB/SM	REVISED PER CITY OF PORT ORANGE AND SJRWMD COMMENTS (10-28-23 & 9-20-23)
3	03-01-24	BB/SM	REVISED PER CITY OF PORT ORANGE COMMENTS DATED 02-08-23
4	09-30-24	BB/SM	REVISED PER ARCHITECTURAL PLANS UPDATES

PORT ORANGE PUBLIC UTILITIES FIELD OPS FACILITY
FINAL ENGINEERING PLANS
CONSTRUCTION NOTES
VOLUSIA COUNTY, FLORIDA
CITY OF PORT ORANGE

PROJECT NO: ZC 20035
DESIGNED BY: SM
DRAFTED BY: SM
CHECKED BY: BB
DRAWING FILE: 02-03_20035_NOT

ROBERT J. BALL, P.E. NO. 60001
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SHEET: C4 OF 15

Know what's below. Call before you dig.

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

SCHENKEL SHULTZ
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REVISIONS		
MARK	DESCRIPTION	DATE

SEAL

ROBERT J. BALL, P.E. NO. 60001

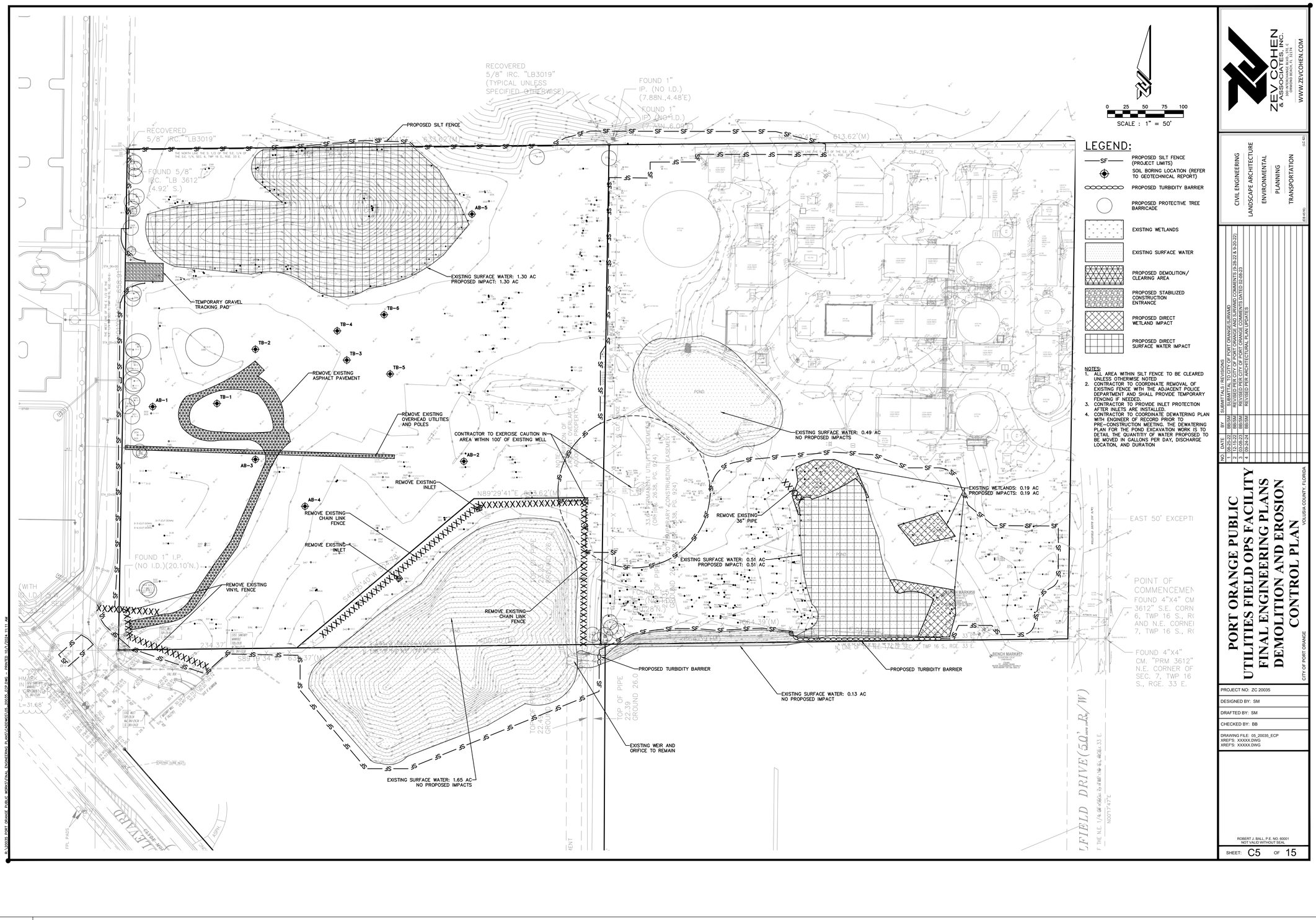
COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
DRAWN BY: SM

CONSTRUCTION NOTES

C4

PERMIT/BID DOCUMENTS

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LEGEND:

- SF — PROPOSED SILT FENCE (PROJECT LIMITS)
- SOIL BORING LOCATION (REFER TO GEOTECHNICAL REPORT)
- PROPOSED TURBIDITY BARRIER
- PROPOSED PROTECTIVE TREE BARRICADE
- EXISTING WETLANDS
- EXISTING SURFACE WATER
- PROPOSED DEMOLITION/ CLEARING AREA
- PROPOSED STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED DIRECT WETLAND IMPACT
- PROPOSED DIRECT SURFACE WATER IMPACT

NOTES:
1. ALL AREA WITHIN SILT FENCE TO BE CLEARED UNLESS OTHERWISE NOTED
2. CONTRACTOR TO COORDINATE REMOVAL OF EXISTING FENCE WITH THE ADJACENT POLICE DEPARTMENT AND SHALL PROVIDE TEMPORARY FENCING IF NEEDED.
3. CONTRACTOR TO PROVIDE INLET PROTECTION AFTER INLETS ARE INSTALLED.
4. CONTRACTOR TO COORDINATE DEWATERING PLAN WITH ENGINEER OF RECORD PRIOR TO PRE-CONSTRUCTION MEETING. THE DEWATERING PLAN FOR THE POND EXCAVATION WORK IS TO DETAIL THE QUANTITY OF WATER PROPOSED TO BE MOVED IN GALLONS PER DAY, DISCHARGE LOCATION, AND DURATION

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CIVIL ENGINEERING
LANDSCAPE ARCHITECTURE
ENVIRONMENTAL
PLANNING
TRANSPORTATION
LC# 4160

NO	DATE	BY	SUBMITTALS / REVISIONS
1	08-25-22	BB/SM	SUBMITTAL TO CITY OF PORT ORANGE/SJRWMD
2	12-15-23	BB/SM	REVISED PER CITY OF PORT ORANGE AND SJRWMD COMMENTS (3-28-23 & 9-20-23)
3	03-04-24	BB/SM	REVISED PER CITY OF PORT ORANGE COMMENTS DATED 02-06-23
4	09-30-24	BB/SM	REVISED PER ARCHITECTURAL PLANS UPDATES

PORT ORANGE PUBLIC UTILITIES FIELD OPS FACILITY
FINAL ENGINEERING PLANS
DEMOLITION AND EROSION CONTROL PLAN

VOLUSIA COUNTY, FLORIDA
CITY OF PORT ORANGE

PROJECT NO: ZC 20035
DESIGNED BY: SM
DRAFTED BY: SM
CHECKED BY: BB
DRAWING FILE: 05_20035_ECP
XREF'S: XXXXX.DWG
XREF'S: XXXXX.DWG

ROBERT J. BALL, P.E. NO. 60001
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SHEET: C5 OF 15

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CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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REVISIONS		
MARK	DESCRIPTION	DATE

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ROBERT J. BALL, P.E. NO. 60001

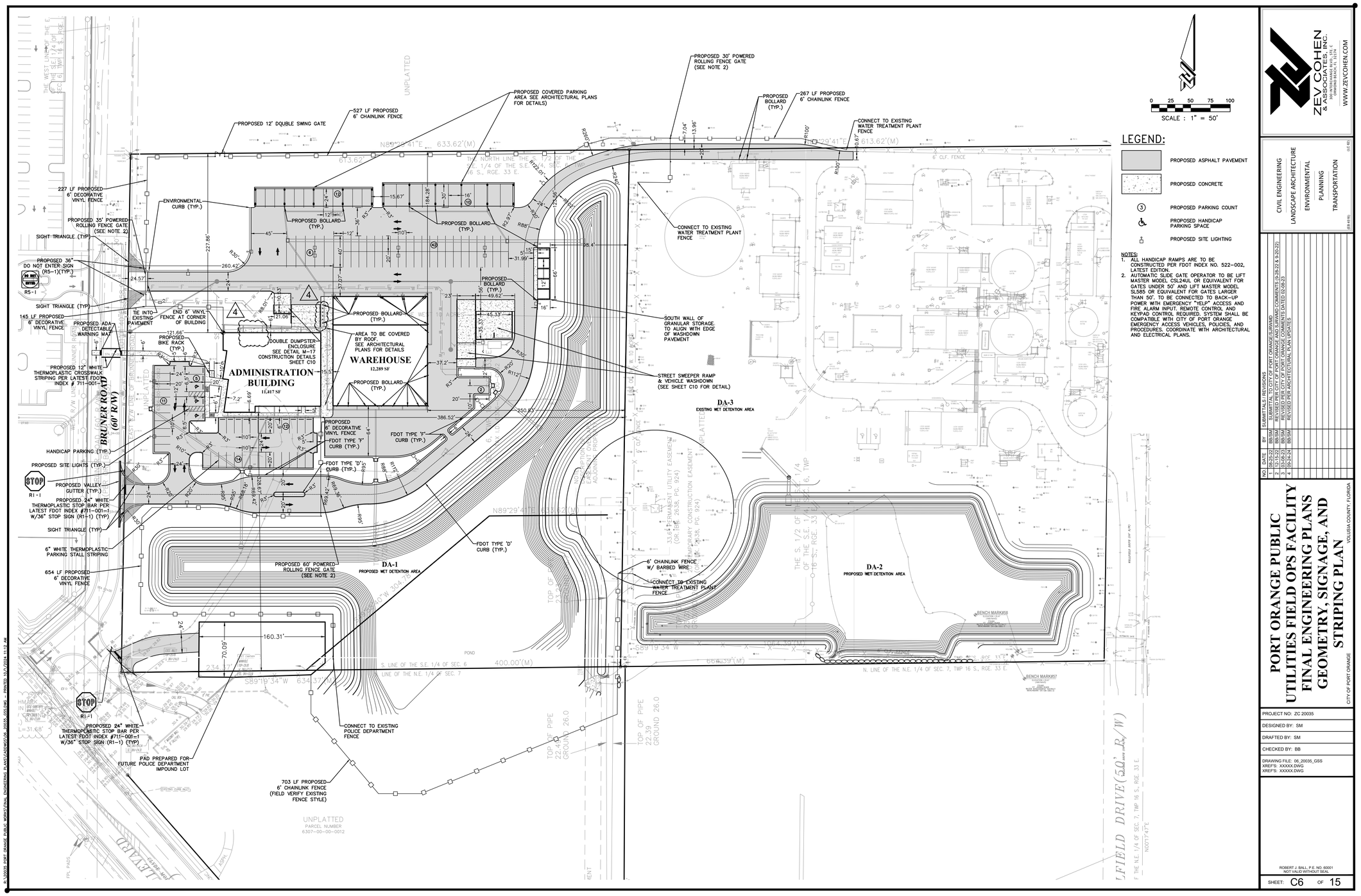
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ISSUE DATE: 09/30/2024
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DEMOLITION AND EROSION CONTROL PLAN

C5

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LEGEND:

- PROPOSED ASPHALT PAVEMENT
- PROPOSED CONCRETE
- (3) PROPOSED PARKING COUNT
- PROPOSED HANDICAP PARKING SPACE
- PROPOSED SITE LIGHTING

NOTES:
1. ALL HANDICAP RAMPS ARE TO BE CONSTRUCTED PER FDOT INDEX NO. 522-002, LATEST EDITION.
2. AUTOMATIC SLIDE GATE OPERATOR TO BE LIFT MASTER MODEL CSL24UL OR EQUIVALENT FOR GATES UNDER 50' AND LIFT MASTER MODEL SL585 OR EQUIVALENT FOR GATES LARGER THAN 50'. TO BE CONNECTED TO BACK-UP POWER WITH EMERGENCY "YELP" ACCESS AND FIRE ALARM INPUT. REMOTE CONTROL AND KEYPAD CONTROL REQUIRED. SYSTEM SHALL BE COMPATIBLE WITH CITY OF PORT ORANGE EMERGENCY ACCESS VEHICLES, POLICIES, AND PROCEDURES. COORDINATE WITH ARCHITECTURAL AND ELECTRICAL PLANS.

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ENVIRONMENTAL
PLANNING
TRANSPORTATION
LC# 4160

NO	DATE	BY	SUBMITTALS / REVISIONS
1	08-25-22	BB/SM	SUBMITTAL TO CITY OF PORT ORANGE/SJRWMD
2	12-15-22	BB/SM	REVISED PER CITY OF PORT ORANGE AND SJRWMD COMMENTS (3-28-23 & 9-20-23)
3	03-24-23	BB/SM	REVISED PER CITY OF PORT ORANGE COMMENTS (10-13-23 & 11-29-23) DATED 02-06-23
4	10-24-24	BB/SM	REVISED PER ARCHITECTURAL PLANS UPDATES

PORT ORANGE PUBLIC UTILITIES FIELD OPS FACILITY
FINAL ENGINEERING PLANS GEOMETRY, SIGNAGE, AND STRIPING PLAN

VOLUSIA COUNTY, FLORIDA
CITY OF PORT ORANGE

PROJECT NO: ZC 20035
DESIGNED BY: SM
DRAFTED BY: SM
CHECKED BY: BB
DRAWING FILE: 06_20035_GSS
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CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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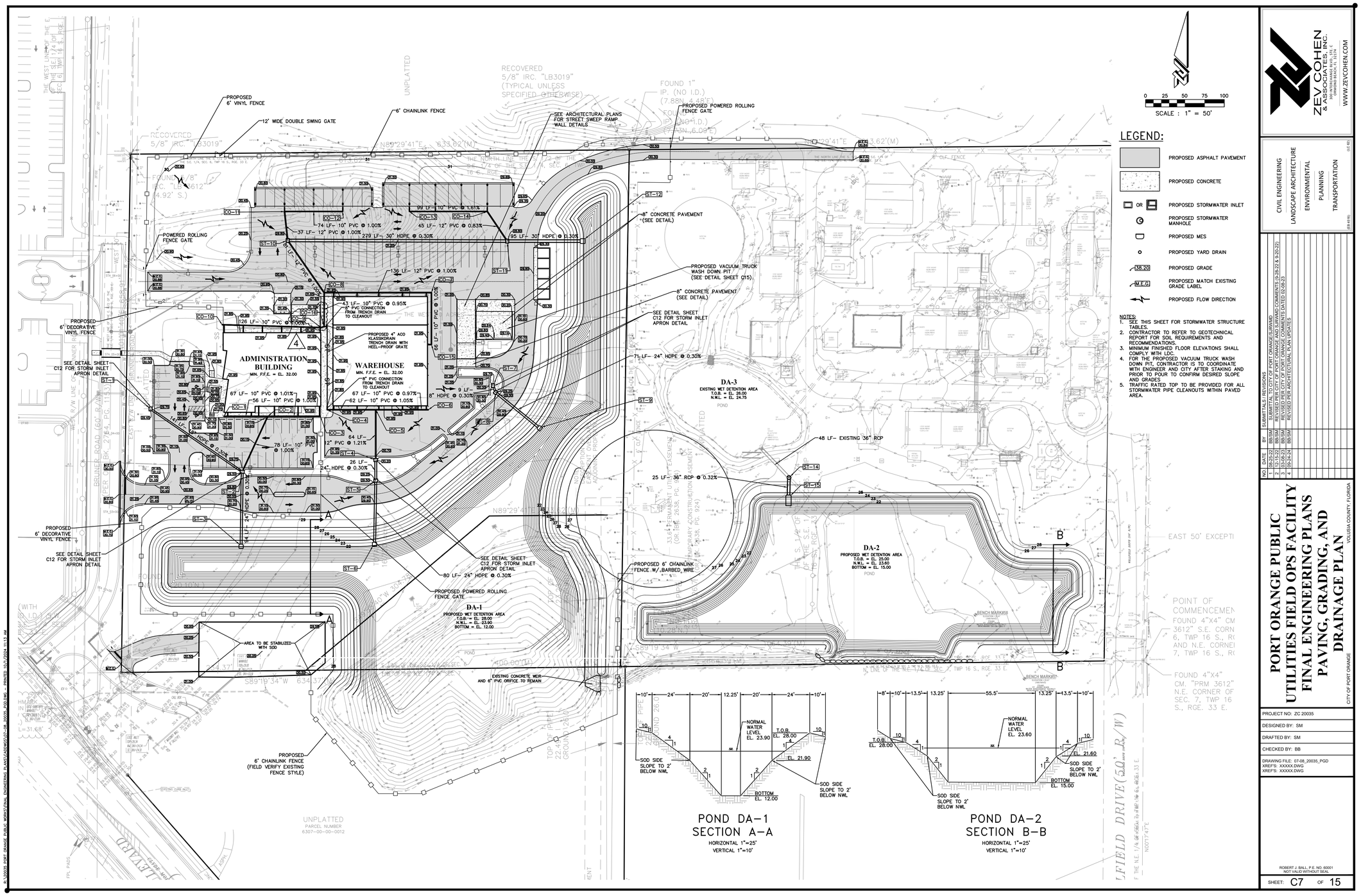
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GEOMETRY, SIGNAGE, AND STRIPING PLAN

C6

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3	01-30-24	BB/SM	REVISED PER CITY OF PORT ORANGE COMMENTS (3-25-24) DATED 02-06-23
4	09-24-24	BB/SM	REVISED PER ARCHITECTURAL PLANS UPDATES

PORT ORANGE PUBLIC UTILITIES FIELD OPS FACILITY
FINAL ENGINEERING PLANS
PAVING, GRADING, AND DRAINAGE PLAN
VOLUSIA COUNTY, FLORIDA
CITY OF PORT ORANGE

PROJECT NO: ZC 20035
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CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
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PAVING, GRADING, AND DRAINAGE PLAN

C7

PERMIT/BID DOCUMENTS

STORMWATER STRUCTURE TABLE

STRUCTURE NUMBER	STRUCTURE TYPE	STRUCTURE T.C.	PIPE INVERT(S), DIRECTION(S), SIZE(S)
CO-1	6" CLEAN-OUT	31.85	27.69 (E) 10" PVC
CO-2	6" CLEAN-OUT	31.15	27.13 (W) 10" PVC 27.13 (E) 10" PVC 27.13 (SW) 10" PVC
CO-3	6" CLEAN-OUT	31.85	27.80 (W) 10" PVC
CO-4	6" CLEAN-OUT	31.90	28.00 (E) 10" PVC 28.00 (N) 8" PVC
CO-5	6" CLEAN-OUT	31.90	27.35 (W) 10" PVC 27.35 (E) 10" PVC 27.35 (S) 12" PVC
CO-6	6" CLEAN-OUT	31.90	28.00 (W) 10" PVC
CO-7	6" CLEAN-OUT	31.90	27.29 (S) 10" PVC 27.29 (W) 12" PVC
CO-8	6" CLEAN-OUT	31.60	25.93 (E) 12" PVC 25.93 (S) 10" PVC 23.97 (NW) 12" PVC
CO-9	6" CLEAN-OUT	31.90	26.38 (W) 10" PVC 26.38 (E) 10" PVC
CO-10	6" CLEAN-OUT	31.90	27.64 (E) 10" PVC
CO-11	6" CLEAN-OUT	29.80	22.48 (E) 10" PVC 22.48 (N) 8" PVC 22.48 (S) 12" PVC
CO-12	6" CLEAN-OUT	30.90	23.22 (W) 10" PVC 23.22 (N) 8" PVC
CO-13	6" CLEAN-OUT	30.80	23.25 (E) 10" PVC -1.74 (N) 8" PVC
CO-14	6" CLEAN-OUT	29.30	21.66 (W) 10" PVC -1.74 (N) 8" PVC 21.66 (SE) 12" PVC
CO-15	6" CLEAN-OUT	31.90	27.95 (N) 10" PVC 27.95 (W) 10" PVC
CO-16	6" CLEAN-OUT	31.90	26.34 (W) 10" PVC 26.37 (E) 8" PVC 26.34 (N) 10" PVC
ST-1	TYPE D INLET – INDEX NO. 425-052	29.45	21.69 (SE) 18" HDPE
ST-2	TYPE D INLET – INDEX NO. 425-052	29.50	21.27 (NW) 18" HDPE 26.35 (NE) 10" PVC 21.28 (S) 24" HDPE
ST-3	MES (24") – INDEX NO. 430-021	—	21.00 (N) 24" HDPE
ST-4	TYPE D INLET – INDEX NO. 425-052	30.20	26.58 (N) 12" PVC 21.32 (S) 24" HDPE
ST-5	TYPE D INLET – INDEX NO. 425-052	29.25	21.24 (S) 24" HDPE 21.24 (N) 24" HDPE
ST-6	MES (24") – INDEX NO. 430-021	—	21.00 (N) 24" HDPE
ST-7	TYPE D INLET – INDEX NO. 425-052	29.70	21.24 (S) 18" HDPE
ST-8	TYPE D INLET – INDEX NO. 425-052	29.25	21.22 (N) 18" HDPE 21.22 (SE) 24" HDPE
ST-9	MES (24") – INDEX NO. 430-021	—	21.00 (NW) 24" HDPE
ST-10	TYPE D INLET – INDEX NO. 425-052	29.80	22.11 (E) 30" HDPE 22.11 (N) 12" PVC 23.16 (SE) 12" PVC
ST-11	TYPE D INLET – INDEX NO. 425-052	28.80	21.28 (W) 30" HDPE 21.28 (E) 30" HDPE 21.28 (NW) 12" PVC
ST-12	MES (30") – INDEX NO. 430-021	—	21.00 (W) 30" HDPE
ST-14	MANHOLE (48" DIA.) – INDEX NO. 425-001	28.50	22.08 (S) 36" RCP 24.60 (NW) EXISTING 36" RCP
ST-15	MES (36") – INDEX NO. 430-021	—	22.00 (N) 36" RCP

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4	09-24-24	BB/SM	REVISED PER ARCHITECTURAL PLAN UPDATES

PORT ORANGE PUBLIC UTILITIES FIELD OPS FACILITY
FINAL ENGINEERING PLANS
STORMWATER STRUCTURES TABLE
CITY OF PORT ORANGE — VOLUSIA COUNTY, FLORIDA

PROJECT NO: ZC 20035
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CHECKED BY: BB
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SHEET: C8 OF 15

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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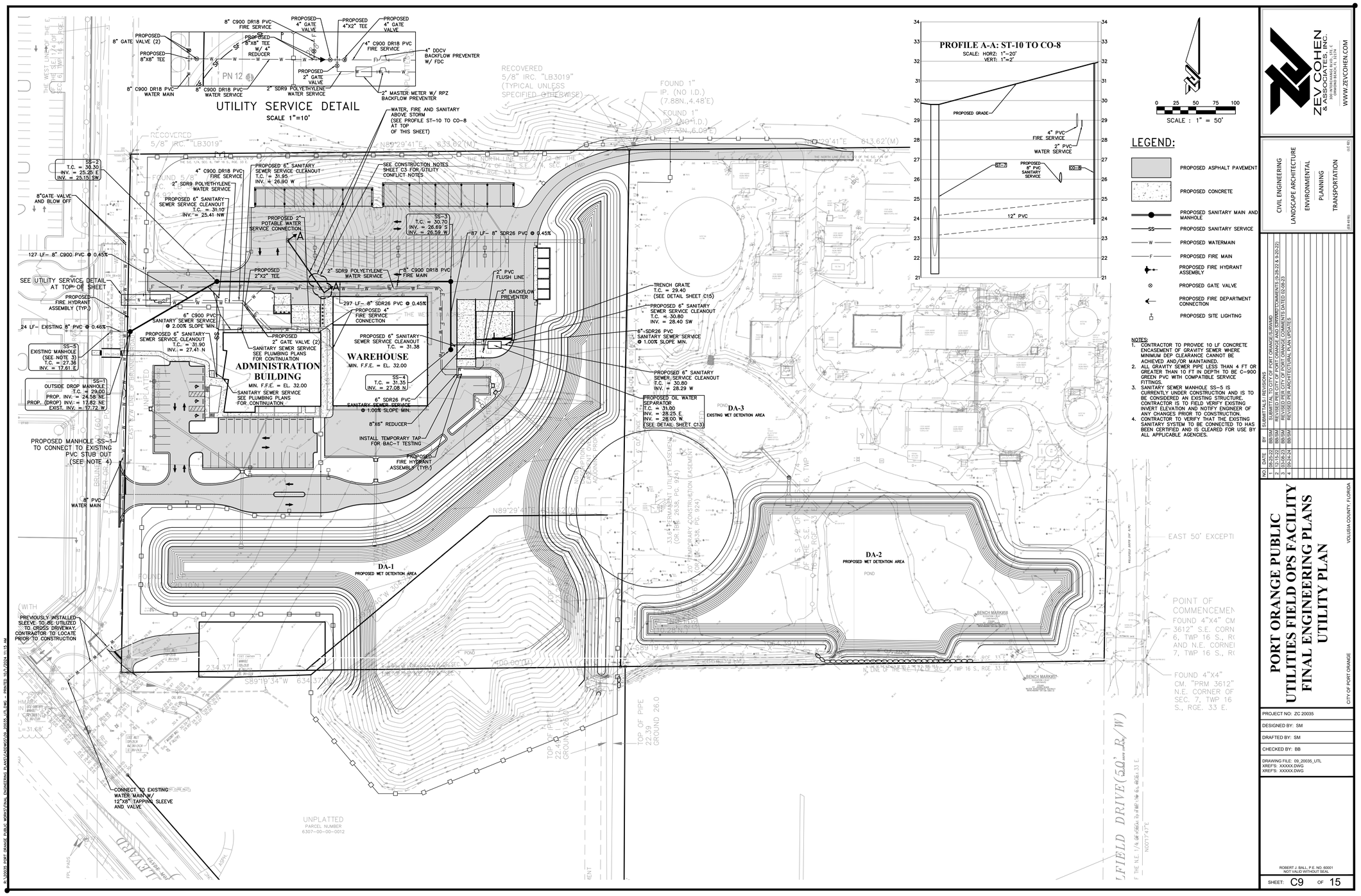
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STORMWATER
STRUCTURES TABLE

C8

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4	09-04-24	BB/SM	REVISED PER ARCHITECTURAL PLANS UPDATES

PORT ORANGE PUBLIC UTILITIES FIELD OPS FACILITY
FINAL ENGINEERING PLANS
UTILITY PLAN
CITY OF PORT ORANGE — VOLUSIA COUNTY, FLORIDA

REVISIONS		
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SHEET: C9 OF 15

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
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UTILITY PLAN

C9

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MATERIALS

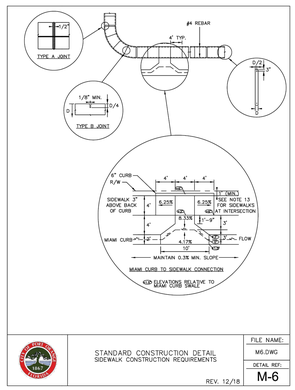
THE INSPECTION AND TESTING OF MATERIALS AND FINISHED ARTICLES TO BE INCORPORATED IN THE WORK SHALL BE MADE BY BUREAUS, LABORATORIES, OR AGENCIES APPROVED BY THE ENGINEER OF RECORD. THE CONTRACTOR SHALL SUBMIT SUCH SAMPLES, OR SUCH SPECIAL OR TEST PIECES OF MATERIALS AS THE ENGINEER OF RECORD MAY REQUIRE. THE CONTRACTOR SHALL NOT INCORPORATE ANY MATERIAL OR FINISHED ARTICLE INTO THE WORK UNTIL THE RESULTS OF THE INSPECTION OR TESTS ARE KNOWN AND THE CONTRACTOR HAS BEEN NOTIFIED BY THE ENGINEER OF RECORD THAT THE MATERIAL OR FINISHED ARTICLE IS ACCEPTED. ALL MATERIALS MUST BE OF THE SPECIFIED QUALITY AND BE EQUAL TO THE APPROVED SAMPLE. IF A SAMPLE HAS BEEN SUBMITTED, CERTIFIED COPIES OF ALL TESTS MADE SHALL BE SUBMITTED TO THE ENGINEER OF RECORD AS WELL AS TO THE CITY'S DESIGNATED SITE INSPECTOR. THE CITY'S DESIGNATED SITE INSPECTOR SHALL REVIEW ALL TESTING REPORTS AND CERTIFICATES PRIOR TO THE ENGINEER OF RECORD REQUESTING A FINAL PROJECT INSPECTION FROM THE CITY.

LABORATORY CONTROL AND CERTIFICATES

1. SPECIFICATIONS: SAMPLING, TESTING, AND LABORATORY METHODS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE AASHTO OR ASTM, WHERE AASHTO OR ASTM SPECIFICATIONS ARE NOT APPLICABLE, THE CONTRACTOR SHALL COMPLY WITH THE MOST RECENT STANDARD SPECIFICATIONS OF THE AASHTO OR ASTM IN FORCE ON THE DATE OF THE TEST.
2. TEST & CERTIFICATES: THE CONTRACTOR SHALL ENGAGE AN APPROVED TESTING LABORATORY TO PROVIDE THE FOLLOWING TESTS AND CERTIFICATIONS SIGNED BY A REGISTERED ENGINEER OF THE STATE OF FLORIDA, A TECHNICIAN PERFORMING THE TESTS SHALL BE STATE CERTIFIED WHERE SUCH CERTIFICATION IS REQUIRED BY THE TESTING PROCEDURE. TWO COPIES OF THE ENGINEER OF RECORD AND THE CITY SHALL ALSO BE PROVIDED BY THE CONTRACTOR AND THE FOLLOWING SHALL NOT BE TAKEN AS A COMPLETE AND EXHAUSTIVE LIST OF THE CONTRACTOR'S TESTING RESPONSIBILITIES:
   A) SOIL ANALYSIS FOR STRUCTURAL FILL MATERIAL PRIOR TO INSTALLATION.
   B) PROCTOR DENSITIES, MOISTURE CONTENT, COMPACTED FIELD DENSITIES, AND ATTERBERG LIMITS.
   C) FLOWABLE FILL – MIX DESIGNS, CONSTRUCTION SUPERVISION AND COMPRESSIVE STRENGTH TESTS.
   D) ANALYSIS OF RECYCLED CONCRETE BASE MATERIAL PRIOR TO INSTALLATION.
   E) ASPHALT MIX DESIGN, BITUMEN CONTENT, SIEVE ANALYSIS, MARSHALL FIELD STABILITY TESTS, NUCLEAR DENSITY TESTS (BACKSCATTER METHOD), AND ANALYSIS OF CORE SAMPLES.
   F) CONCRETE MIX DESIGNS FOR ALL APPLICATIONS INCLUDING PAVEMENT, CAST-IN-PLACE STRUCTURES, CURBING, OUTFALLS, SIDEWALKS, BIKE PATHS, APRONS, AND DRIVEWAYS.
   G) COMPRESSIVE TEST CYLINDERS AND SLUMP TESTS FOR ALL APPLICATIONS OF CONCRETE, INCLUDING PAVEMENT, CAST-IN-PLACE STRUCTURES, CURBING, OUTFALLS, SIDEWALKS, BIKE PATHS, APRONS, AND DRIVEWAYS.
   H) CHLORINE RESIDUAL AND BACTERIOLOGICAL TESTING OF WATER MAINS.
   I) PRESSURIZED LEAK TESTING OF WATER MAINS, FORCE MAINS, AND RECLAIMED WATER MAINS.

STANDARD CONSTRUCTION DETAIL
TECHNICAL SPECIFICATIONS
FOR SITES AND SUBDIVISIONS
TESTING
REV. 12/18

FILE NAME: M2.DWG
DETAIL REF: M-2



STANDARD CONSTRUCTION DETAIL
SIDEWALK CONSTRUCTION REQUIREMENTS
REV. 12/18

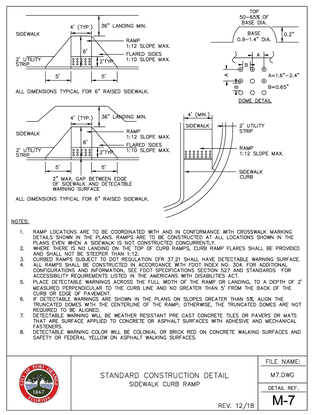
FILE NAME: M6.DWG
DETAIL REF: M-6

NOTES:

1. ALL CONCRETE SIDEWALKS AND BIKE PATHS IN PUBLIC RIGHT-OF-WAYS, PRIVATE RIGHT-OF-WAYS, COMMON AREAS IN RESIDENTIAL SITES, COMMERCIAL, INDUSTRIAL, INSTITUTIONAL, MULTI-FAMILY OR MIXED-USE SITES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SPECIFICATIONS LISTED BELOW. EXCEPTION TO THE SPECIFICATIONS BELOW WILL BE FOR PRIVATE RESIDENTIAL SIDEWALKS NOT ADJACENT TO PUBLIC ROADWAYS.
2. SIDEWALKS, BIKE PATHS, RAMPS, AND DRIVEWAY APRONS SHALL BE CONSTRUCTED OF PLAIN PORTLAND CEMENT CONCRETE HAVING A MAXIMUM SLUMP OF 3", A MINIMUM DEVELOPED COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS, AND A MINIMUM UNIFORM THICKNESS OF 4", WHERE INTENDED FOR USE BY VEHICLES OF MORE THAN NOMINAL WEIGHT, SUCH AS DRIVEWAYS, THE SLAB SHALL BE 6" THICK.
3. 2-#4 METAL REINFORCEMENT BARS WITH MINIMUM 6" OVERLAPS SHALL BE INSTALLED LONGITUDINALLY 3" FROM THE EDGE. THE BARS SHALL BE LOCATED AT MID DEPTH OF THE CONCRETE. THE BARS SHALL BE PLACED ON NON FERROUS SPACERS TO ENSURE REQUIRED SEPARATION FROM SUBGRADE.
4. ALL SIDEWALKS, BIKE PATHS, RAMPS, AND DRIVEWAY APRONS SHALL BE PLACED ON A FIRM, STABLE, AND THE ENGINEERED CLEAN SOIL AND FULL SHALL BE UNDISTURBED GROUND, AND SOILS TO BE COMPACTED SHALL BE COMPACTED TO A MINIMUM 95% DENSITY BASED ON MODIFIED PROCTOR DRY TEST PER AASHTO T-180.
5. ALL CONCRETE WORK IN THE RIGHT-OF-WAY SHALL BE INSPECTED BY THE CITY AFTER THE FORMWORK IS COMPLETE AND BEFORE THE CONCRETE IS POURED. NOTIFY THE CITY BEFORE THE BEGINS.
6. SIDEWALKS SHALL BE PLACED PARALLEL TO AND 12" WITHIN THE RIGHT-OF-WAY LINE, EXCEPT THAT THE CITY MAY APPROVE DEVIATIONS TO SAVE SPECIMEN TREES PROVIDED THAT THE SIDEWALK IS LOCATED WITHIN THE RIGHT-OF-WAY OR AN APPROVED SIDEWALK EASEMENT ABUTTING THE RIGHT-OF-WAY IS RECORDED.
7. THE TOP OF THE SIDEWALK PARALLEL WITH CURB AND GUTTER SHALL BE AT AN ELEVATION NO LOWER THAN THE CROWN OF THE ADJACENT ROADWAY AND NO HIGHER THAN 6" ABOVE THE CROWN, UNLESS APPROVED BY THE CITY, TO MAKE A MORE NATURAL TRANSITION WITH THE ADJACENT LAND.
8. SIDEWALKS SHALL BE GRADED TO MATCH EXISTING GRADES AT THE PROPERTY LINE AS NEARLY AND CLOSELY AS POSSIBLE. THE FINISH OF EXISTING ADJACENT SLABS AND ALL EDGES SHALL BE TOOLED TO ELIMINATE SHARP CORNERS.
9. CONTROL JOINTS (SCORES) SHALL BE PROVIDED BETWEEN EXISTING CONCRETE OR STRUCTURES AND FRESH CONCRETE, TO SEPARATE PEDESTRIAN SECTIONS FROM SECTIONS WHICH WILL ENCOUNTER VEHICLE TRAFFIC, TO SEPARATE FRESH PLACEMENT FROM CONCRETE WHICH HAS SET FOR MORE THAN 60 MINUTES, AND NO FARTHER APART THAN 100'. JOINT MATERIAL SHALL BE PREFORMED JOINT FILLER MEETING FDOT SPECIFICATIONS.
10. CONTROL JOINTS (SCORES) SHALL BE TOOLED INTO THE FRESH CONCRETE TO A DEPTH EQUAL TO 1/4 THE SLAB THICKNESS, 1/8" WIDTH, AND SPACED APART A DISTANCE EQUAL TO THE WIDTH OF THE SLAB OR 48", WHICHEVER IS GREATEST.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING THE FINISHED SIDEWALK FROM ALL DAMAGE AND VANDALISM UNTIL THE CITY ACCEPTS OR APPROVES THE SIDEWALK. AFTER WHICH THE CITY SHALL BE RESPONSIBLE FOR ALL MAINTENANCE. ALL DAMAGED SIDEWALK, NOT IN ACCORDANCE WITH THE CITY CODE, ANY SIDEWALK SECTION DAMAGED OR VANDALIZED PRIOR TO ACCEPTANCE OR APPROVAL SHALL BE CUT OUT BETWEEN JOINTS AND REPLACED. REPAIRS ARE NOT ACCEPTABLE.
12. ALL FORMS SHALL BE REMOVED PRIOR TO ACCEPTANCE OR APPROVAL AND THE DISTURBED GROUND SHALL BE BACKFILLED, RE-GRADED, AND SODDED SO THAT THE REAR SURFACE OF THE CONCRETE IS REASONABLY FLUSH WITH THE ADJACENT SOIL GRADE.
13. THE CONTRACTOR SHALL PROVIDE ALL RAMP AND CURB CONNECTIONS AT EACH CORNER, THE 3" RISE TO SIDEWALK FINAL GRADE WILL BE OMITTED BETWEEN CONNECTIONS.

STANDARD CONSTRUCTION DETAIL
SIDEWALK CONSTRUCTION REQUIREMENTS
REV. 12/18

FILE NAME: M6.DWG
DETAIL REF: M-6.1

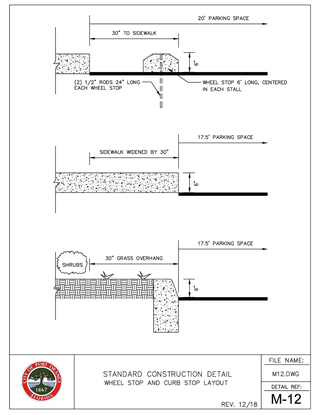


NOTES:

1. RAMP LOCATIONS ARE TO BE COORDINATED WITH AND IN CONFORMANCE WITH CROSSWALK MARKING DETAILS SHOWN IN THE PLANS. RAMPS ARE TO BE CONSTRUCTED AT ALL LOCATIONS SHOWN IN THE PLANS EVEN WHEN A SIDEWALK IS NOT CONSTRUCTED CONCURRENTLY.
2. WHERE THERE IS NO LANDING ON THE TOP OF CURB RAMPS, CURB RAMP FLARES SHALL BE PROVIDED AND SHALL NOT BE STEEPER THAN 10:1.
3. ALL RAMPS SHALL BE DESIGNED IN ACCORDANCE WITH 67-37.21 SHALL HAVE DETECTABLE WARNING SURFACE.
4. ALL RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH FDOT INDEX NO. 304. FOR ADDITIONAL CONFIGURATIONS AND INFORMATION, SEE FDOT SPECIFICATIONS SECTION 527 AND STANDARDS FOR ACCESSIBILITY REQUIREMENTS LISTED IN THE AMERICANS WITH DISABILITIES ACT.
5. PLACE DETECTABLE WARNINGS ACROSS THE FULL WIDTH OF THE RAMP OR LANDING, TO A DEPTH OF 2' MEASURED FROM THE BACK OF THE CURB LINE AND NO GREATER THAN 5' FROM THE BACK OF THE CURB OR EDGE OF PAVEMENT.
6. IF DETECTABLE WARNINGS ARE SHOWN IN THE PLANS ON SLOPES GREATER THAN 5%, ALIGN THE TRUNCATED DOMES WITH THE CENTERLINE OF THE RAMP; OTHERWISE, THE TRUNCATED DOMES ARE NOT REQUIRED TO BE ALIGNED.
7. DETECTABLE WARNINGS SHALL BE WEATHER RESISTANT PRE CAST CONCRETE TILES OR PAVERS OR MATS THAT ARE SURFACE APPLIED TO CONCRETE OR ASPHALT SURFACES WITH ADHESIVE AND MECHANICAL FASTENERS.
8. DETECTABLE WARNING COLOR WILL BE COLONIAL OR BRICK RED ON CONCRETE WALKING SURFACES AND SAFETY OF FEDERAL YELLOW ON ASPHALT WALKING SURFACES.

STANDARD CONSTRUCTION DETAIL
SIDEWALK CURB RAMP
REV. 12/18

FILE NAME: M7.DWG
DETAIL REF: M-7

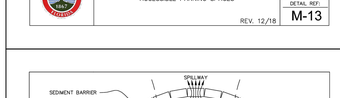


STANDARD CONSTRUCTION DETAIL
WHEEL STOP AND CURB STOP LAYOUT
REV. 12/18

FILE NAME: M12.DWG
DETAIL REF: M-12

ACCESSIBLE PARKING SPACES SHALL BE PROVIDED IN ACCORDANCE WITH CURRENT FLORIDA STATUTES, INCLUDING THE FOLLOWING DETAILS:

1. ANY COMMERCIAL REAL ESTATE PROPERTY OR RESIDENTIAL MODEL CENTERS OWNER OFFERING PARKING FOR THE GENERAL PUBLIC SHALL PROVIDE SPECIALLY DESIGNED AND MARKED MOTOR VEHICLE PARKING SPACES FOR THE EXCLUSIVE USE OF PHYSICALLY DISABLED PERSONS WHO HAVE BEEN ISSUED PARKING PERMITS PURSUANT TO STATE LAW.
2. PARALLEL PARKING SPACES SHALL BE LOCATED AT THE BEGINNING OR END OF A BLOCK OR ADJACENT TO ALLEY ENTRANCES. CURBS ADJACENT TO SUCH SPACES SHALL BE OF A HEIGHT WHICH WILL NOT INTERFERE WITH THE OPENING AND CLOSING OF MOTOR VEHICLE DOORS.
3. ACCESSIBLE PARKING SPACES SHALL BE CONSPICUOUSLY OUTLINED IN BLUE PAINT AND SHALL BE POSTED WITH A SIGN SHOWING THE SYMBOL OF ACCESSIBILITY AND THE CAPTION PARKING BY DISABLED PERMIT ONLY, AND AN ADDITIONAL SIGN STATING THE PENALTY FOR ILLEGAL USE OF THE SPACE. SUCH SIGNS SHALL NOT BE OBSCURED BY A VEHICLE PARKED IN THE SPACE. ALL ACCESSIBLE PARKING MUST BE SIGNED AND MARKED IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE FLORIDA DEPARTMENT OF TRANSPORTATION.
4. PERPENDICULAR OR DIAGONAL PARKING SPACES SHALL BE A MINIMUM OF 12' WIDE. ALL ACCESSIBLE PARKING SPACES SHALL HAVE A 5' WIDE ADJACENT ACCESS AISLE. PARKING ACCESS AISLES SHALL BE PART OF THE ACCESSIBLE ROUTE TO THE BUILDING OR FACILITY ENTRANCE. TWO ACCESSIBLE PARKING SPACES MAY SHARE A COMMON ACCESS AISLE. PARKED VEHICLE OVERHANGS SHALL NOT REDUCE THE CLEAR WIDTH OF AN ACCESSIBLE CIRCULATION ROUTE.

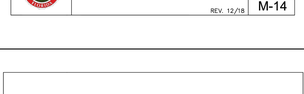


5. ALL SPACES SHALL HAVE AN ACCESSIBLE CURB-RAMP OR CURB-CUT TO ALLOW ACCESS TO THE BUILDING SERVICES IT SHALL BE LOCATED SO THAT USERS WILL NOT BE COMPELLED TO WHEEL BEHIND PARKED VEHICLES, EXCEPT HIS OR HER OWN VEHICLE.
6. THE MINIMUM NUMBER OF SUCH PARKING SPACES SHALL COMPLY WITH THE FOLLOWING TABLE:

TOTAL PARKING IN LOT	REQUIRED NUMBER OF ACCESSIBLE SPACES
UP – 25	1
26 – 50	2
51 – 75	3
76 – 100	4
101 – 150	5
151 – 200	6
201 – 300	7
301 – 400	8
401 – 500	9
501 – 1000	2% OF TOTAL
OVER 1000	20+1 FOR EACH 100 (OR FRACTION THEREOF) OVER 1000

STANDARD CONSTRUCTION DETAIL
ACCESSIBLE PARKING SPACES
REV. 12/18

FILE NAME: M13.DWG
DETAIL REF: M-13



NOTE:

1. RAISED SIDEWALKS ADJACENT TO BUILDINGS MAY BE USED IN LIEU OF WHEEL STOPS, PROVIDING THE SIDEWALK IS NOT LESS THAN 7' WIDE (LDC, CHAPTER 12, SECTION 4(C)(2)).
2. A 44" WIDE MINIMUM CLEAR ACCESSIBLE ROUTE MUST BE PROVIDED AT ALL TIMES.
3. ACCESSIBLE PARKING SPACES AND ACCESS AISLES SHALL BE LEVEL WITH SURFACE SLOPES NOT EXCEEDING 1/4",/1' OR 2.08% IN ALL DIRECTIONS.
4. WHERE PARKING SPACES ARE MARKED WITH LINES, WIDTH MEASUREMENTS OF PARKING SPACES AND ACCESSIBLE AISLES SHALL BE MADE FROM CENTERLINE OF THE MARKINGS.
5. WHERE PARKING SPACES OR ACCESS AISLES ARE NOT ADJACENT TO ANOTHER PARKING SPACE OR ACCESS AISLE, MEASUREMENTS SHALL BE PERMITTED TO INCLUDE THE FULL WIDTH OF THE LINE DEFINING THE PARKING SPACE OR ACCESS AISLE.
6. LINE WIDTHS FOR ACCESSIBILITY SYMBOL AND STRIPING, AND ANGLE OF ACCESS AISLE STRIPING ARE RECOMMENDED MEASUREMENTS.

STANDARD CONSTRUCTION DETAIL
ACCESSIBLE PARKING LAYOUT
REV. 12/18

FILE NAME: M14.DWG
DETAIL REF: M-14



NOTE:

1. PARKING SPACE SIGNS FOR INDIVIDUALS WITH DISABILITIES SHALL CONFORM TO CURRENT LOCAL, STATE AND FEDERAL CODES AND REGULATIONS.
2. ALL SIGNS SHALL BE DESIGNED TO WITHSTAND WIND SPEED LISTED IN FBC (LATEST EDITION).

STANDARD CONSTRUCTION DETAIL
ACCESSIBLE PARKING SIGN, BOLLARD/SIGN COMBINATION AND POST MOUNTED
REV. 12/18

FILE NAME: M15.DWG
DETAIL REF: M-15

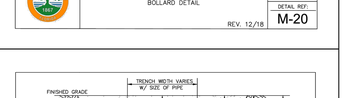


NOTES:

1. PROVIDE 40' STRAIGHT STATIC APPROACH (MIN.) AND 40' APPROACH AND DEPARTURE RADIUS (MIN.).
2. AREA TO BE FREE OF OVERHEAD LINES AND WIRES.
3. APPLICANT TO PROVIDE A SIDE ELEVATION TO DEMONSTRATE COLOR, MATERIAL, AND DESIGN CONSISTENCY WITH THE PRINCIPAL BUILDING.
4. ENCLOSURE SHALL BE DESIGNED FOR WIND SPEED LISTED IN FBC (LATEST EDITION).
5. ENCLOSURE SHALL REQUIRE BUILDING PERMIT FOR CONSTRUCTION.

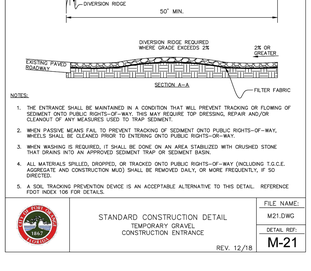
STANDARD CONSTRUCTION DETAIL
DOUBLE CONTAINER DUMPSTER ENCLOSURE
REV. 12/18

FILE NAME: M17.DWG
DETAIL REF: M-17



STANDARD CONSTRUCTION DETAIL
BOLLARD DETAIL
REV. 12/18

FILE NAME: M20.DWG
DETAIL REF: M-20

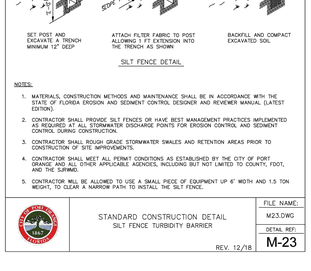


NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN PASSIVE MEANS FAIL TO PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, WHEELS SHALL BE CLEANED PRIOR TO ENTERING ONTO PUBLIC RIGHTS-OR-WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
4. ALL MATERIALS SPILLED, DROPPED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY (INCLUDING T.O.C.E. AGGREGATE AND CONSTRUCTION MUD) SHALL BE REMOVED DAILY, OR MORE FREQUENTLY, IF SO DIRECTED.
5. A SOIL TRACKING PREVENTION DEVICE IS AN ACCEPTABLE ALTERNATIVE TO THIS DETAIL. REFERENCE FDOT INDEX 106 FOR DETAILS.

STANDARD CONSTRUCTION DETAIL
TEMPORARY GRAVEL CONSTRUCTION ENTRANCE
REV. 12/18

FILE NAME: M21.DWG
DETAIL REF: M-21



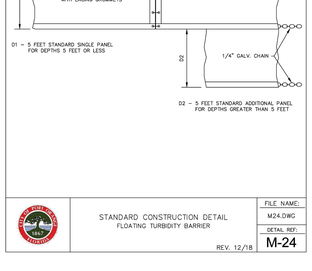
SILT FENCE DETAIL

NOTES:

1. MATERIALS, CONSTRUCTION METHODS AND MAINTENANCE SHALL BE IN ACCORDANCE WITH THE STATE OF FLORIDA EROSION AND SEDIMENT CONTROL DESIGNER AND REVIEWER MANUAL (LATEST EDITION).
2. CONTRACTOR SHALL PROVIDE SILT FENCES OR HAVE BEST MANAGEMENT PRACTICES IMPLEMENTED AS REQUIRED AT ALL STORMWATER DISCHARGE POINTS FOR EROSION CONTROL AND SEDIMENT CONTROL DURING CONSTRUCTION.
3. CONTRACTOR SHALL ROUGH GRADE STORMWATER SWALES AND RETENTION AREAS PRIOR TO CONSTRUCTION OF SITE IMPROVEMENTS.
4. CONTRACTOR SHALL MEET ALL PERMIT CONDITIONS AS ESTABLISHED BY THE CITY OF PORT ORANGE AND ALL OTHER APPLICABLE AGENCIES, INCLUDING BUT NOT LIMITED TO COUNTY, FDOT, AND THE SJRWMD.
5. CONTRACTOR WILL BE ALLOWED TO USE A SMALL PIECE OF EQUIPMENT UP 6' WIDTH AND 1.5 TON WEIGHT, TO CLEAR A NARROW PATH TO INSTALL THE SILT FENCE.

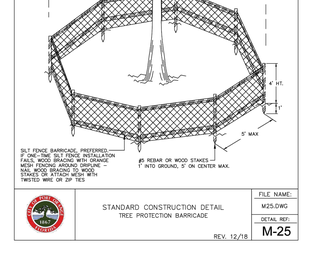
STANDARD CONSTRUCTION DETAIL
SILT FENCE TURBIDITY BARRIER
REV. 12/18

FILE NAME: M23.DWG
DETAIL REF: M-23



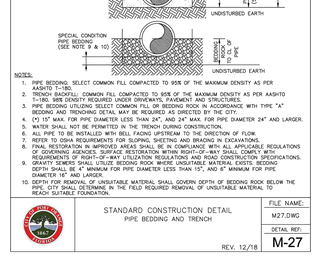
STANDARD CONSTRUCTION DETAIL
FLOATING TURBIDITY BARRIER
REV. 12/18

FILE NAME: M24.DWG
DETAIL REF: M-24



STANDARD CONSTRUCTION DETAIL
TREE PROTECTION BARRICADE
REV. 12/18

FILE NAME: M25.DWG
DETAIL REF: M-25



NOTES:

1. PIPE BEDDING: SELECT COMMON FILL COMPACTED TO 95% OF THE MAXIMUM DENSITY AS PER AASHTO T-180.
2. TRENCH BACKFILL: COMMON FILL COMPACTED TO 95% OF THE MAXIMUM DENSITY AS PER AASHTO T-180. 98% DENSITY REQUIRED UNDER DRIVEWAYS, PAVEMENT AND STRUCTURES.
3. PIPE BEDDING UTILIZING SELECT COMMON FILL OR BEDDING ROCK IN ACCORDANCE WITH TYPE "A" BEDDING AND TRENCHING DETAIL MAY BE REQUIRED AS DIRECTED BY THE CITY.
4. (*) 15" MAX. FOR PIPE DIAMETER LESS THAN 24", AND 24" MAX. FOR PIPE DIAMETER 24" AND LARGER.
5. WATER SHALL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION.
6. ALL PIPE TO BE INSTALLED WITH BELL FACING UPSTREAM TO THE DIRECTION OF FLOW.
7. REFER TO OSHA REQUIREMENTS FOR SLOPING, SHEETING AND BRACING IN EXCAVATIONS.
8. ALL TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH THE APPLICABLE REGULATIONS OF GOVERNING AGENCIES. SURFACE RESTORATION WITHIN RIGHT-OF-WAY SHALL COMPLY WITH REQUIREMENTS OF RIGHT-OF-WAY UTILIZATION REGULATIONS AND ROAD CONSTRUCTION SPECIFICATIONS.
9. GRAVITY SEWERS SHALL UTILIZE BEDDING ROCK WHERE UNSUITABLE MATERIAL EXISTS. BEDDING DEPTH SHALL BE 4" MINIMUM FOR PIPE DIAMETER LESS THAN 15", AND 6" MINIMUM FOR PIPE DIAMETER 15" AND LARGER.
10. DEPTH FOR REMOVAL OF UNSUITABLE MATERIAL SHALL GOVERN DEPTH OF BEDDING ROCK BELOW THE PIPE. THE ENGINEER SHALL BE PRESENT IN THE FIELD REQUIRED REMOVAL OF UNSUITABLE MATERIAL TO REACH SUITABLE FOUNDATION.

STANDARD CONSTRUCTION DETAIL
PIPE BEDDING AND TRENCH
REV. 12/18

FILE NAME: M27.DWG
DETAIL REF: M-27

ZEV COHEN & ASSOCIATES, INC.
300 INTERCHANGE BLVD., STE. C
DAYTONA BEACH, FL 32114
WWW.ZEVCOHEN.COM

CIVIL ENGINEERING
LANDSCAPE ARCHITECTURE
ENVIRONMENTAL
PLANNING
TRANSPORTATION
LC# 4D
LB# 8190

NO	DATE	BY	SUBMITTAL / REVISIONS
1	08-25-22	BB/SM	SUBMITTAL TO CITY OF PORT ORANGE/S.RIVARD
2	12-15-23	BB/SM	REVISED PER CITY OF PORT ORANGE AND S.RIVARD COMMENTS (1-26-23 & 9-20-22)
3	03-04-24	BB/SM	REVISED PER CITY OF PORT ORANGE COMMENTS (3-1-24 DATED 02-08-23
4	03-04-24	BB/SM	REVISED PER ARCHITECTURAL PLANS UPDATES

PORT ORANGE PUBLIC UTILITIES FIELD OPS FACILITY
FINAL ENGINEERING PLANS
CONSTRUCTION DETAILS

CITY OF PORT ORANGE — VOLUSIA COUNTY, FLORIDA

PROJECT NO: ZC 20035
DESIGNED BY: SM
DRAFTED BY: SM
CHECKED BY: BB
DRAWING FILE: 10-14_20035_DET

ROBERT J. BALL, P.E. NO. 60001

SHEET: C10 OF 15

R:\20035 PORT ORANGE PUBLIC WORKS\FINAL ENGINEERING PLANS\CAD\IMG\10-14_20035_DET.DWG – PRINTED 10/1/2024 11:18 AM

REVISIONS

MARK	DESCRIPTION	DATE

SEAL

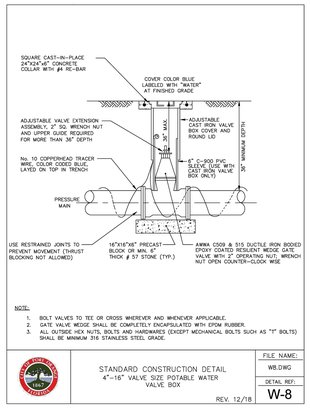
ROBERT J. BALL, P.E. NO. 60001

COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
DRAWN BY: SM

CONSTRUCTION DETAILS

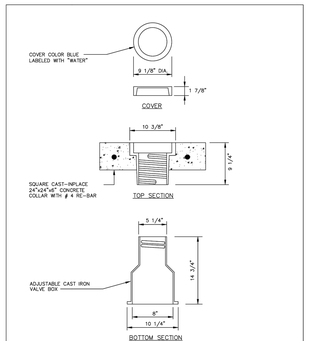
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PERMIT/BID DOCUMENTS

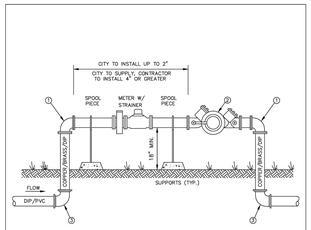


NOTE:
1. BOLT VALVES TO TEE OR CROSS WHEREVER AND WHENEVER APPLICABLE.
2. GATE VALVE WEDGE SHALL BE COMPLETELY ENCAPSULATED WITH EPDM RUBBER.
3. ALL OUTSIDE HEX NUTS, BOLTS AND HARDWARES (EXCEPT MECHANICAL BOLTS SUCH AS "T" BOLTS) SHALL BE MINIMUM 316 STAINLESS STEEL GRADE.

STANDARD CONSTRUCTION DETAIL
4"-16" VALVE SIZE POTABLE WATER VALVE BOX
REV. 12/18
FILE NAME: W8.DWG
DETAIL REF: W-8



STANDARD CONSTRUCTION DETAIL
POTABLE WATER VALVE BOX COVER AND LID
REV. 12/18
FILE NAME: W9.DWG
DETAIL REF: W-9

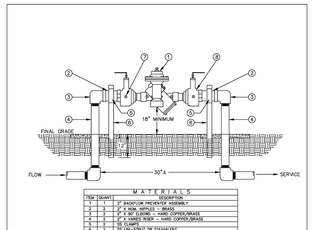


M A T E R I A L S
2" — COPPER OR BRASS
4" TO 10" — DIP

ITEM	QUANT.	DESCRIPTION
1	2	90° BEND (FLG. & FLG.)
2	1	2"-10" BACKFLOW PREVENTER
3	2	90° BEND (M.J. & MJ.)

NOTES:
1. ALL DEVICES SHALL BE PAINTED TO COMPLY WITH FLORIDA ADMINISTRATIVE CODE CHAPTER 62-555 AND THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION CROSS-CONNECTION CONTROL PROGRAM, AS FOLLOWS:
   WATER MAIN – BLUE
   DOMESTIC – BLUE
   RECLAIM WATER MAIN – PURPLE
2. LENGTH OF SPOOL PIECES BEFORE AND AFTER METER BASED ON METER MANUFACTURER'S RECOMMENDATION.

STANDARD CONSTRUCTION DETAIL
2"-10" METER WATER SERVICE W/ BACKFLOW PREVENTER
REV. 12/18
FILE NAME: W10.DWG
DETAIL REF: W-10

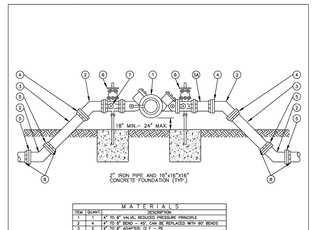


M A T E R I A L S

ITEM	QUANT.	DESCRIPTION
1	1	2" BACKFLOW PREVENTER ASSEMBLY
2	2	2" X NON. NIPPLES – BRASS
3	2	2" X 90° ELBOW – HARD COPPER/BRASS
4	2	2" X NIPPLE RISER – HARD COPPER/BRASS
5	2	2" 90° ELBOW
6	1	1" DIA. COPPER CRIMP OR EQUIVALENT
7	2	TEST COCK
8	2	BALL VALVE

NOTES:
1. ALL 2" AND SMALLER BACKFLOW PREVENTER MUST BE STABILIZED WITH CHANNEL OR NON-CORROSIVE UNI-STRUT OR EQUIVALENT AND APPROPRIATE CLAMPS.
2. DOUBLE CHECK VALVES MAY BE INSTALLED IN UNDERGROUND VAULTS.
3. ALL COMMERCIAL PROPERTIES ARE REQUIRED BY ORDINANCE TO HAVE A BACKFLOW DEVICE. INSTALLED AND ANNUALLY TESTED WITH PASSING RESULTS FORWARDED TO THE CITY PUBLIC UTILITIES DEPARTMENT.
4. FOR FURTHER INFORMATION CONCERNING BACKFLOW PREVENTERS SEE CITY OF PORT ORANGE "MANUAL OF CROSS-CONNECTION CONTROL."
5. ALL DEVICES SHALL BE PAINTED TO COMPLY WITH FLORIDA ADMINISTRATIVE CODE CHAPTER 62-555 AND THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION CROSS-CONNECTION CONTROL PROGRAM. BLUE FOR DOMESTIC WATER, PURPLE FOR RECLAIMED WATER AND RED FOR FIRE LINE.

STANDARD CONSTRUCTION DETAIL
2" BACKFLOW PREVENTER
DOUBLE CHECK OR REDUCED PRESSURE
REV. 12/18
FILE NAME: W12.DWG
DETAIL REF: W-12



M A T E R I A L S

ITEM	QUANT.	DESCRIPTION
1	1	4" 90 ø" VALVE, WELDED PRESSURE PRINCIPLE
2	4	4" 90 ø" BEND – 45° (WK BE REPLACED WITH 90° BENDS
3	1	4" 90 ø" ADAPTER, O.I.P. – PE
4A	1	4" 90 ø" ADAPTER, O.I.P. – PE (OPT.)
5	1	4" 90 ø" ADAPTER FLANGE PVC
6	1	4" 90 ø" ADAPTER FLANGE PVC (SPARE)
7	1	4" 90 ø" VALVE, GATE, FL-F-F
8	2	4" 90 ø" STEM
9	2	4x4 90° OR 90° MEGALUG OR RESTRAINED JOINT

NOTES:
1. FIELD ADJUST AND CUT ITEM 3 TO THE PROPER LENGTH.
2. DO NOT INTERCHANGE ITEMS 4 AND 5.
3. TWO BACKFLOW DEVICES ARE REQUIRED BY ORDINANCE TO HAVE A BACKFLOW DEVICE. INSTALLED AND ANNUALLY TESTED WITH PASSING RESULTS FORWARDED TO THE CITY PUBLIC UTILITIES DEPARTMENT.
4. FOR FURTHER INFORMATION CONCERNING BACKFLOW PREVENTERS SEE CITY OF PORT ORANGE "MANUAL OF CROSS-CONNECTION CONTROL."
5. ALL DEVICES SHALL BE PAINTED TO COMPLY WITH FLORIDA ADMINISTRATIVE CODE CHAPTER 62-555 AND THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION CROSS-CONNECTION CONTROL PROGRAM. BLUE FOR DOMESTIC WATER, PURPLE FOR RECLAIMED WATER AND RED FOR FIRE LINE.

STANDARD CONSTRUCTION DETAIL
4"-8" BACKFLOW PREVENTER
REDUCED PRESSURE
REV. 12/18
FILE NAME: W13.DWG
DETAIL REF: W-13

NOTES:
1. TAPPING OF MAINS SHALL BE PERFORMED BY THE CITY AND BILLED IN ACCORDANCE WITH THE ADOPTED FEE RESOLUTION. ALL MATERIALS TO BE PROVIDED BY DEVELOPER/CONTRACTOR.
2. EXCAVATIONS FOR TAPPING WORK TO BE SAFE, SECURE AND DRY, WITH 6" THICK (MIN.) LAYER OF #57 STONE AT BOTTOM.
3. CITY ALLOWS ONLY 1", 2", 4", 6", 8", 10" AND 12" TAPS.
4. REQUIRED RESTRAINED JOINTS TO BE INSTALLED – THRUST BLOCKS ARE NOT PERMITTED.
5. EPOXY COATED STEEL, STAINLESS STEEL SLEEVES WITH 316 STAINLESS STEEL BOLTS ARE PERMITTED FOR ALL TYPES OF PIPE MATERIALS.
6. ALL VALVES 2" OR GREATER SHALL BE GATE VALVES. CORPORATION STOPS ALLOWED ON BLOW-OFFS ONLY.

STANDARD CONSTRUCTION DETAIL
TAPPING VALVE AND SLEEVE
REV. 12/18
FILE NAME: W15.DWG
DETAIL REF: W-15

STANDARD CONSTRUCTION DETAIL
POTABLE WATER
BLOW-OFF ASSEMBLY
REV. 12/18
FILE NAME: W18.DWG
DETAIL REF: W-18

NOTES:
1. HYDRANTS SHALL BE BREAK AWAY TYPE WITH PUMPER NOZZLE FACING STREET.
2. HYDRANTS SHALL BE NON-DRAINING TYPE.
3. HYDRANTS TO BE PAINTED EMERGENCY YELLOW AT MANUFACTURE–EPOXY OR POLYURETHANE.
4. ADJUSTABLE TRENCH ADAPTOR ASSEMBLY REQUIRED FOR ALL VALVES GREATER THAN 36" DEEP.
5. ALL VALVES 2" OR GREATER SHALL BE GATE VALVES. CORPORATION STOPS ON BLOW-OFFS ONLY.
6. ALL OUTSIDE HEX NUTS, BOLTS AND HARDWARES (EXCEPT MECHANICAL BOLTS SUCH AS "T" BOLTS) SHALL BE MINIMUM 316 STAINLESS STEEL GRADE.
7. THE INTERNAL UPPER AND LOWER STEM SHALL BE MINIMUM 304 STAINLESS STEEL GRADE.

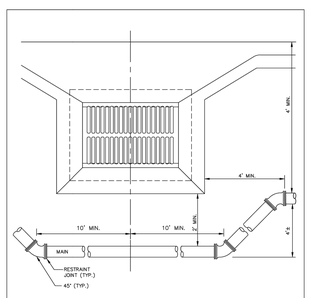
STANDARD CONSTRUCTION DETAIL
FIRE HYDRANT ASSEMBLY
REV. 12/18
FILE NAME: W21.DWG
DETAIL REF: W-20

NOTE:
1. CONTINUOUS No. 10 COPPERHEAD TRACER WIRE TO BE INSTALLED WITH ALL PIPE. WIRE SHALL BE BROUGHT UP TO GRADE AT ALL VALVES.
2. ALL TRACER WIRES SHALL BE INTERCONNECTED WITH WATER-PROOF WIRE NUT CAP OR WITH SIMILAR APPROVED METHOD AT ALL TEES, VALVES, AND OTHER APPURTENANCES SHOWN OR NOTED.
3. A SUCCESSFUL CONTINUITY TEST SHALL BE CONDUCTED AND WITNESSED BY A CITY INSPECTOR AT THE COMPLETION OF TRACER WIRE INSTALLATION.

STANDARD CONSTRUCTION DETAIL
POTABLE WATER LOCATOR TAPE / TRACER WIRE INSTALLATION
REV. 12/18
FILE NAME: W21.DWG
DETAIL REF: W-21

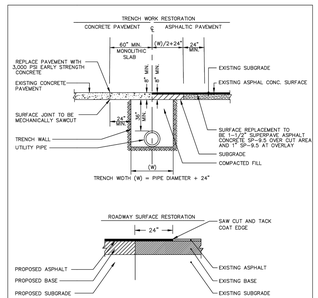
NOTES:
1. LOWERING OF EXISTING POTABLE WATER OR SANITARY SEWER FORCE MAIN BY DEFLECTION METHOD ACCEPTABLE IF FIELD CONDITIONS PERMIT.
2. LENGTH OF SECTION BASED ON MINIMUM LENGTH AS DETERMINED BY DIPRA RESTRAINED JOINT MANUAL.
3. INSTALL RESTRAINED JOINTS, AS REQUIRED, FROM DEFLECTION POINT IN BOTH DIRECTIONS.
4. CONCRETE ENCASEMENT OF SANITARY SEWER MAINS IS AN ALTERNATIVE METHOD OF ADDRESSING A CONFLICT. USE OF ENCASEMENT MUST BE APPROVED BY THE CITY.

STANDARD CONSTRUCTION DETAIL
POTABLE WATER OR SANITARY SEWER
FORCE MAIN DEFLECTION
REV. 12/18
FILE NAME: W23.DWG
DETAIL REF: W-23



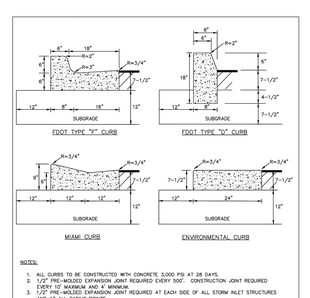
NOTES:
1. PIPE TO BE DEFLECTED AROUND A DRAINAGE INLET SHALL BE RESTRAINED IN ACCORDANCE WITH DIPRA (LATEST EDITION). RESTRAINT GUIDELINES TO BE ADAPTED TO PVC PIPE AS NECESSARY.

STANDARD CONSTRUCTION DETAIL
MAIN INSTALLATION BETWEEN DRAINAGE INLET AND SIDEWALK
REV. 12/18
FILE NAME: W24.DWG
DETAIL REF: W-24



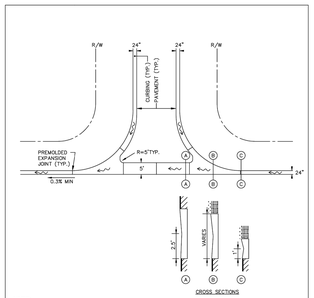
NOTES:
1. PAVING REPLACEMENT SHALL INCLUDE RAISING ALL MANHOLE FRAMES/LIDS AND VALVE BOXES/LIDS, AND SIMILAR APPURTENANCES, TO FINAL ELEVATION PRIOR TO RESURFACING.
2. REPLACEMENT BASE MATERIAL TO BE LIMEROCK OR RECYCLED CONCRETE. BASE AND ANY SUBBASE TO BE COMPACTED TO 98% DENSITY BASED ON AASHTO T-180 MODIFIED PROCTOR TEST.
3. IN AREAS WHERE CONCRETE PAVEMENT IS TO BE UTILIZED, AREA MUST REMAIN FREE OF VEHICULAR TRAFFIC FOR A MINIMUM OF 3 DAYS.

STANDARD CONSTRUCTION DETAIL
PAVEMENT RESTORATION
REV. 12/18
FILE NAME: R13.DWG
DETAIL REF: R-13



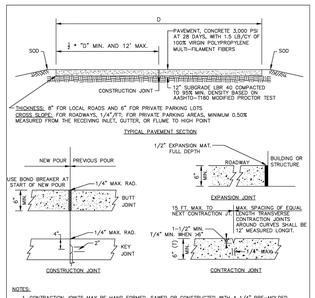
NOTES:
1. ALL CURBS TO BE CONSTRUCTED WITH CONCRETE 3,000 PSI AT 28 DAYS.
2. 1/2" PRE-MOLDED EXPANSION JOINT REQUIRED EVERY 500'. CONSTRUCTION JOINT REQUIRED EVERY 10' MAXIMUM AND 4' MINIMUM.
3. 1/2" PRE-MOLDED EXPANSION JOINT REQUIRED AT EACH SIDE OF ALL STORM INLET STRUCTURES AND AT ALL POINTS OF TANGENCY.
4. 12" LIMS SUBGRADE TO BE STABILIZED TO A MINIMUM LBR 40 AND COMPACTED TO 98% DENSITY BASED ON AASHTO T-180 MODIFIED PROCTOR TEST.
5. EXPANSION JOINT MATERIAL MUST COVER THE ENTIRE CROSS SECTION OF CURB.
6. HEADER-TYPE CURBS INSTALLED DIRECTLY ON TOP OF PAVEMENT (EXTRUDED CURBS) ARE NOT PERMITTED.
7. ALL ASPHALT AND/OR PAVER DRIVEWAY APRONS LOCATED IN PUBLIC R/W SHALL INCLUDE CURBING.

STANDARD CONSTRUCTION DETAIL
STANDARD CURB CONSTRUCTION
REV. 12/18
FILE NAME: R11.DWG
DETAIL REF: R-11



NOTES:
1. VALLEY GUTTER TO HAVE A MINIMUM LONGITUDINAL SLOPE OF 0.3%
2. VALLEY GUTTER TO BE CONSTRUCTED WITH CONCRETE 3,000 PSI AT 28 DAYS.
3. 12" SUBGRADE TO BE STABILIZED TO MINIMUM LBR 40 AND COMPACTED TO 98% DENSITY BASED ON AASHTO T-180 MODIFIED PROCTOR TEST.
4. VALLEY GUTTERS ARE REQUIRED WHEN STORMWATER CROSSES THE INTERSECTION OF ROADWAYS AND COMMERCIAL DRIVEWAYS.

STANDARD CONSTRUCTION DETAIL
ROADWAY INTERSECTION VALLEY GUTTER
REV. 12/18
FILE NAME: R12.DWG
DETAIL REF: R-12



NOTES:
1. CONTRACTION JOINTS MAY BE HAND FORMED, SAWED OR CONSTRUCTED WITH A 1/4" PRE-MOLDED FILLER JOINT. JOINTS MUST BE SAWED BETWEEN 4 AND 18 HOURS AFTER CONCRETE HAS BEEN PLACED.
2. EXPANSION JOINTS TO BE PLACED BETWEEN STRUCTURE AND CURB AND AT ANY PERMANENT STRUCTURE ABUTTING OR WITHIN THE PAVED AREA, INCLUDING SIDEWALKS. USE OF WOOD IS NOT ACCEPTABLE.
3. FINAL DETERMINATION OF CONSTRUCTION JOINT SELECTION AND APPLICATION SHALL BE MADE BY THE ENGINEER OF RECORD BASED ON PROJECT REQUIREMENTS AND LOCATION.
4. CONSTRUCTION JOINTS WITHIN THE SLAB AREA SHOULD NOT CONTAIN PRE-MOLDED EXPANSION JOINT FILLER.
5. CONCRETE PAVEMENT CONSTRUCTION SHALL BE IN ACCORDANCE WITH ACI PUBLICATION 330R-87.

STANDARD CONSTRUCTION DETAIL
CONCRETE PAVEMENT DETAILS
REV. 12/18
FILE NAME: R14.DWG
DETAIL REF: R-14

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CIVIL ENGINEERING
LANDSCAPE ARCHITECTURE
ENVIRONMENTAL
PLANNING
TRANSPORTATION
LC# 4170

NO	DATE	BY	SUBMITTALS / REVISIONS
1	08-25-22	BB/SM	SUBMITTAL TO CITY OF PORT ORANGE/SJRWMD
2	12-15-23	BB/SM	REVISED PER CITY OF PORT ORANGE AND SJRWMD COMMENTS (10-28-23 & 9-20-23)
3	03-04-24	BB/SM	FINAL SUBMITTAL TO CITY OF PORT ORANGE/SJRWMD (SJRWMD ISSUED 02-08-24)
4	09-30-24	BB/SM	REVISED PER ARCH-ITECTURAL PLANS UPDATES

PORT ORANGE PUBLIC UTILITIES FIELD OPS FACILITY
FINAL ENGINEERING PLANS
CONSTRUCTION DETAILS
CITY OF PORT ORANGE VOLUSIA COUNTY, FLORIDA

PROJECT NO: ZC 20035
DESIGNED BY: SM
DRAFTED BY: SM
CHECKED BY: BB
DRAWING FILE: 10-14_20035_DET

ROBERT J. BALL, P.E. NO. 60001

ROBERT J. BALL, P.E. NO. 60001
NOT VALID WITHOUT SEAL

SHEET: C11 OF 15

REVISIONS		
MARK	DESCRIPTION	DATE

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE
PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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www.schenkelshultz.com
834 N. Orange Avenue,
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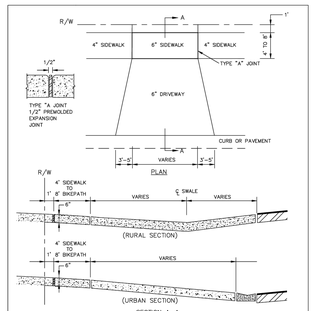
COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
DRAWN BY: SM

CONSTRUCTION DETAILS

C11

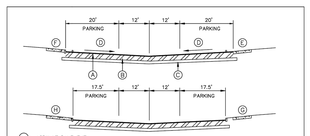
PERMIT/BID DOCUMENTS

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NOTES:
1. DRIVEWAY APRON BASE TO BE COMPACTED AND TESTED TO 98% DENSITY WITH MINIMUM LBR 40 BASED ON AASHTO T-180 MODIFIED PROCTOR TEST.
2. DRIVEWAY APRON CONCRETE – 2,500 PSI AT 28 DAY.

STANDARD CONSTRUCTION DETAIL
DRIVEWAY APRON
REV. 12/18
FILE NAME: R16.DWG
DETAIL REF: R-16



Ⓐ ASPHALT PAVEMENT:
1-1/2" SUPERPAVE ASPHALT CONCRETE TYPE SP-9.5, MINIMUM MARSHALL FIELD STABILITY 1500, COMPACTED TO 98% DENSITY PER FM 1-T238 (METHOD B); NUCLEAR DENSITY TEST, "BACK SCATTER METHOD" AND/OR MINIMUM 90 PERCENT MAXIMUM VOIDLESS SPECIFIC GRAVITY

Ⓑ BASE:
6" LIMEROCK (LBR 100) OR CRUSHED CONCRETE (LBR 130) COMPACTED TO MINIMUM 98% DENSITY BASED ON AASHTO T-180 MODIFIED PROCTOR TEST

NOTE: RECYCLED CONCRETE OR LIMEROCK FOR BASE OR SUBBASE APPLICATIONS SHALL BE ALLOWED ON PARKING AREAS ONLY WHERE THE LOWEST ELEVATION OF THE PARKING SUBGRADE IS A MINIMUM OF 6" ABOVE THE SEASONAL HIGH GROUNDWATER TABLE AS CERTIFIED BY A FLORIDA LICENSED PROFESSIONAL SOILS ENGINEER AND SUBSEQUENTLY APPROVED FOR BY THE CITY. IN AREAS NOT MEETING THESE STANDARDS, A SOIL CEMENT BASE WILL BE REQUIRED.

Ⓒ SUBGRADE:
STABILIZED TO MINIMUM LBR 40 AS SPECIFIED BY FDOT REQUIREMENTS FOR TYPE B STABILIZED SUBGRADE AND COMPACTED TO 98% DENSITY BASED ON MODIFIED PROCTOR MAXIMUM DRY TEST PER AASHTO T-180

Ⓓ THE MINIMUM ALLOWABLE PARKING LOT PAVEMENT SLOPE FOR ASPHALT SHALL BE NO LESS THAN 0.75% MEASURED FROM THE RECEIVING INLET OR FLUME TO HIGH POINT). THE MINIMUM SLOPE MAY BE REDUCED TO 0.50% FOR CONCRETE PAVEMENT

Ⓔ 4" MIN. FLUSH SIDEWALK, CONCRETE 2,500 PSI AT 28 DAYS, WHEEL STOP FACE AT 2' FROM SIDEWALK EDGE

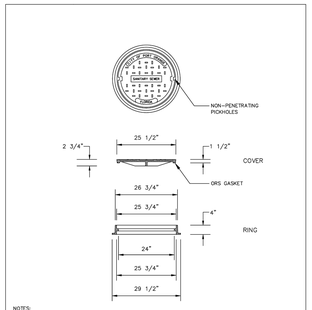
Ⓕ 4" MIN. RAISED SIDEWALK, CONCRETE 2,500 PSI AT 28 DAYS, WHEEL STOP FACE AT 2' FROM SIDEWALK EDGE

Ⓖ 4" MIN. RAISED SIDEWALK, CONCRETE 2,500 PSI AT 28 DAYS, NO WHEEL STOP, CURB FACE AT 2' FROM SIDEWALK EDGE, GRASS/GROUND COVER (NOT MULCH) BETWEEN CURB AND SIDEWALK

Ⓗ 7" MIN. RAISED SIDEWALK FROM FACE OF CURB, CONCRETE 2,500 PSI AT 28 DAYS, NO WHEEL STOP

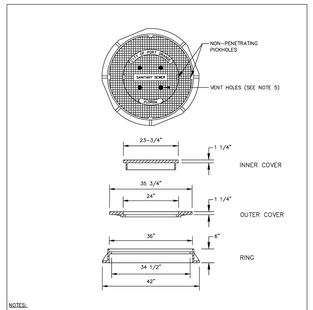
NOTES:
1. ALL MATERIALS ARE TO BE APPROVED BY THE CITY'S ENGINEER AND THE DEVELOPER'S LICENSED SOILS ENGINEER PRIOR TO PLACEMENT.
2. A REPRESENTATIVE OF A CERTIFIED SOIL LABORATORY SHALL BE PRESENT DURING ALL CONSTRUCTION PHASES UTILIZING A SOIL CEMENT BASE.

STANDARD CONSTRUCTION DETAIL
PRIVATE PARKING LOT
REV. 12/18
FILE NAME: R15.DWG
DETAIL REF: R-15



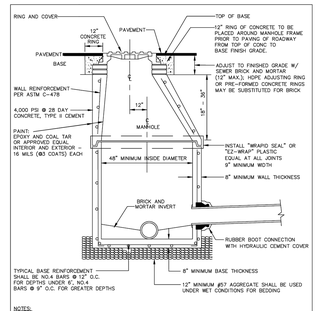
NOTES:
1. COVER – 125 LBS.
2. RING – 90 LBS.
3. MATERIAL: ASTM-A48 GRAY IRON CLASS 35B
4. BL COVER AND USF 117 BASE BY US FOUNDRY & MFG. CORP., OR EQUAL
5. GREASE INTERCEPTOR COVERS TO BE MARKED WITH "GREASE" INSTEAD OF "SANITARY SEWER"

STANDARD CONSTRUCTION DETAIL
SANITARY SEWER MANHOLE SINGLE COVER
REV. 12/18
FILE NAME: S4.DWG
DETAIL REF: S-4



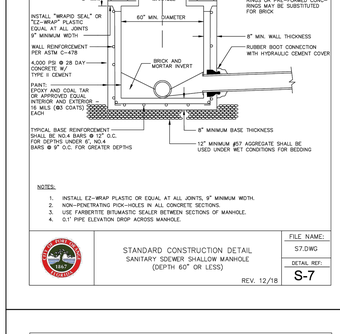
NOTES:
1. OUTER COVER – 220 LBS.
2. INNER COVER – 200 LBS.
3. RING – 170 LBS.
4. MATERIAL: ASTM-A48 GRAY IRON CLASS 35B
5. U.S. FOUNDRY 667–OR RING; OUTER COVER (OR), INNER COVER (BJ), WITH 4 TO 6 1" VENT HOLES AT AIR RELEASE VALVE PIT APPLICATION.

STANDARD CONSTRUCTION DETAIL
SANITARY SEWER MANHOLE DOUBLE COVER
REV. 12/18
FILE NAME: S5.DWG
DETAIL REF: S-5



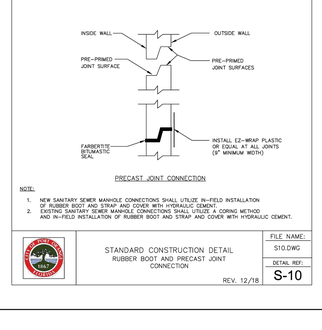
NOTES:
1. ON TRANSITIONS BETWEEN LARGER AND SMALLER DIAMETER SEWER COLLECTORS, THE TOP OF THE INSIDE OF THE TWO SEWER PIPES SHALL BE MATCHED.
2. NON-PENETRATING PICK–HOLES IN ALL CONCRETE SECTIONS.
3. USE FARIBERITE BITUMASTIC SEALER BETWEEN SECTIONS OF MANHOLES.
4. MAXIMUM DEFLECTION TO BE LAID OUT TO MEASURED FROM MANHOLE TOP TO INSIDE BOTTOM.
5. 0.1' PIPE ELEVATION DROP ACROSS MANHOLE.

STANDARD CONSTRUCTION DETAIL
SANITARY SEWER STANDARD MANHOLE
REV. 12/18
FILE NAME: S6.DWG
DETAIL REF: S-6



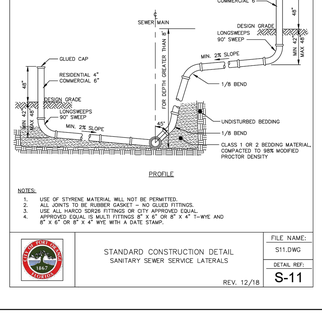
NOTES:
1. INSTALL EZ–WRAP PLASTIC OR EQUAL AT ALL JOINTS, 9" MINIMUM WIDTH.
2. NON–PENETRATING PICK–HOLES IN ALL CONCRETE SECTIONS.
3. USE FARIBERITE BITUMASTIC SEALER BETWEEN SECTIONS OF MANHOLE.
4. 0.1' PIPE ELEVATION DROP ACROSS MANHOLE.

STANDARD CONSTRUCTION DETAIL
SANITARY SEWER SHALLOW MANHOLE (DEPTH 60" OR LESS)
REV. 12/18
FILE NAME: S7.DWG
DETAIL REF: S-7



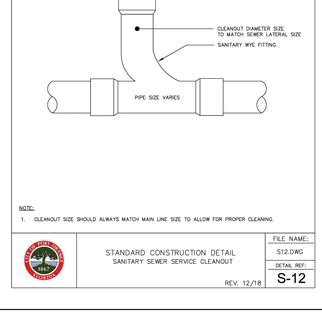
NOTE:
1. NEW SANITARY SEWER MANHOLE CONNECTIONS SHALL UTILIZE IN–FIELD INSTALLATION OF RUBBER BOOT AND STRAP AND COVER WITH HYDRAULIC CEMENT.
2. EXISTING SANITARY SEWER MANHOLE CONNECTIONS SHALL UTILIZE A CORING METHOD AND IN–FIELD INSTALLATION OF RUBBER BOOT AND STRAP AND COVER WITH HYDRAULIC CEMENT.

STANDARD CONSTRUCTION DETAIL
RUBBER BOOT AND PRECAST JOINT CONNECTION
REV. 12/18
FILE NAME: S10.DWG
DETAIL REF: S-10



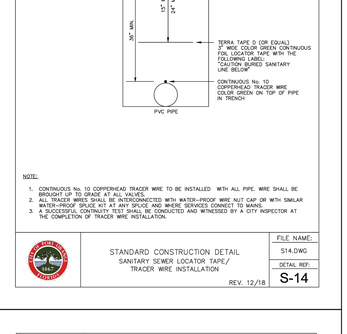
NOTES:
1. USE OF STYRENE MATERIAL WILL NOT BE PERMITTED.
2. ALL JOINTS TO BE RUBBER GASKET – NO GLUED FITTINGS.
3. USE ALL HARCO SDR26 FITTINGS OR CITY APPROVED EQUAL.
4. APPROVED EQUAL IS MULTI FITTINGS 6" X 6" OR 8" X 4" T–WYE AND 6" X 6" OR 8" X 4" WYE WITH A DATE STAMP.

STANDARD CONSTRUCTION DETAIL
SANITARY SEWER SERVICE LATERALS
REV. 12/18
FILE NAME: S11.DWG
DETAIL REF: S-11



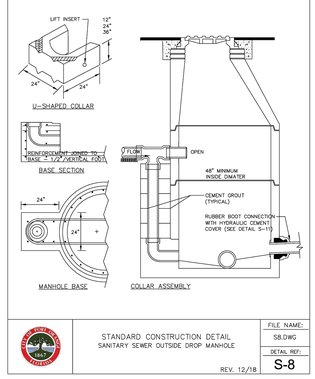
NOTE:
1. CLEANOUT SIZE SHOULD ALWAYS MATCH MAIN LINE SIZE TO ALLOW FOR PROPER CLEANING.

STANDARD CONSTRUCTION DETAIL
SANITARY SEWER SERVICE CLEANOUT
REV. 12/18
FILE NAME: S12.DWG
DETAIL REF: S-12

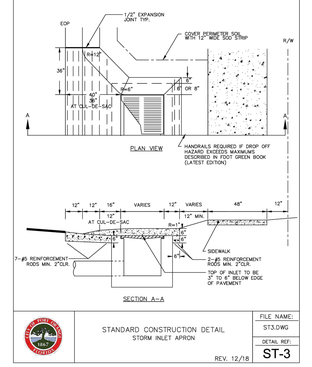


NOTE:
1. CONTINUOUS No. 10 COPPERHEAD TRACER WIRE TO BE INSTALLED WITH ALL PIPE. WIRE SHALL BE BROUGHT UP TO GRADE AT ALL VALVES.
2. ALL TRACER WIRES SHALL BE INTERCONNECTED WITH WATER–PROOF WIRE NUT CAP OR WITH SIMILAR WATER–PROOF SPLICE KIT AT ANY SPLICE AND WHERE SERVICES CONNECT TO MAINS.
3. A SUCCESSFUL CONTINUITY TEST SHALL BE CONDUCTED AND WITNESSED BY A CITY INSPECTOR AT THE COMPLETION OF TRACER WIRE INSTALLATION.

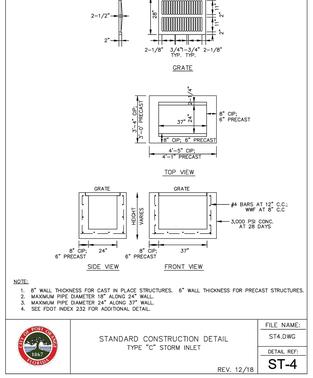
STANDARD CONSTRUCTION DETAIL
SANITARY SEWER LOCATOR TAPE / TRACER WIRE INSTALLATION
REV. 12/18
FILE NAME: S14.DWG
DETAIL REF: S-14



STANDARD CONSTRUCTION DETAIL
SANITARY SEWER OUTSIDE DROP MANHOLE
REV. 12/18
FILE NAME: S8.DWG
DETAIL REF: S-8

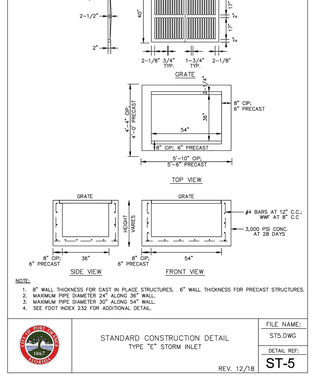


STANDARD CONSTRUCTION DETAIL
STORM INLET APRON
REV. 12/18
FILE NAME: ST3.DWG
DETAIL REF: ST-3



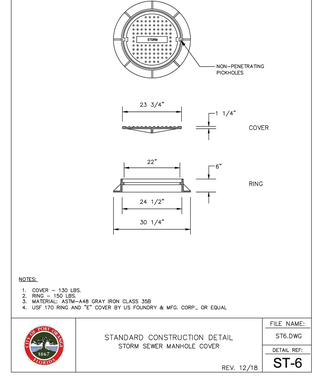
NOTE:
1. 6" WALL THICKNESS FOR CAST IN PLACE STRUCTURES. 6" WALL THICKNESS FOR PRECAST STRUCTURES.
2. MAXIMUM PIPE DIAMETER 18" ALONG 24" WALL.
3. MAXIMUM PIPE DIAMETER 24" ALONG 37" WALL.
4. SEE FDOT INDEX 232 FOR ADDITIONAL DETAIL.

STANDARD CONSTRUCTION DETAIL
TYPE "C" STORM INLET
REV. 12/18
FILE NAME: ST4.DWG
DETAIL REF: ST-4



NOTE:
1. 6" WALL THICKNESS FOR CAST IN PLACE STRUCTURES. 6" WALL THICKNESS FOR PRECAST STRUCTURES.
2. MAXIMUM PIPE DIAMETER 24" ALONG 36" WALL.
3. MAXIMUM PIPE DIAMETER 30" ALONG 54" WALL.
4. SEE FDOT INDEX 232 FOR ADDITIONAL DETAIL.

STANDARD CONSTRUCTION DETAIL
TYPE "E" STORM INLET
REV. 12/18
FILE NAME: ST5.DWG
DETAIL REF: ST-5



NOTES:
1. COVER – 130 LBS.
2. RING – 150 LBS.
3. MATERIAL: ASTM–A48 GRAY IRON CLASS 35B
4. USF 170 RING AND "E" COVER BY US FOUNDRY & MFG. CORP., OR EQUAL

STANDARD CONSTRUCTION DETAIL
STORM SEWER MANHOLE COVER
REV. 12/18
FILE NAME: ST6.DWG
DETAIL REF: ST-6

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CIVIL ENGINEERING
LANDSCAPE ARCHITECTURE
ENVIRONMENTAL
PLANNING
TRANSPORTATION
LC# 4610

NO	DATE	BY	SUBMITTALS / REVISIONS
1	08-22-22	BB/SM	SUBMITTAL TO CITY OF PORT ORANGE/SURVMD
2	12-15-22	BB/SM	REVISED PER CITY OF PORT ORANGE AND SURVMD COMMENTS (12-28-22 & 1-20-22)
3	05-24-23	BB/SM	REVISED PER CITY OF PORT ORANGE COMMENTS (5-24-23 DATED 02-08-23
4	09-04-24	BB/SM	REVISED PER ARCHITECTURAL PLAN UPDATES

PORT ORANGE PUBLIC UTILITIES FIELD OPS FACILITY
FINAL ENGINEERING PLANS
CONSTRUCTION DETAILS

VOLUSIA COUNTY, FLORIDA
CITY OF PORT ORANGE

PROJECT NO: ZC 20035
DESIGNED BY: SM
DRAFTED BY: SM
CHECKED BY: BB
DRAWING FILE: 10-14_20035_DET

ROBERT J. BALL, P.E. NO. 60001
NOT VALID WITHOUT SEAL

SHEET: C12 OF 15

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

SCHENKEL SHULTZ
SS Lic. No. AA-C000937
834 N. Orange Avenue,
Winter Park, FL 32789
voice 407-872-3322
www.schenkelshultz.com
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ZEV COHEN & ASSOCIATES, INC.
300 INTERCHANGE BLVD., STE. C
DAYTONA BEACH, FL 32174
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REVISIONS		
MARK	DESCRIPTION	DATE

SEAL

ROBERT J. BALL, P.E. NO. 60001

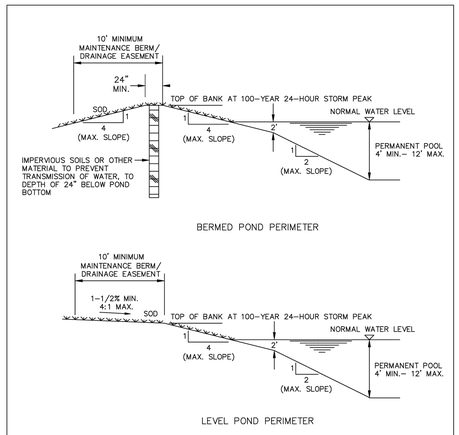
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ISSUE DATE: 09/30/2024
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CONSTRUCTION DETAILS

C12

PERMIT/BID DOCUMENTS

R:\20035 PORT ORANGE PUBLIC WORKS\FINAL ENGINEERING PLANS\CAD\REV\10-14_20035_DET.DWG – PRINTED: 10/1/2024 11:16 AM



NOTES:

1. SOD IS TO BE PLACED TO THE NORMAL WATER LEVEL.
2. A PLANTED LITTORAL ZONE IS NOT PERMISSIBLE FOR SLOPES EXCEEDING 6:1 (HORIZONTAL:VERTICAL).
3. AS AN OPTION TO A LITTORAL ZONE, THE DESIGNER CAN EITHER:
   A) PROVIDE AN ADDITIONAL 50% OF THE PERMANENT POOL VOLUME.
   B) PROVIDE PRETREATMENT OF THE STORMWATER PRIOR TO ENTERING THE WET DETENTION POND.

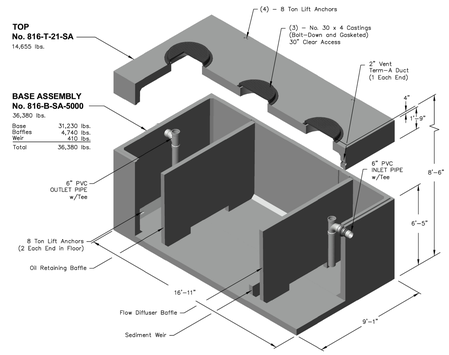
STANDARD CONSTRUCTION DETAIL
WET POND

FILE NAME: ST9.DWG

DETAIL REF: ST-9

REV. 12/18

816-SA-5000



Note:
– Customer is responsible for supplying crane to set and assemble vault.

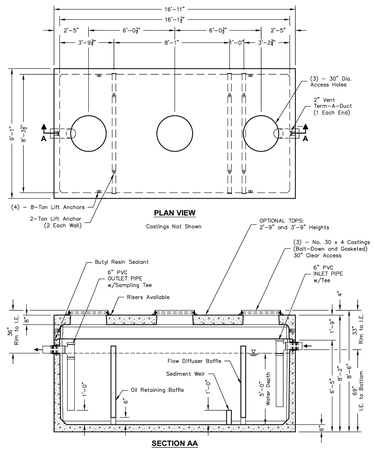
Note: Designed for 0 to 5'–0" of Cover

"IAPMO Listed"

Oldcastle Precast®	816-SA-5000	816-SA-5000 OIL / WATER SEPARATOR 5000 GALLON - API STYLE
PO Box 323, Wilsonville, Oregon 97070-0323	File Name: 020-816SA-5000	
Tel: (503) 682-2844 Fax: (503) 682-2657	Issue Date: 2016	
	oldcastleprecast.com/wilsonville	

18.0

816-SA-5000



Notes:
– Designed in accordance with ASTM C 890 for AASHTO HS20–44 vehicle loading
– Flow Rate 333 GPM based on 15 min. retention time.
– Manufacturer's recommendations:
  1.) Ventilate each end to open atmosphere.
  2.) Prior to "Start Up" of System, fill with clean water to bottom of outlet pipe (approx. one foot deep). For best results, fill to flow line.
  3.) Follow Regular Inspection, Cleaning, & Maintenance Schedule (See Clean Out & Maintenance).

Oldcastle Precast®	816-SA-5000	816-SA-5000 OIL / WATER SEPARATOR 5000 GALLON - API STYLE
PO Box 323, Wilsonville, Oregon 97070-0323	File Name: 020-816SA-5000	
Tel: (503) 682-2844 Fax: (503) 682-2657	Issue Date: 2016	
	oldcastleprecast.com/wilsonville	

18.1

ACO DRAIN

Type 678Q Longitudinal ductile iron grate (ADA)



Product Features

- Certified to EN 1433 Load Class C - 56,000 lbs - 968 psi
- Uses 'QuickLok' boltless locking system
- Suitable for use with K200, KS200, H200K-13, and H200KS-13 channels
- Manufactured from ductile iron to ASTM A 536-84 - Grade 65-45-12
- E- coated for improved resistance against rust
- Complies with ADA - American Disabilities Act of 1990 Section 4.5.4
- Complies with ASME: A112.6.3 - 2001: Section 7.12 Heel Resistant Strainers and Grates
- Bicycle Tire Penetration Resistant to AS 3996 - 2006

Specifications

General
The surface drainage system shall be ACO Drain K200, KS200, H200K-13, and H200KS-13, channels* complete with ACO Type 678Q longitudinal ductile iron grate with 'QuickLok' locking as manufactured by ACO Polymer Products, Inc. or similar approved.

Materials
The covers shall be manufactured from ductile iron and have ***minimum*** properties as follows:

- ***Independently certified to meet Load Class C to EN 1433 - 56,000 lbs - 968 psi***
- ***Ductile iron to ASTM A 536-84 - Grade 65-45-12***
- ***Intake area of 60.6 sq. in. (390.97 cm²) per half meter of grate***

The overall width of 9.41" (239mm) and overall length of 19.69" (500mm). Slots measure at a maximum of 0.24" (6mm) by 1.73" (44mm).

Installation
The trench drain system and grates shall be installed in accordance with the manufacturer's installation instructions and recommendations.

* delete as appropriate

ACO Specification Information

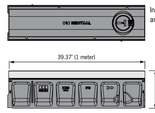
June 2016

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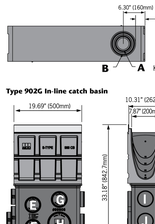
ACO DRAIN

KlassikDrain - K200 Galvanized steel edge rail channel system

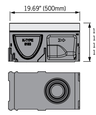
One meter channel



Inside view of channel - showing channel ID number and knockout if applicable (every 5th channel)



Half meter channel



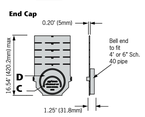
Type 902G in-line catch basin

Outlet flow rates

Outlet	Product	Outlet size (Sch. 40)	Invert Depth	GPM	CFS
A	Bottom outlet - K2-00	4" round	7.87"	153	0.34
A	Bottom outlet - K2-040	4" round	15.75"	216	0.48
B	Bottom outlet - K2-00	6" round	7.87"	344	0.77
B	Bottom outlet - K2-040	6" round	15.75"	486	1.08
C	End outlet - K2-00	4" round	7.87"	132	0.29
C	End outlet - K2-40	4" round	15.75"	202	0.45
D	End outlet - K2-10	6" round	9.84"	320	0.71
D	End outlet - K2-40	6" round	15.75"	437	0.97
E	Type K2-902G	4" round	25.32"	261	0.59
F	Type K2-902G	4" round	31.83"	297	0.66
G	Type K2-902G	4" round	23.76"	254	0.57
H	Type K2-902G	6" round	31.83"	658	1.47
I	Type K2-902G	4" round	23.91"	255	0.57
J	Type K2-902G	4" round	30.40"	290	0.65
K	Type K2-902G	6" round	24.68"	570	1.27
L	Type K2-902G	4" round	24.13"	256	0.57
M	Type K2-902G	6" round	31.82"	658	1.47
N	Type K2-902G	4" round	31.26"	294	0.66
O	Type K2-902G	6" round	31.26"	651	1.45
P	Type K2-902G	8" round	31.82"	1149	2.56
Q	Type K2-902G	4" round	30.32"	640	1.43
R	Type K2-902G	4" round	23.19"	251	0.56
S	Type K2-902G	4" round	29.90"	288	0.64

Note: These are the pipe flow rates at the specified outlet, **NOT** channel flow rates. "Catch basin flow rates are without trash bucket - using trash bucket reduces flow.

End Cap



ACO Specification Information

Jan 15/1

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ACO DRAIN

KlassikDrain - K200 Galvanized steel edge rail channel system

Description	Part No.	Invert inches²	Invert mm²	Wgt Lbs.
K2-00 Neutral channel - 39.37" (1m)[2]	**75041**	**7.87**	**200**	**83.6**
K2-1 Sloped channel - 39.37" (1m)	75001	8.07	205	83.6
K2-2 Sloped channel - 39.37" (1m)	75002	8.27	210	84.7
K2-3 Sloped channel - 39.37" (1m)	75003	8.46	215	85.8
K2-4 Sloped channel - 39.37" (1m)	75004	8.66	220	86.9
K2-5 Sloped channel - 39.37" (1m)[1]	75005	8.86	225	88.0
K2-6 Sloped channel - 39.37" (1m)	75006	9.06	230	89.1
K2-7 Sloped channel - 39.37" (1m)	75007	9.25	235	90.2
K2-8 Sloped channel - 39.37" (1m)	75008	9.45	240	91.3
K2-9 Sloped channel - 39.37" (1m)	75009	9.65	245	92.4
K2-10 Sloped channel - 39.37" (1m)[2]	75010	9.84	250	93.5
K2-010 Neutral channel - 39.37" (1m)[2]	**75043**	**9.84**	**250**	**93.5**
K2-0103 Neutral channel - 19.69" (0.5m)[2]	**75044**	**9.84**	**250**	**56.0**
K2-11 Sloped channel - 39.37" (1m)	75011	10.04	255	94.6
K2-12 Sloped channel - 39.37" (1m)	75012	10.24	260	95.7
K2-13 Sloped channel - 39.37" (1m)	75013	10.43	265	96.8
K2-14 Sloped channel - 39.37" (1m)	75014	10.63	270	97.9
K2-15 Sloped channel - 39.37" (1m)[2]	75015	10.83	275	99.0
K2-16 Sloped channel - 39.37" (1m)	75016	11.02	280	100.1
K2-17 Sloped channel - 39.37" (1m)	75017	11.22	285	101.2
K2-18 Sloped channel - 39.37" (1m)	75018	11.41	290	102.3
K2-19 Sloped channel - 39.37" (1m)	75019	11.61	295	103.4
K2-20 Sloped channel - 39.37" (1m)[2]	75020	11.81	300	104.5
K2-020 Neutral channel - 39.37" (1m)[2]	**75045**	**11.81**	**300**	**104.5**
K2-0203 Neutral channel - 19.69" (0.5m)[2]	**75046**	**11.81**	**300**	**64.0**
K2-21 Sloped channel - 39.37" (1m)	75021	12.01	305	105.6
K2-22 Sloped channel - 39.37" (1m)	75022	12.20	310	106.7
K2-23 Sloped channel - 39.37" (1m)	75023	12.40	315	107.8
K2-24 Sloped channel - 39.37" (1m)	75024	12.60	320	108.9
K2-25 Sloped channel - 39.37" (1m)[2]	75025	12.80	325	110.0
K2-26 Sloped channel - 39.37" (1m)	75026	12.99	330	111.1
K2-27 Sloped channel - 39.37" (1m)	75027	13.19	335	112.2

Description	Part No.	Invert inches²	Invert mm²	Wgt Lbs.
K2-28 Sloped channel - 39.37" (1m)	75028	13.39	340	113.3
K2-29 Sloped channel - 39.37" (1m)	75029	13.58	345	114.4
K2-30 Sloped channel - 39.37" (1m)[2]	75030	13.78	350	115.5
K2-030 Neutral channel - 39.37" (1m)[2]	**75047**	**13.78**	**350**	**115.5**
K2-0303 Neutral channel - 19.69" (0.5m)[2]	**75048**	**13.78**	**350**	**68.0**
K2-31 Sloped channel - 39.37" (1m)	75031	13.98	355	116.6
K2-32 Sloped channel - 39.37" (1m)	75032	14.17	360	117.7
K2-33 Sloped channel - 39.37" (1m)	75033	14.37	365	118.8
K2-34 Sloped channel - 39.37" (1m)	75034	14.57	370	119.9
K2-35 Sloped channel - 39.37" (1m)[2]	75035	14.76	375	121.0
K2-36 Sloped channel - 39.37" (1m)	75036	14.96	380	122.1
K2-37 Sloped channel - 39.37" (1m)	75037	15.16	385	123.2
K2-38 Sloped channel - 39.37" (1m)	75038	15.35	390	124.3
K2-39 Sloped channel - 39.37" (1m)	75039	15.55	395	125.4
K2-40 Sloped channel - 39.37" (1m)[2]	75040	15.75	400	126.5
K2-040 Neutral channel - 39.37" (1m)[2]	**75049**	**15.75**	**400**	**126.5**
K2-0403 Neutral channel - 19.69" (0.5m)[2]	**75050**	**15.75**	**400**	**77.0**
K2-9010 Inline catch basin - 19.69" 0.5m[2]	94611	32.81	833.3	68.0
K2-621G catch basin - 19.69" 0.5m[2]	94620	37.33	948.1	91.0
K2-631G catch basin - 19.69" 0.5m[2]	94633	49.33	1252.9	101.0
K2-Series 600 Optional plastic riser	99902	-	-	10.0
Foul air trap - fits both 900 & 600 series basins	90854	-	-	1.2
Universal end cap	96821	15.71	399	1.4
Debris strainer for 8" bottom knockout	93488	-	-	0.2
K2-Installation device	97478	-	-	2.8
Grate removal tool	01318	-	-	0.3
K2-QuickLok locking bar	10457	-	-	0.5

Notes:
1. This channel offers a bottom knockout feature; 4" & 6" round
2. Inverts shown are for the male end; for female invert depth subtract 5mm (~0.2") from the male invert (except for neutral channels, where it will be same as male invert).
   To calculate the overall channel depth add 25mm (~1.0") to invert depth.
3. This catch basin kit includes a polymer concrete top, removable Quicklok locking bar, trash bucket and plastic base. Select an appropriate grate.
4. This catch basin kit includes a polymer concrete top, removable Quicklok locking bar, deep trash bucket, plastic riser and plastic base. Select an appropriate grate.

Specifications

General
The surface drainage system shall be ACO Drain K200 complete with gratings secured with 'QuickLok' locking as manufactured by ACO Polymer Products, Inc. or approved equal.

Materials
The trench system bodies shall be manufactured from polyester polymer concrete with the minimum properties as follows:

Compressive strength:	14,000 psi
Flexural strength:	4,000 psi
Water absorption	0.07%
Frost proof	YES
Salt proof	YES
Dilute acid and alkali resistant	YES

The nominal clear opening shall be 8" (200mm) with overall width of 10.24" (260mm). Pre-cast units shall be manufactured with either an invert slope of 0.5% or with neutral invert and have a wall thickness of at least 0.50" (13mm). Each unit will feature a partial radius in the trench bottom and a male to female interconnecting end profile. Units shall have horizontal cast in anchoring keys on the outside wall to ensure maximum mechanical bond to the surrounding bedding material and pavement surface. The galvanized steel edge rail will be integrally cast in by the manufacturer to ensure maximum homogeneity between polymer concrete body and edge rail. Each edge rail shall be at least 3/32" (2.5mm) thick.

Grates
Grates shall be specified. See separate ACO Spec. Info grate sheets for details. After removal of grates and 'QuickLok' bar there shall be uninterrupted access to the trench to aid maintenance.

Installation
The trench drain system shall be installed in accordance with the manufacturer's installation instructions and recommendations.

ACO Polymer Products, Inc.

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Chardon, OH 44024
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Fort Mill, SC 29708
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SPEC INFO

ACO Specification Information

Jan 15/1

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CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
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CIVIL ENGINEERING
LANDSCAPE ARCHITECTURE
ENVIRONMENTAL
PLANNING
TRANSPORTATION

LC# 4193

NO	DATE	BY	SUBMITTALS / REVISIONS
1	08-25-22	BB/SM	SUBMITTAL TO CITY OF PORT ORANGE/SJRWMD
2	12-15-23	BB/SM	REVISED PER CITY OF PORT ORANGE AND SJRWMD COMMENTS (12-28-23 & 1-22-24)
3	03-04-24	BB/SM	REVISED PER CITY OF PORT ORANGE COMMENTS DATED 02-08-24
4	09-04-24	BB/SM	REVISED PER ARCHITECTURAL PLANS UPDATES

PORT ORANGE PUBLIC UTILITIES FIELD OPS FACILITY
FINAL ENGINEERING PLANS
CONSTRUCTION DETAILS

VOLUSIA COUNTY, FLORIDA
CITY OF PORT ORANGE

PROJECT NO: ZC 20035
DESIGNED BY: SM
DRAFTED BY: SM
CHECKED BY: BB
DRAWING FILE: 10-14_20035_DET

REVISIONS		
MARK	DESCRIPTION	DATE

SEAL

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COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
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CONSTRUCTION DETAILS

SHEET: C13 OF 15

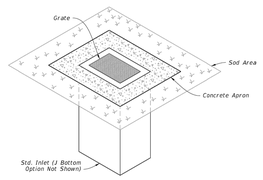
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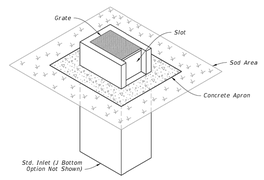
GENERAL NOTES:

1. Work this Index with Index 425-001 and Index 425-010.
2. Chamfer all exposed edges and corners ¾" chamfer or tooled to ½" radius.
3. All reinforcing is Grade 60 bars with 2" minimum. cover unless otherwise noted. Cut or bend bars for 1½" clearance around pipe opening. Provide one additional #4 bar above and at each side of pipe opening.
4. Use Concrete Apron on inlets without slots and inlets with non-traversable slots only when called for in the Plans.
5. Quantities are for informational and estimating purposes only.



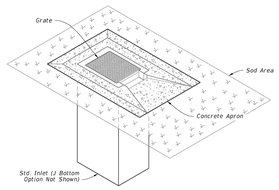
DITCH BOTTOM INLET TYPE C TRAVERSABLE

(Without Slot - Type D, E, and H Similar, Pipe Connection Not Shown)



DITCH BOTTOM INLET TYPE C NON-TRAVERSABLE

(Slot > 7" Shown - Type D, E, and H Similar, Pipe Connection Not Shown)



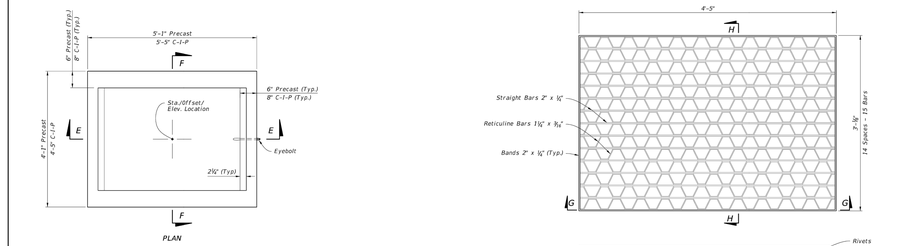
DITCH BOTTOM INLET TYPE C TRAVERSABLE

(Single Slot < 7" Shown, Double Slot, Type D, and E Similar, Pipe Connection Not Shown)

TABLE OF CONTENTS:

Sheet	Description
1	General Notes and Contents
2	Type C - Dimensional, Reinforcing, and Grate Details
3	Type D - Dimensional, Reinforcing, and Grate Details
4	Type E - Dimensional, Reinforcing, and Grate Details
5	Type H (2 & 3 Grate) - Dimensional, Reinforcing, and Steel Grate Details
6	Type H (4 Grate) - Dimensional, Reinforcing, and Steel Grate Details
7	Cast Iron Grate Details
8	Non-Traversable Inlet Details
9	Traversable Inlet Without Slot Details
10	Traversable Inlet With Slot Details
11	Case 1 - Add Traversable Slots to Existing Inlets
12	Case 2 - Add Traversable Slots (Partial) to Existing Inlets
13	Case 3 - Add Traversable Slots (Partial) to Existing Inlets and Ditch Block
14	Alternate A Structure Bottom - Top Slab Details

LAST REVISION 11/01/20	REVISION	DESCRIPTION:	FDOT FY 2022-23 STANDARD PLANS	DITCH BOTTOM INLET TYPE C, D, E, AND H	INDEX 425-052	SHEET 1 of 14



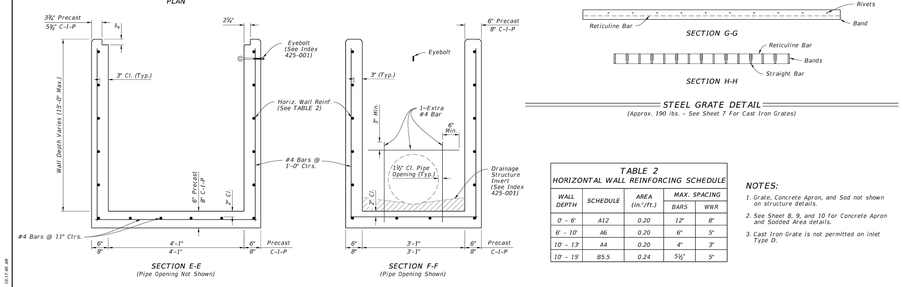


TABLE 2
HORIZONTAL WALL REINFORCING SCHEDULE

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING BARS	MAX. SPACING WWR
0' - 6'	A12	0.20	12"	8"
6' - 10'	A6	0.20	6"	5"
10' - 13'	A4	0.20	4"	3"
10' - 13'	B5.5	0.24	5½"	5"

NOTES:
1. Grate, Concrete Apron, and Sod not shown on structure details.
2. See Sheet 8, 9, and 10 for Concrete Apron and Sodded Area details.
3. Cast Iron Grate is not permitted on inlet Type D.

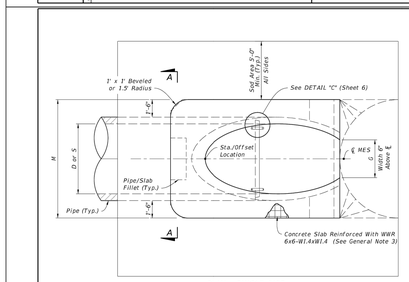
DIMENSIONAL AND REINFORCING DETAILS

TYPE D - DIMENSIONAL, REINFORCING, AND STEEL GRATE DETAILS

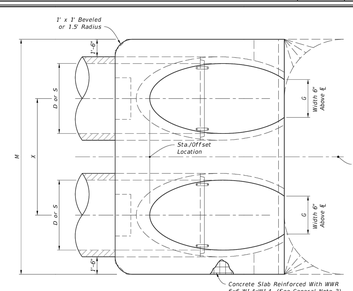
STEEL GRATE DETAIL

(Approx. 190 lbs. - See Sheet 7 For Cast Iron Grates)

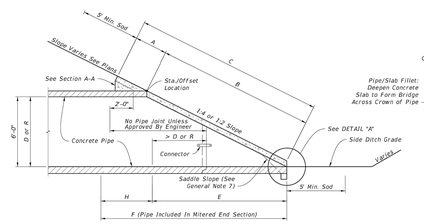
LAST REVISION 11/01/20	REVISION	DESCRIPTION:	FDOT FY 2022-23 STANDARD PLANS	DITCH BOTTOM INLET TYPE C, D, E, AND H	INDEX 425-052	SHEET 3 of 14



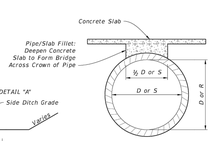
PLAN - SINGLE PIPE



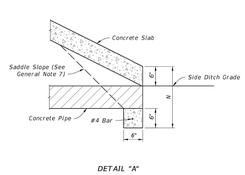
PLAN - MULTIPLE PIPE



ELEVATION



SECTION A-A
(Pipe/Slab Fillet)



DETAIL "A"

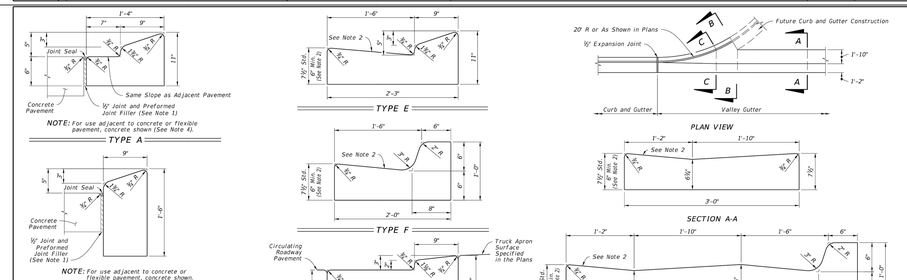
ROUND CONCRETE PIPE

(Elliptical Pipe Similar)

NOTE: See Table 1 on Sheet 3 for Dimensions and Quantities.

SINGLE AND MULTIPLE CONCRETE PIPE

LAST REVISION 11/01/19	REVISION	DESCRIPTION:	FDOT FY 2022-23 STANDARD PLANS	CROSS DRAIN MITERED END SECTION	INDEX 430-021	SHEET 2 of 6



CONCRETE CURB AND GUTTER

LAST REVISION 11/01/21	REVISION	DESCRIPTION:	FDOT FY 2022-23 STANDARD PLANS	CURB AND GUTTER	INDEX 520-001	SHEET 2 of 3

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LC# 4D

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1	08-25-22	BB/SM	SUBMITTAL TO CITY OF PORT ORANGE/SJRWMD
2	12-15-22	BB/SM	REVISED PER CITY OF PORT ORANGE AND SJRWMD COMMENTS (10-28-22 & 9-20-22)
3	03-24-23	BB/SM	REVISED PER CITY OF PORT ORANGE COMMENTS DATED 02-08-23
4	09-04-24	BB/SM	REVISED PER ARCHITECTURAL PLANS UPDATES

PORT ORANGE PUBLIC UTILITIES FIELD OPS FACILITY
FINAL ENGINEERING PLANS
CONSTRUCTION DETAILS

VOLUSIA COUNTY, FLORIDA
CITY OF PORT ORANGE

PROJECT NO: ZC 20035
DESIGNED BY: SM
DRAFTED BY: SM
CHECKED BY: BB
DRAWING FILE: 10-14_20035_DET

ROBERT J. BALL, P.E. NO. 60001
NOT VALID WITHOUT SEAL

SHEET: C14 OF 15

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

SCHENKEL SHULTZ
SS Lic. No. AA-C000937
www.schenkelshultz.com
834 N. Orange Avenue,
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voice 407-872-3322

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REVISIONS		
MARK	DESCRIPTION	DATE

SEAL

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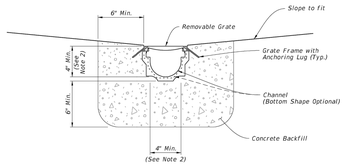
COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
DRAWN BY: SM

CONSTRUCTION DETAILS

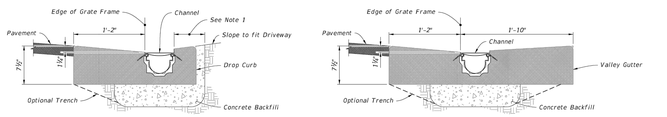
C14

PERMIT/BID DOCUMENTS

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PREFORMED CHANNEL WITH REMOVABLE GRATE



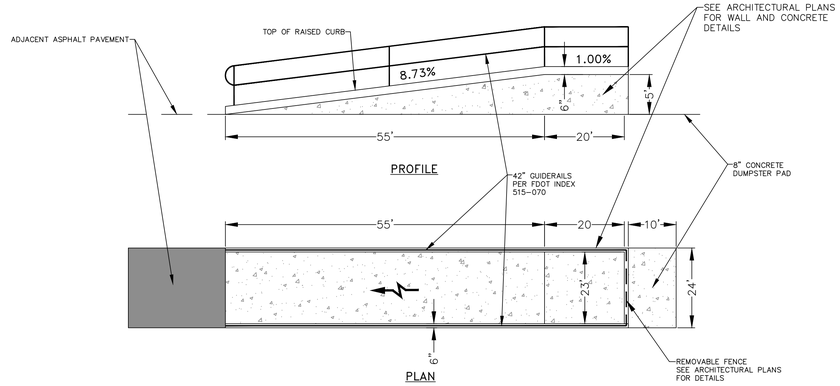
TYPICAL LOCATIONS

NOTES:

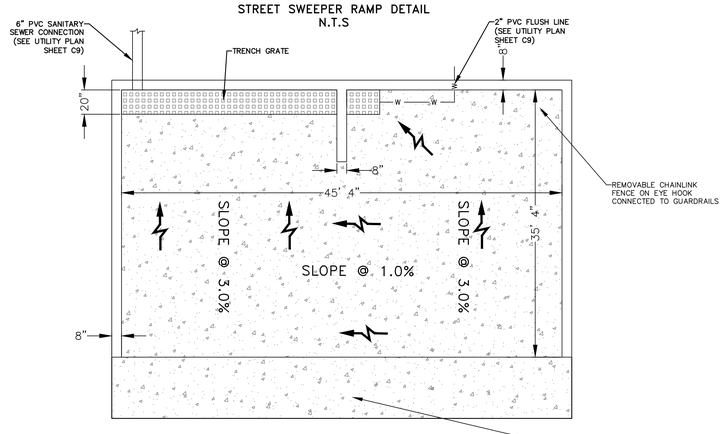
1. Provide minimum 6" of concrete on this side of the drain.
2. 4" Minimum unless otherwise shown in Plans.

TYPE II - REMOVABLE GRATE

LAST REVISION	DESCRIPTION:	FDOT FY 2022-23 STANDARD PLANS	TRENCH DRAIN	INDEX	SHEET
11/01/19				436-001	3 of 3

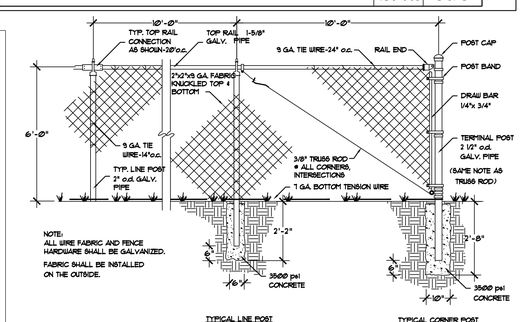


STREET SWEEPER RAMP DETAIL
N.T.S



VACUUM TRUCK WASH DOWN PIT DETAIL
N.T.S

NOTES:
1. CONTRACTOR TO COORDINATE WITH ENGINEER AND CITY AFTER STAKING AND PRIOR TO POURING TO CONFIRM DESIRED GRADES AND SLOPE



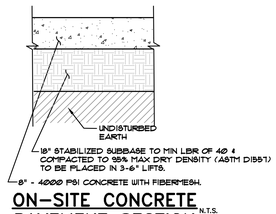
NOTE:
ALL WIRE FABRIC AND FENCE HARDWARE SHALL BE GALVANIZED.
FABRIC SHALL BE INSTALLED ON THE OUTSIDE.

1 CHAIN LINK FENCE DETAIL

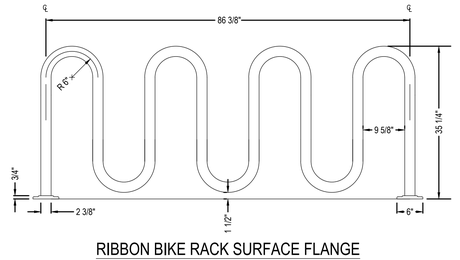
SCALE: N.T.S.

NOTES:

1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 (PCI) PSI AT 28 DAYS. CONFORMANCE TO STRENGTH REQUIREMENTS SHALL BE DETERMINED BY ACI STANDARD 318, LATEST EDITION, SECTIONS 4.8.2.3 AND 4.8.3.
2. CONTRACTOR SHALL FURNISH A JOINTING PLAN TO ENGINEER FOR REVIEW BEFORE CONCRETE COMMENCES.



ON-SITE CONCRETE PAVEMENT SECTION N.T.S.



RIBBON BIKE RACK SURFACE FLANGE MOUNT
9 BIKE CAPACITY
CONTRACTOR TO VERIFY COLOR IS CONSISTENT WITH THE REST OF THE DEVELOPMENT

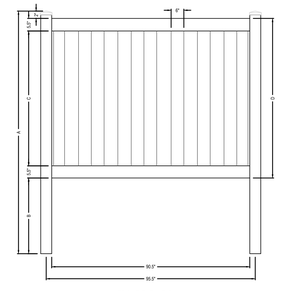
ILLUSIONS VINYL FENCE
MEDFORD, NY 11763
www.illusionsfence.com
TOLL FREE: 1-800-339-3362

SELECT DESIRED POST CAP MODEL

- FRENCH GOTHIC - V55FG
- TEARDROP - V55TD
- COACHMAN - V55CM
- BALL - V55BC
- SOLAR - V55P
- SOLAR - V55O
- NEW ENGLAND - V55NE
- FLAT - V55FO

SELECT DESIRED POST OPTIONS:

- 5" X 5" - .140 WALL
- 5" X 5" H.D. - .250 WALL
- MAJESTIC ™ 8" X 8" - .250 WALL



FRONT ELEVATION

A		B		C		D	
H/FT	INCHES	H/FT	INCHES	H/FT	INCHES	H/FT	INCHES
3	60	3	22	3	25	3	36
4	84	4	34	4	37	4	48
5	96	5	34	5	49	5	60
6	108	6	34	6	61	6	72

NOTES:
1. ALL ILLUSIONS VINYL FENCES ARE ASTM F964-09 COMPLIANT
2. AVAILABLE IN GRAND ILLUSIONS COLOR SPECTRUM (35 COLORS) AND GRAND ILLUSIONS VINYL WOODGRAINS (5 AUTHENTIC WOODGRAINS)
3. INCLUDES METAL REINFORCEMENT BOTTOM RAIL

V300-3,4,5,6
3',4',5',6' H X 8' W SOLID TONGUE AND GROOVE

ALL STYLES AVAILABLE IN GRAND ILLUSIONS 35 COLORS AND 5 AUTHENTIC WOODGRAINS

3708-101 SEE ACCOMPANYING SPECIFICATIONS FOR MORE INFORMATION. REVISION DATE 05/22/2012

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4	09-24-24	BB/SM	REVISED PER ARCHITECTURAL PLANS UPDATES

CITY OF PORT ORANGE

PORT ORANGE PUBLIC UTILITIES FIELD OPS FACILITY
FINAL ENGINEERING PLANS
CONSTRUCTION DETAILS

VOLUSIA COUNTY, FLORIDA

PROJECT NO: ZC 20035
DESIGNED BY: SM
DRAFTED BY: SM
CHECKED BY: BB
DRAWING FILE: 10-14_20035_DET

ROBERT J. BALL, P.E. NO. 60001
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SHEET: C15 OF 15

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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REVISIONS		
MARK	DESCRIPTION	DATE

SEAL

ROBERT J. BALL, P.E. NO. 60001

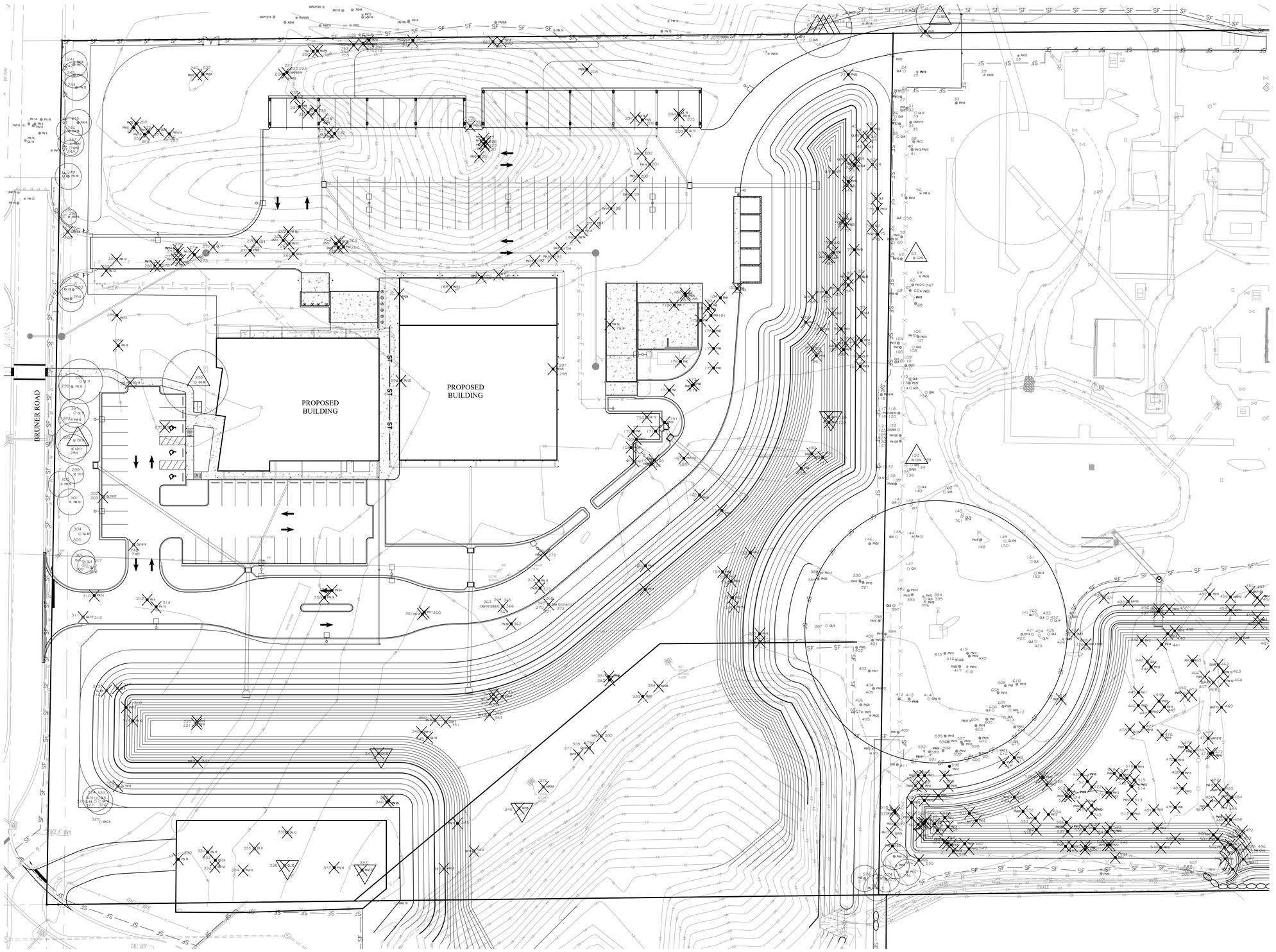
COMM. NO.: 2021815
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CONSTRUCTION DETAILS

C15

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TREE LEGEND

MAP	MAPLE TREE
SG	SWEET GUM TREE
MAG	MAGNOLIA TREE
PN	SLASH PINE TREE
RN	RAIN TREE
QN	WATER OAK TREE
QV	LIVE OAK TREE
QL	LAUREL OAK TREE
PM	SABAL PALM TREE

MINIMUM ON SITE TREES

SITE ACREAGE	18.82 AC.
MINIMUM TREES REQUIRED ON SITE (6.3 ACRES)	328
CALCULATION: 819,799 S.F. / 2,500 S.F. = 328	
EXISTING TREES/PALMS TO BE PRESERVED (≥6" D.B.H)	283
NUMBER OF TREES PROVIDED ON LANDSCAPE PLAN	48
NUMBER OF PALMS PROVIDED (MAX. 25% = 36) 7 / 3 = 2	2
TOTAL NUMBER OF TREES (EXISTING PLUS PROVIDED)	333

SPECIMEN TREE REQUIREMENTS

TOTAL SITE ACREAGE	18.82 AC.
SPECIMEN TREES ON SITE	23
SPECIMEN TREES REQUIRED TO BE SAVED (80%)	18
SPECIMEN TREES TO BE REMOVED	6
SPECIMEN TREES TO BE PRESERVED	17

PROTECTIVE AREA SHALL BE ENTIRE DRIP LINE OR ONE (1) FOOT RADIUS PER INCH OF DIAMETER, WHICHEVER IS GREATER

SPECIMEN TREES PER ACRE (DBH TYPES)	EXISTING SPECIMEN TREES TO BE PRESERVED
0-0.5 OR 1	50%
1.0-2	60%
3 + OR MORE	4 PER ACRE

LEGEND

- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED
- EXISTING SPECIMEN TREE TO REMAIN
- EXISTING SPECIMEN TREE TO BE REMOVED
- DENOTES ROOT ZONE PROTECTION AREA REQUIRED

SPECIMEN TREE MITIGATION

Project Name: Port Orange Public Works Facility — Permit No.:
Address: — Date:
Instructions: Fill in all highlighted areas. The form will calculate the required quantities and values.

Mitigation Tabulation Charts

Mitigation for healthy Specimen trees

Qty. for removal	Size	# Replacement Trees	Subtotal			
1	12-16"	2	2	or	$ 675.76	
3	17-24"	3	9	or	$ 3,034.51	
2	25-32"	4	8	or	$ 2,715.12	
	33-40"	5	0	or	$ -	
	41"+	6	0	or	$ -	
	Total B replacement trees		19		$ 6,446.41	tree bank contribution amount

Total replacement trees = 19 or $ 6,446.41 Total tree bank contribution amount

*Replacement trees shall be a minimum (4") four-inch caliper, 14 feet high

THE 19 TREES HAVE BEEN PLANTED ON SITE. SEE PLANT SCHEDULE, SHEET LA1 FOR SPECIFICATIONS.

0 15 30 45 60
SCALE : 1" = 30'

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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REVISIONS		
MARK	DESCRIPTION	DATE

SEAL

JAKE STEHR, RLA, NO. 6667462

COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
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TREE PROTECTION PLAN & DETAILS

TP1

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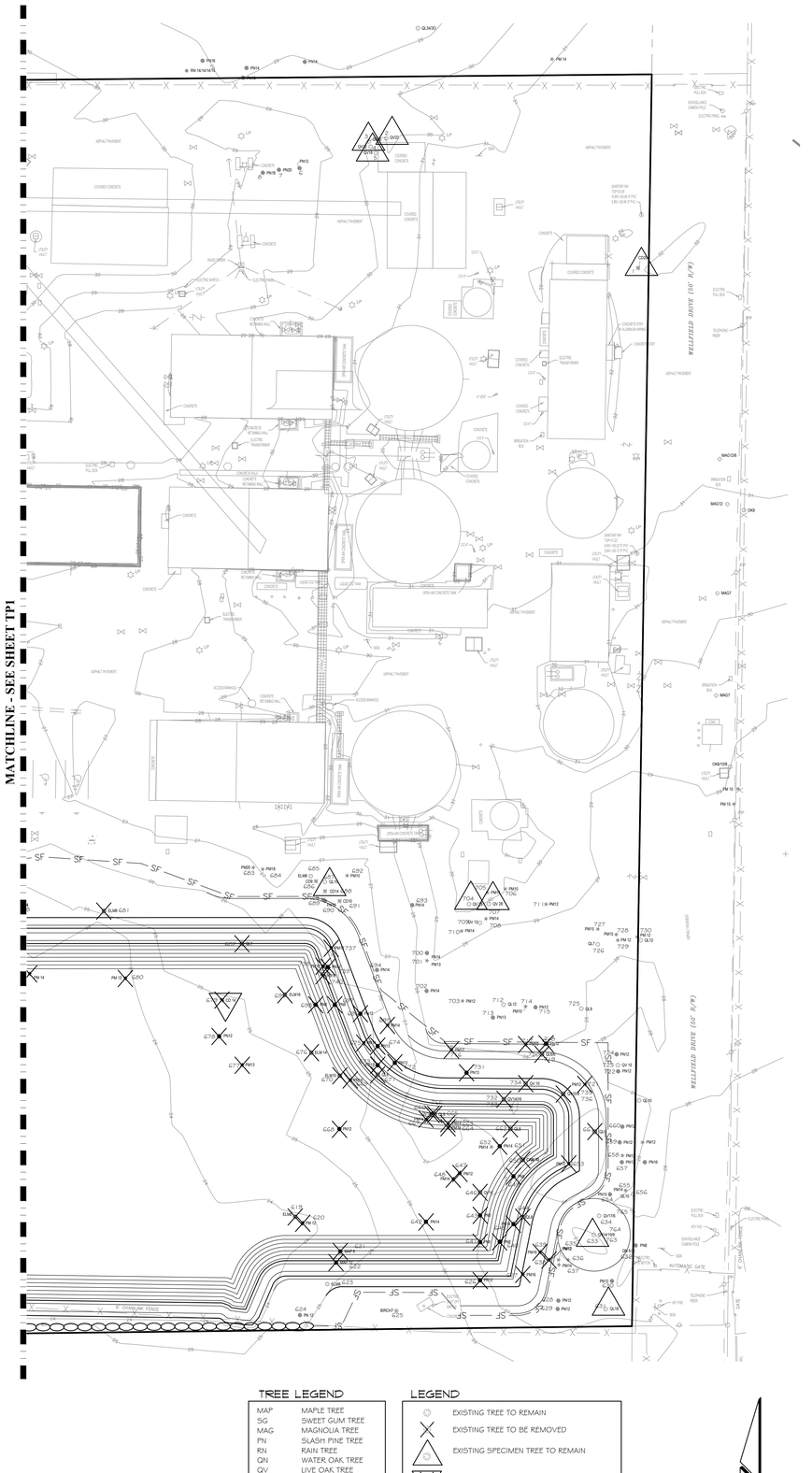
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EXISTING TREE DATA - 6" D.B.H. AND GREATER

Point	Description
△ 1	CEDAR 20
△ 2	LIVE 22
3	LIVE 16
△ 4	LIVE 22
5	LIVE 18
6	PINE 13
7	PINE 20
8	PINE 18
△ 9	LAUREL 18
* 10	PINE 20
11	PALM 12
12	PALM 14
13	LIVE 6
△ 14	LIVE 18
△ 15	LIVE 22
△ 16	LIVE 20
17	LIVE 14
18	LIVE 6
19	PALM 18
20	LIVE 6
21	LIVE 16
* 22	PINE 20
23	PINE 22
24	LAUREL 6
25	PALM 14
26	LAUREL 10
27	PINE 10
28	RN 12
29	PALM 16
30	PINE 16
31	PINE 8
32	LAUREL 6
33	LAUREL 12
△ 34	PINE 12
35	PINE 12
36	LAUREL 8
37	PALM 12
38	LIVE 8
39	PINE 13
40	PINE 13
41	PINE 10
* 42	PINE 12
* 43	LAUREL 12
* 44	LAUREL 7
* 45	LAUREL 10
* 46	LAUREL 8
* 47	LAUREL 10
* 48	LAUREL 11
* 49	LAUREL 10
* 50	PALM 16
* 51	LAUREL 10
* 52	LAUREL 10
* 53	PINE 16
* 54	LAUREL 6
* 55	LAUREL 6
56	PALM 14
57	PINE 14
58	LAUREL 6
59	PINE 16
60	CEDAR 9
61	CEDAR 6
62	PINE 10
△ 63	CEDAR 12
64	PALM 16
65	PINE 12
66	PALM 20
67	PINE 12
68	PINE 12
69	PINE 8
70	LAUREL 12
71	LAUREL 9
72	PINE 20
* 73	PINE 13
* 74	LAUREL 7
* 75	PINE 12
* 76	PINE 11
* 77	PINE 18
78	LAUREL 12
* 79	CEDAR 6
* 80	LAUREL 6
* 81	LAUREL 12
* 82	LAUREL 10
* 83	PINE 13
* 84	PINE 12
* 85	LAUREL 11
* 86	PINE 12
* 87	PINE 15
* 88	LAUREL 15
* 89	LAUREL 8
* 90	LAUREL 6
* 91	LAUREL 7
* 92	PINE 12
* 93	LIVE 8
* 94	PINE 14
* 95	LAUREL 10
* 96	PINE 16
* 97	LAUREL 8
* 98	LAUREL 8
* 99	PALM 6
* 100	LAUREL 7
* 101	PINE 14
* 102	LAUREL 10
* 103	PINE 18
104	PINE 13
105	PINE 7
106	PALM 12
107	PINE 10
108	LAUREL 9
109	LAUREL 8
110	LAUREL 8
111	PINE 12
112	LAUREL 6
113	PINE 12
114	LAUREL 6
115	PALM 14
116	PALM 14
117	PINE 6
118	PINE 10
119	PINE 8
120	PINE 10
121	LIVE 6
122	LIVE 8
123	LIVE 8
124	PINE 10
125	PINE 6
126	PINE 10
127	PINE 6
▽ 128	LAUREL 25
* 129	PINE 22
* 130	PINE 8
* 131	PINE 10
* 132	PINE 16
△ 133	CEDAR 14
134	LAUREL 8
135	LIVE 6
136	LIVE 8
137	LAUREL 16
138	LAUREL 12
139	PINE 18
140	LAUREL 6
141	LIVE 6
142	LAUREL 7
143	LAUREL 14
144	PALM 15
145	LAUREL 6
146	PINE 20
147	LAUREL 6
148	PINE 18
149	LAUREL 10
150	LAUREL 6
151	LAUREL 6
152	LAUREL 12
153	PINE 16
154	PINE 10
* 155	LAUREL 7
* 156	PINE 20
* 157	PINE 20
* 158	PALM 15
* 159	PINE 14
* 160	PINE 14
* 161	PINE 24
* 162	PINE 30
* 163	PINE 12
* 164	PINE 10
* 165	PINE 6
* 166	PINE 20
* 167	LIVE 7
* 168	PINE 10
* 169	PINE 12
* 170	PINE 8
* 171	PINE 16
* 172	PINE 7
* 173	PINE 6
* 174	PINE 8
* 175	PINE 6
* 176	PINE 6
* 177	PINE 6
* 178	PINE 6
* 179	PINE 6
* 180	PINE 6
* 181	PINE 6
* 182	PINE 6
* 183	PINE 6
* 184	PINE 8
* 185	PINE 6
* 186	PINE 6
* 187	PINE 6
* 188	PINE 6
* 189	PALM 14
* 190	PINE 17
* 191	CAMPHORPHOR 17
* 192	PALM 14
* 193	PALM 14
* 194	CAMPHORPHOR 7
* 195	PALM 14
* 196	PALM 14
* 197	CAMPHORPHOR 8
* 198	PALM 14
* 199	CAMPHORPHOR 9
* 200	PALM 14
* 201	PALM 14
* 202	CAMPHORPHOR 8
* 203	LAUREL 10
* 204	LAUREL 16
* 205	PALM 16
* 206	PINE 22
* 207	PALM 16
* 208	PINE 24
* 209	TW 14
* 210	TW 12
* 211	PINE 20
* 212	PINE 20
* 213	PINE 20
* 214	PINE 10
* 215	PINE 8
* 216	PINE 8
* 217	PINE 8
* 218	PINE 8
* 219	MAPLE 8
* 220	PINE 11
* 221	MAPLE 6
* 222	MAPLE 6
* 223	MAPLE 14
* 224	PINE 22
* 225	PINE 14
* 226	PINE 8
* 227	PINE 13
* 228	PINE 8
* 229	PINE 10
* 230	PINE 10
* 231	PINE 12
* 232	PINE 22
* 233	LAUREL 12
* 234	MAPLE 6
* 235	PINE 7
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* 238	PINE 6
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245	PINE 14
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* 250	PINE 20
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* 252	PINE 11
* 253	PINE 6
* 254	PINE 11
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* 256	PINE 14
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413	PINE 18
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612	LAUREL 6
613	LAUREL 6
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* 619	ELM 8
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* 621	MAPLE 6
* 622	MAPLE 12
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* 627	PALM 16
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△ 633	LIVE 19
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* 668	PINE 12
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* 673	PINE 13
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* 676	ELM 14
* 677	PALM 13
* 678	PINE 12
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* 697	PINE 8
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* 699	ELM 16
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702	PINE 14
703	PALM 12
△ 704	LIVE 28
705	PALM 14
706	PALM 10
△ 707	LIVE 28
708	PALM 14
709	LIVE 13
710	PALM 14
711	PALM 12
712	LAUREL 12
713	PINE 13
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* 721	PALM 12
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726	LAUREL 7
727	PALM 15
728	PALM 15
729	PALM 12
730	PALM 12
* 731	PINE 13
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* 733	LIVE 16
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* 735	LIVE 10
* 736	LIVE 8
* 737	PALM 12
* 738	PALM 16
* 739	PINE 12
* 740	PALM 16
* 741	PINE 12
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* 744	PINE 12
* 745	PINE 14
746	PINE 12
747	PINE 12
* 748	LIVE 14
* 749	LIVE 14
* 750	LAUREL 12
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* 752	PALM 14
* 753	PINE 12
* 754	PINE 10
* 755	PINE 8
* 756	PINE 9
* 757	LAUREL 8
758	WATER 8
759	LAUREL 8
760	LIVE 6
761	LAUREL 14
762	LAUREL 7
763	LIVE 14
764	LIVE 9
765	LIVE 6
* 766	LIVE 17

- TOTAL TREES: 763
- TREES 315 - 317 WERE CUT DOWN PRIOR TO CONSTRUCTION
- PROTECTED TREES REMOVED: 480
- PROTECTED TREES TO REMAIN: 283
- SPECIMEN TREES REMOVED: 6
- SPECIMEN TREES TO REMAIN: 17
- * PROTECTED TREES BEING REMOVED
- △ SPECIMEN TREES TO REMAIN (SEE SHEETS TP1 & TP2 FOR SPECIES LOCATIONS AND SIZES)
- ▽ SPECIMEN TREES TO BE REMOVED (SEE SHEETS TP1 & TP2 FOR SPECIES LOCATIONS AND SIZES)

MATCHLINE - SEE SHEET TP1



TREE LEGEND

MAP	MAPLE TREE
SG	SWEET GUM TREE
MAG	MAGNOLIA TREE
PN	SLASH PINE TREE
RN	RAIN TREE
QN	WATER OAK TREE
QV	LIVE OAK TREE
QL	LAUREL OAK TREE
PM	SABAL PALM TREE

LEGEND

- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED
- EXISTING SPECIMEN TREE TO REMAIN
- EXISTING SPECIMEN TREE TO BE REMOVED
- DENOTES ROOT ZONE PROTECTION AREA REQUIRED

SCALE : 1" = 30'

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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DAYTONA BEACH, FL 32114
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REVISIONS		
MARK	DESCRIPTION	DATE

SEAL

JAKE STEHR, RLA, NO. 6667462

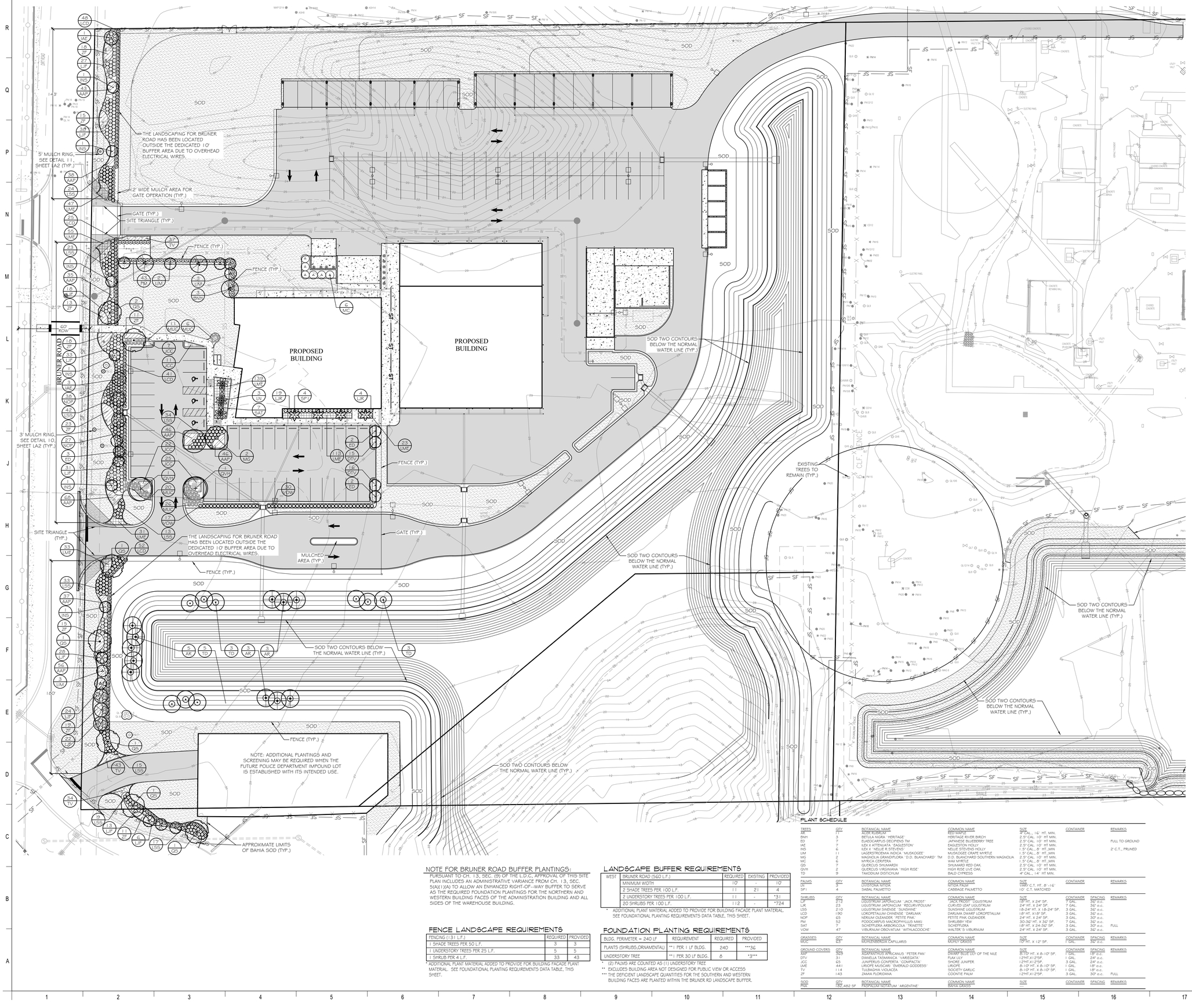
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ISSUE DATE: 09/30/2024
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TREE PROTECTION PLAN & DETAILS

TP2

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NOTE FOR BRUNER ROAD BUFFER PLANTINGS:

PURSUANT TO CH. 13, SEC. (3) OF THE L.D.C, APPROVAL OF THIS SITE PLAN INCLUDES AN ADMINISTRATIVE VARIANCE FROM CH. 13, SEC. 5(A)(1)(A) TO ALLOW AN ENHANCED RIGHT-OF-WAY BUFFER TO SERVE AS THE REQUIRED FOUNDATION PLANTINGS FOR THE NORTHERN AND WESTERN BUILDING FACES OF THE ADMINISTRATION BUILDING AND ALL SIDES OF THE WAREHOUSE BUILDING.

LANDSCAPE BUFFER REQUIREMENTS

		REQUIRED	EXISTING	PROVIDED
WEST	BRUNER ROAD (560 L.F.)			
	MINIMUM WIDTH	10'	-	10'
	2 SHADE TREES PER 100 L.F.	11	21	4
	2 UNDERSTORY TREES PER 100 L.F.	11	-	*31
	20 SHRUBS PER 100 L.F.	112	-	*724

* ADDITIONAL PLANT MATERIAL ADDED TO PROVIDE FOR BUILDING FACADE PLANT MATERIAL. SEE FOUNDATIONAL PLANTING REQUIREMENTS DATA TABLE, THIS SHEET.

FENCE LANDSCAPE REQUIREMENTS

FENCING (131 L.F.)	REQUIRED	PROVIDED
1 SHADE TREES PER 50 L.F.	3	3
1 UNDERSTORY TREES PER 25 L.F.	5	5
1 SHRUB PER 4 L.F.	33	43

* ADDITIONAL PLANT MATERIAL ADDED TO PROVIDE FOR BUILDING FACADE PLANT MATERIAL. SEE FOUNDATIONAL PLANTING REQUIREMENTS DATA TABLE, THIS SHEET.

FOUNDATION PLANTING REQUIREMENTS

BLDG. PERIMETER = 240 LF	REQUIREMENT	REQUIRED	PROVIDED
PLANTS (SHRUBS,ORNAMENTAL)	** 1 PER 1 LF BLDG.	240	***316
UNDERSTORY TREE	** 1 PER 30 LF BLDG.	8	*3***

* (2) PALMS ARE COUNTED AS (1) UNDERSTORY TREE
** EXCLUDES BUILDING AREA NOT DESIGNED FOR PUBLIC VIEW OR ACCESS
*** THE DEFICIENT LANDSCAPE QUANTITIES FOR THE SOUTHERN AND WESTERN BUILDING FACES ARE PLANTED WITHIN THE BRUNER RD LANDSCAPE BUFFER.

PLANT SCHEDULE

TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	REMARKS
AR	11	ACER RUBRUM	RED MAPLE	4" CAL., 16' HT. MIN.		
BNH	3	BETULA NIGRA 'HERITAGE'	HERITAGE RIVER BIRCH	2.5" CAL., 10' HT. MIN.		
ED	7	ELAEOCARPUS DECIPIENS TM	JAPANESE BLUEBERRY TREE	2.5" CAL., 10' HT. MIN.		FULL TO GROUND
IAE	7	ILEX X ATTENUATA 'EAGLESTON'	EAGLESTON HOLLY	2.5" CAL., 10' HT. MIN.		
INS	6	ILEX X 'NELLIE R. STEVENS'	NELLIE STEVENS HOLLY	1.5" CAL., 8' HT.,MIN.		2' C.T., PRUNED
LIM	11	LAGERSTROEMIA INDICA 'MUSKOGEE'	MUSKOGEE CRAPE MYRTLE	1.5" CAL., 8' HT.,MIN.		
MG	2	MAGNOLIA GRANDIFLORA 'D.D. BLANCHARD' TM	D.D. BLANCHARD SOUTHERN MAGNOLIA	2.5" CAL., 10' HT. MIN.		
MC	6	MYRICA CERIFERA	WAX MYRTLE	1.5" CAL., 8' HT.,MIN.		
QS	7	QUERCUS SHUMARDII	SHUMARD RED OAK	2.5" CAL., 10' HT. MIN.		
QVH	2	QUERCUS VIRGINIANA 'HIGH RISE'	HIGH RISE LIVE OAK	2.5" CAL., 10' HT. MIN.		
TD	9	TAXODIUM DISTICHUM	BALD CYPRESS	4" CAL., 14' HT.MIN.		

PALMS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	REMARKS
LN	3	LIVISTONA NITIDA	NITIDA PALM	VARY C.T. HT., 8'-11.6'		
SP1	4	SABAL PALMETTO	CABBAGE PALMETTO	10' C.T. MATCHED		

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	SPACING	REMARKS
DF	212	LIGUSTRUM JAPONICUM 'JACK FROST'	JACK FROST LIGUSTRUM	18" HT. X 24" SP.	7 GAL.	36" o.c.	
LIK	23	LIGUSTRUM JAPONICUM 'RECURVIFOLIUM'	CURVED LEAF LIGUSTRUM	24" HT. X 24" SP.	7 GAL.	36" o.c.	
LSS	210	LIGUSTRUM SINENSE 'SUNSHINE'	SUNSHINE LIGUSTRUM	18-24" HT. X 18-24" SP.	3 GAL.	36" o.c.	
LCD	190	LOROPETALUM CHINENSE 'DARUMA'	DARUMA DWARF LOROPETALUM	18" HT. X18" SP.	3 GAL.	36" o.c.	
NOP	65	NERIUM OLEANDER 'PETITE PINK'	PETITE PINK OLEANDER	24" HT. X 24" SP.	3 GAL.	30" o.c.	
PM	52	PODOCARPUS MACROPHYLLUS MAKI	SHRUBBY YEW	30-36" HT. X 36" SP.	7 GAL.	36" o.c.	
SAT	7	SCHEFFLERA ARBORICOLA 'TRINETTE'	SCHEFFLERA	18" HT. X 24-36" SP.	3 GAL.	30" o.c.	FULL
VOW	47	VIBURNUM ODOVATUM 'WITHLACOOCHE'	WALTER'S VIBURNUM	24" HT. X 24" SP.	3 GAL.	36" o.c.	

GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	SPACING	REMARKS
MUC	63	MUHLENBERGIA CAPILLARIS	MUHLY GRASS	10" HT. X 12" SP.	1 GAL.	36" o.c.	

GROUND COVERS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	SPACING	REMARKS
AAP	3629	AGAPANTHUS AFRICANUS 'PETER PAN'	DWARF BLUE LILY OF THE NILE	8"-10" HT. X 8-10" SP.	1 GAL.	18" o.c.	
DTV	31	DIANELLA TASMANICA 'VARIEGATA'	FLAX LILY	12"HT.X12"SP.	1 GAL.	24" o.c.	
JCC	65	JUNIPERUS CONFERTA 'COMPACTA'	SHORE JUNIPER	12"HT.X12"SP.	3 GAL.	24" o.c.	
LME	441	LIRIOPE MUSCARI 'EMERALD GODDESS'	LIRIOPE	8-10" HT. X 8-10" SP.	1 GAL.	18" o.c.	
TV	114	TULBAGHIA VIOLACEA	SOCIETY GARLIC	8-10" HT. X 8-10" SP.	1 GAL.	18" o.c.	
ZF	143	ZAMIA FLORIDANA	COONTIE PALM	12"HT.X12"SP.	3 GAL.	30" o.c.	FULL

SOD	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	SPACING	REMARKS
PNA	182,482 SF	PASPALUM NOTATUM 'ARGENTINE'	BAHIA GRASS	---			

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LANDSCAPE PLAN & DETAILS

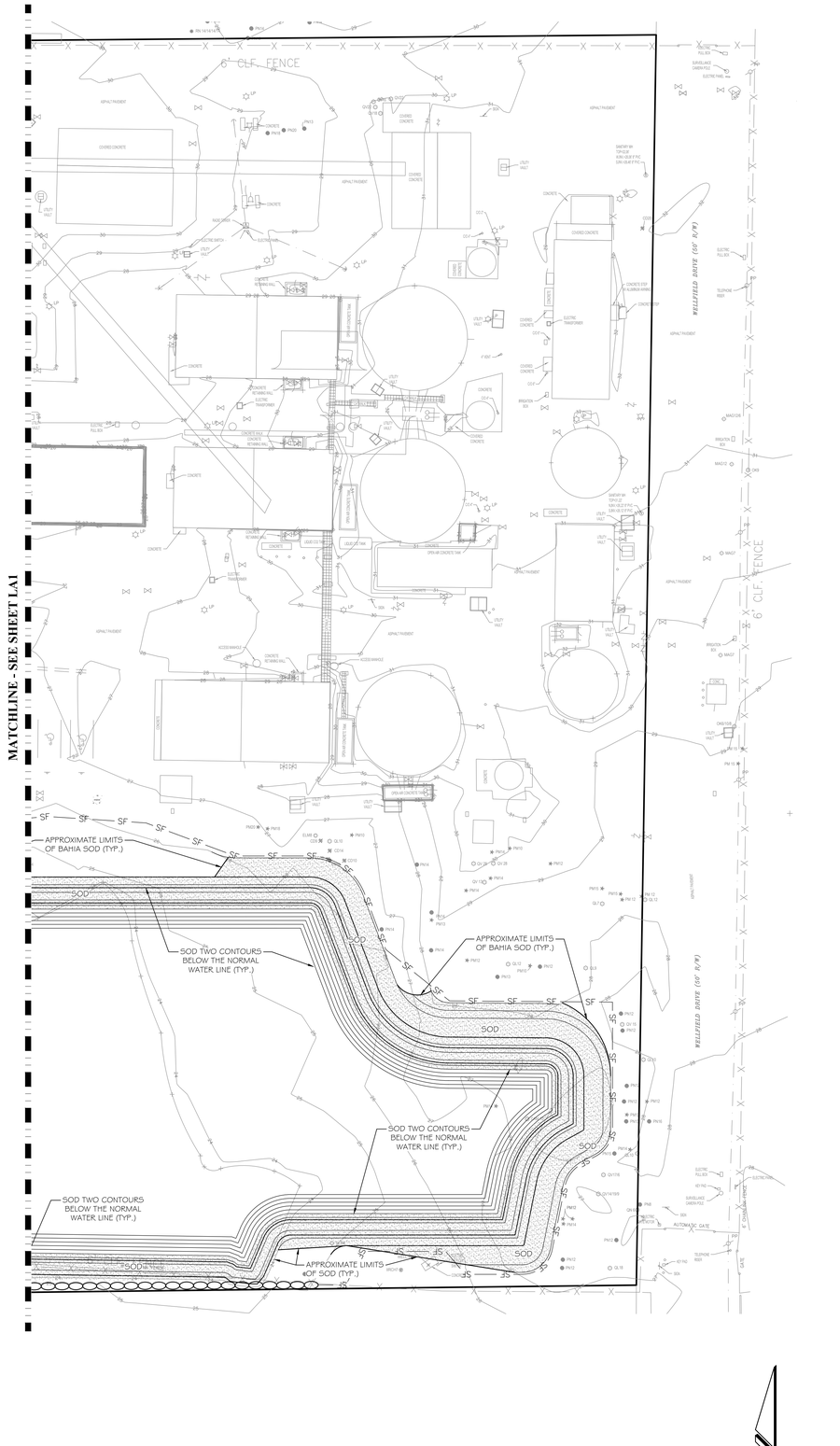
SCALE : 1" = 30'

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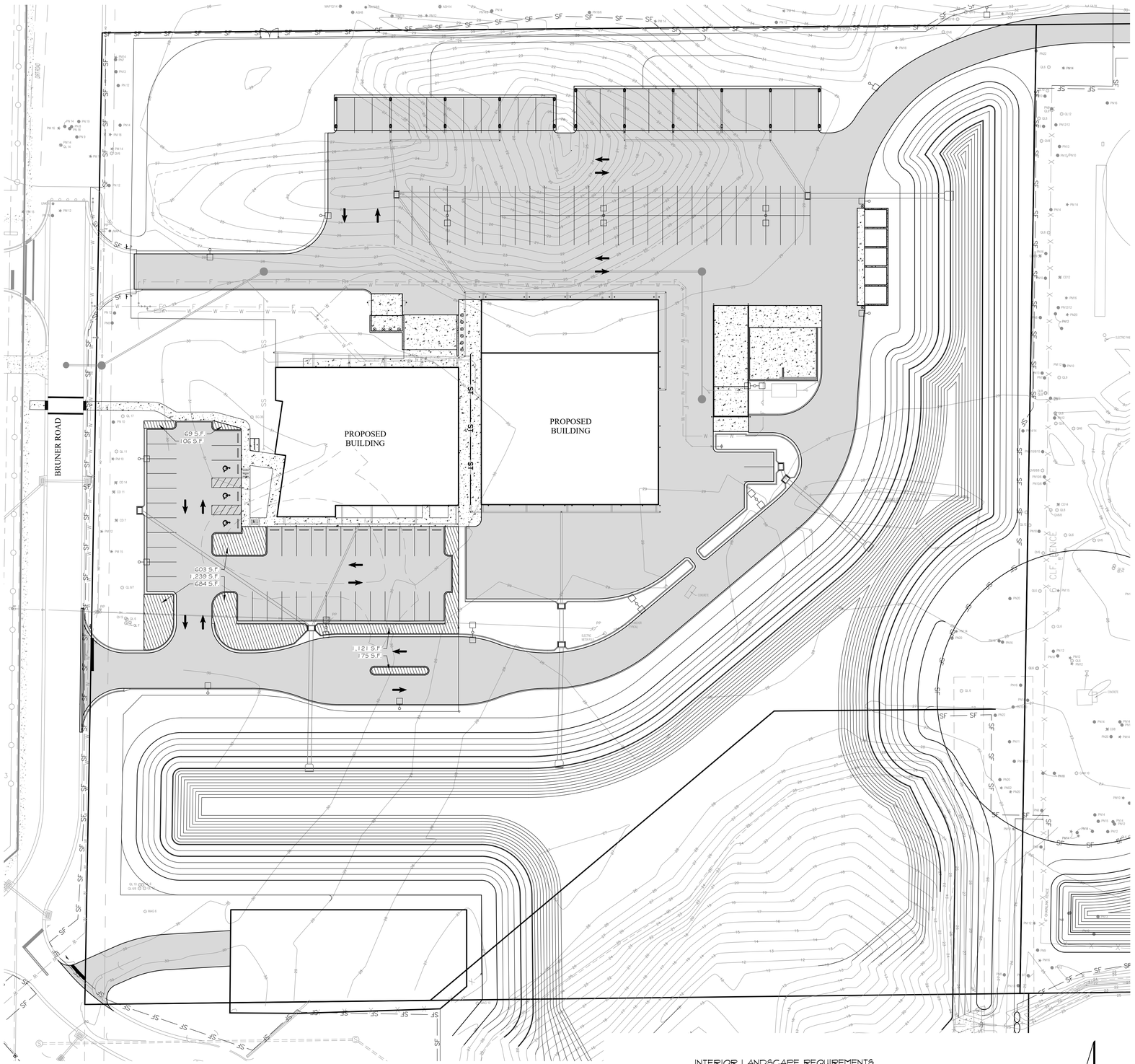
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LANDSCAPE PLAN & DETAILS

LA2

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R:\2020\20-1207 PORT ORANGE PUBLIC WORKS\FINAL ENGINEERING PLANS\LANDSCAPE\2020-1207 LA.DWG - PRINTED: 10/1/2024 11:29 AM



INTERIOR LANDSCAPE REQUIREMENTS

INTERIOR LANDSCAPE AREA REQUIRED	10%
IMPERVIOUS PARKING AND DRIVE AREA	111,420 S.F.
INTERIOR LANDSCAPE REQUIRED (CALCULATION: 111,420 x 10% = 11,142	11,142 S.F.
INTERIOR LANDSCAPE AREA PROVIDED	11,289 S.F.

811 Know what's below. Call before you dig.

0 15 30 45 60

SCALE : 1" = 30'

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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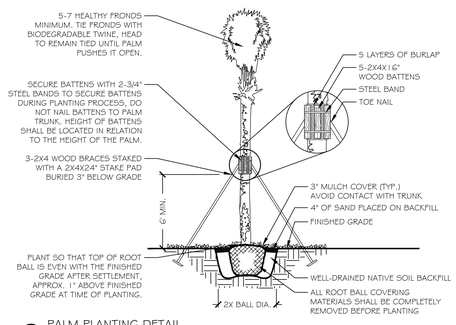
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INTERIOR LANDSCAPING

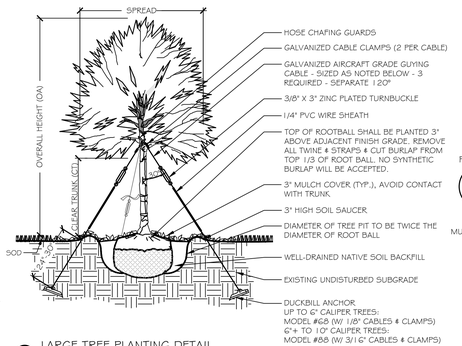
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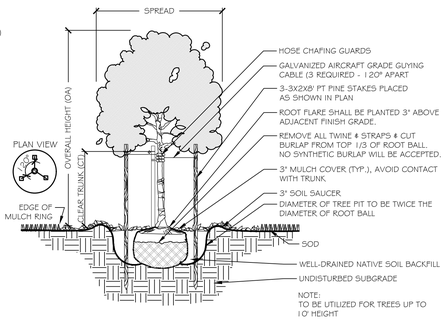
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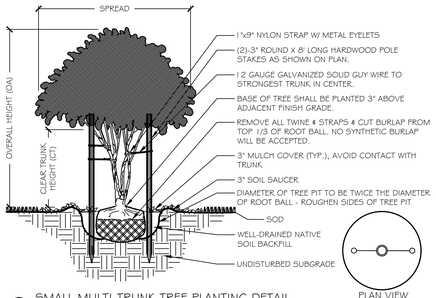
1 PALM PLANTING DETAIL
N.T.S. P-LA-PAL-PALM-01



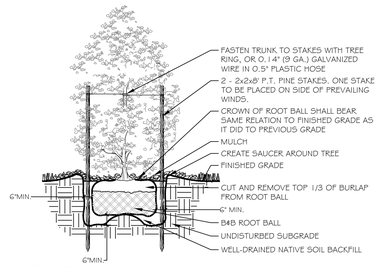
2 LARGE TREE PLANTING DETAIL
N.T.S. P-LA-TRE1-01



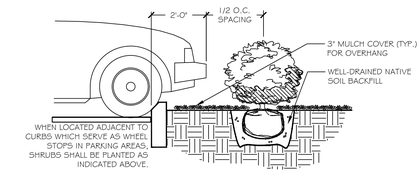
3 SMALL TREE PLANTING DETAIL
N.T.S. P-LA-TRE1-03



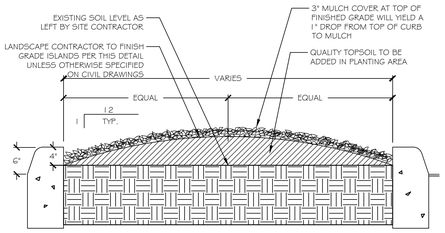
4 SMALL MULTI-TRUNK TREE PLANTING DETAIL
N.T.S. P-LA-TRE1-04



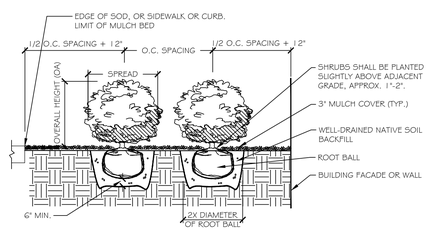
5 FULL TO GROUND TREE PLANTING DETAIL
N.T.S P-LA-TRE1-02



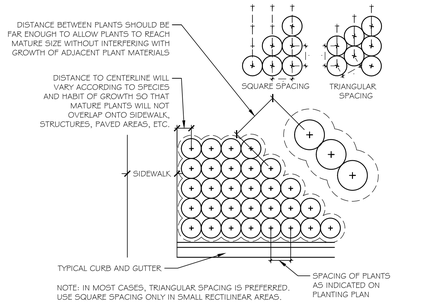
6 HEDGE PLANTING ADJACENT TO PARKING
N.T.S. P-LA-SHR-HEDG-01



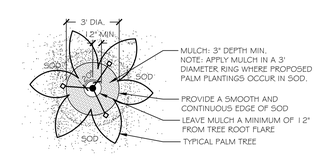
7 INTERIOR CURB ISLAND GRADING DETAIL
N.T.S. P-LA-SHR-INTE-01



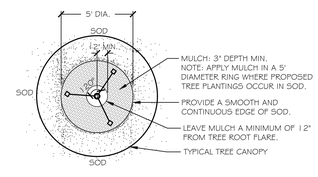
8 SHRUB PLANTING DETAIL
N.T.S. P-LA-SHR-SHRU-02



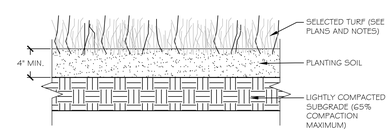
9 PLANT SPACING DETAIL
N.T.S. P-LA-SHR-PLAN-01



10 PALM MULCHING DETAIL IN SOD AREAS
N.T.S. P-LA-MUL-PALM-01



11 TREE MULCHING DETAIL IN SOD AREAS
N.T.S. P-LA-MUL-TREE-01



12 TURF PLANTING DETAIL
N.T.S. P-LA-SOD-01

LANDSCAPE SPECIFICATIONS

1. FLORIDA #1: ALL PLANT MATERIAL SHALL BE GRADE FLORIDA NO. 1 OR BETTER IN QUALITY AS DESIGNATED IN THE MOST RECENT PUBLICATION OF 'GRADES AND STANDARDS FOR NURSERY PLANTS', PUBLISHED BY THE FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES.
2. EXISTING PLANTS: IF EXISTING LANDSCAPING INTERFERES WITH PROPOSED PLANTINGS SHOWN ON PLAN, THE EXISTING LANDSCAPING IS TO BE REMOVED IN FAVOR OF THE NEW PLANTINGS, UNLESS OTHERWISE INDICATED. IF THE EXISTING VEGETATION IS INTENDED TO REMAIN, THE PROPOSED LANDSCAPING SHALL BE LOCATED AS CLOSE AS POSSIBLE TO ITS INTENDED LOCATION.
3. MULCH: ALL PLANTING BEDS SHALL BE TOP DRESSED WITH A MINIMUM OF 3" PINE BARK MULCH, GRADE 'B' OR APPROVED EQUAL. ALL TREES NOT IN BEDS SHALL HAVE A 5' DIAMETER MULCH RING. ALL PALMS NOT IN BEDS SHALL HAVE A 3' DIAMETER MULCH RING UNLESS OTHERWISE NOTED ON PLANS.
4. SOD: SOD SHALL BE ARGENTINE BAHIA SOD. ALL SOD SHALL BE ROLLED UPON INSTALLATION. CONTRACTOR TO SOD ALL AREAS THAT ARE DISTURBED BY CONSTRUCTION RELATED ACTIVITIES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THE SOD IS FREE OF WEEDS & INSECTS UPON INSTALLATION AND FOR THE DURATION OF THE 90 DAY MAINTENANCE PERIOD. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE NO GAPS BETWEEN SOD. SOD QUANTITY TAKEOFFS ARE THE RESPONSIBILITY OF THE CONTRACTOR.
5. QUANTITIES: IN THE EVENT OF A VARIATION BETWEEN THE QUANTITIES SHOWN ON THE PLANT LIST AND THE QUANTITIES OF PLANTS SHOWN ON THE PLAN, THE PLAN SHALL CONTROL.
6. UNFORESEEN CONFLICTS: CONTRACTOR SHALL NOT WILLFULLY INSTALL ANY PORTION OF THE LANDSCAPE PLAN AS SHOWN ON THE DRAWINGS WHEN IT IS OBVIOUS IN THE FIELD THAT UNFORESEEN OBSTRUCTIONS, GRADE DIFFERENCES, STANDING WATER, SOIL CONDITIONS OR OTHER CONFLICTS EXIST. SUCH UNFORESEEN CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE AND THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
7. SUBSTITUTIONS: NO SUBSTITUTIONS OR VARIATIONS OF ANY PLANT MATERIAL OR ITS INSTALLED LOCATION SHALL BE PERMITTED WITHOUT THE PRIOR CONSENT OF THE LANDSCAPE ARCHITECT.
8. CONTAINERS: IF GALLONAGE FOR PLANTS OR TREES IS SHOWN THEY SHALL BE CONTAINER GROWN AND THE SIZE SHOWN SHALL REPRESENT THE MINIMUM ALLOWABLE GALLONAGE. IN ALL CASES THE PLANT SPECIFIED SIZE SHALL GOVERN OVER THE GALLONAGE INDICATED.
9. PLANTING SOIL: CONTRACTOR SHALL VERIFY THAT SOIL CONDITIONS ARE SUITABLE TO THE PLANT SPECIES SPECIFIED. IF SOIL CONDITIONS ARE DEEMED UNSUITABLE FOR PROPER PLANT HEALTH, CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT AND PROPER SUBSTITUTIONS SHALL BE SPECIFIED BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. THE CONTRACTOR SHALL REMOVE LIME ROCK, CONCRETE AND OTHER DELETERIOUS DEBRIS FROM PLANTING BEDS. IF DEBRIS IS INTEGRATED IN THE SOIL, THE SOIL MUST BE EXCAVATED AND REPLACED WITH ACCEPTABLE SOIL. ALL FILL TO BE PLACED IN LANDSCAPE AREAS MUST HAVE A pH RANGE BETWEEN 5.8 AND 7.5, BE ORGANIC IN NATURE, AND BE FREE OF ROCKS AND DEBRIS.
10. TOPSOIL: TOPSOIL MATERIAL SHALL BE FREE FROM ALL HARD CLODS, WEEDS, STONES OVER 1" IN DIAMETER, CLAY, HARD PAN, NOXIOUS OR OTHER UNDESIRABLE PLANTS, SOD, INSECTS, SEEDS, OR MATERIAL WHICH MAY BE HARMFUL FOR GROWTH.
11. WEEDS: IF PRESENT, THE CONTRACTOR SHALL BE RESPONSIBLE TO REMOVE ANY WEEDS FROM PLANTING AND SOD AREAS PRIOR TO THE INSTALLATION OF PROPOSED PLANT MATERIAL AND MULCH COVER. CONTRACTOR SHALL BE RESPONSIBLE TO KEEP BEDS AND SOD FREE OF WEEDS FOR THE DURATION OF THE 90 DAY MAINTENANCE PERIOD.
12. GRADING: UNLESS OTHERWISE STATED ON THESE PLANS, THE LANDSCAPE CONTRACTOR SHALL FINE GRADE ALL AREAS TO BE PLANTED AND SODDED IN ORDER TO ELIMINATE BUMPS AND DEPRESSIONS. FINE GRADING SHALL BE DEFINED AS THE FINAL 2" OF GRADE TO BE ACHIEVED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING AND RE-GRADING WASHOUT AREAS CAUSED BY EROSION UNTIL FINAL ACCEPTANCE OF THE PROJECT.
13. STAKING: ALL TREES AND PALMS ARE TO BE STAKED ACCORDING TO THE DETAILS IN THESE PLANS. IF THE CONTRACTOR PREFERS TO USE OTHER STAKING METHODS THAN SHOWN IN THE DETAILS, HE OR SHE MUST SUBMIT PROPOSED STAKING DETAILS TO THE LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION. THE LANDSCAPE CONTRACTOR SHALL STRAIGHTEN, REPAIR, AND/OR REPLACE ANY PLANTS DAMAGED BY FAILURE TO PROPERLY STAKE OR GUY ANY TREES & PALMS ON SITE, AT THEIR OWN EXPENSE.
14. BED LINES: CONTRACTOR TO ENSURE CURVILINEAR LANDSCAPE BEDS ARE TO BE EDGED WITH SMOOTH FLOWING CURVES. STRAIGHT-LINE LANDSCAPE BEDS ARE TO BE EDGED IN A STRAIGHT LINE PARALLEL TO ADJACENT STRUCTURES UNLESS DESIGNED OTHERWISE.
15. FERTILIZER: OSMOCOTE SLOW RELEASE FERTILIZER OR EQUIVALENT SHALL BE APPLIED TO ALL TREE, SHRUB, AND GROUNDCOVER PLANTING AREAS AT THE RATE OF THREE (3) TABLESPOONS PER 2 S.F. OF PLANTING AREA.
16. DRAINAGE: THE LANDSCAPE CONTRACTOR SHALL ENSURE THAT THIS WORK DOES NOT INTERRUPT EXISTING OR PROPOSED DRAINAGE PATTERNS AND SHALL NOTIFY THE OWNERS REPRESENTATIVE IMMEDIATELY SHALL A CONFLICT ARISE. CONTRACTOR IS RESPONSIBLE FOR ALL LANDSCAPE/SOD AREAS TO PROPERLY DRAIN AWAY FROM BUILDINGS/STRUCTURES.
17. SPECIFICATIONS: THE LANDSCAPE ARCHITECT SHALL BE PERMITTED THE RIGHT DURING INSTALLATION, TO REJECT ANY AND ALL PLANT MATERIAL AND WORKMANSHIP WHICH IN HIS OR HER OPINION DOES NOT MEET THE REQUIREMENTS OF THESE SPECIFICATIONS.
18. PLANT SELECTION: THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT OF THE NURSERY PLANT SOURCE LOCATION A MINIMUM OF 72 HOURS PRIOR TO PURCHASING THE MATERIAL. THE LANDSCAPE ARCHITECT SHALL ACCOMPANY THE CONTRACTOR AND THEIR DESIGNATED LANDSCAPE CONTRACTOR TO THE NURSERY TO REVIEW THE PLANT MATERIAL TAGGED BY THE CONTRACTOR. THE LANDSCAPE ARCHITECT WILL REVIEW THE TAGGED MATERIAL TO BE PURCHASED TO GENERALLY CONFIRM IT MEETS THE SPECIFICATION STANDARDS (STATED IN NOTE #1). THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE QUALITY, SPECIFICATION, INSTALLATION, AND SURVIVORSHIP OF THE PLANT MATERIAL.
19. NATURAL AREAS: NATURALLY PRESERVED VEGETATED AREAS SHALL BE CLEANED UP, INCLUDING BUT NOT LIMITED TO THE REMOVAL OF ANY DEBRIS OR WEEDS AND PRUNING OF DEAD OR YELLOW BRANCHES AND PALM FRONDS. MULCH EDGE OF NATURAL AREA 5' FEET.
20. CLEARANCE PRUNING: ANY TREE PRUNING OF LOWER LIMBS AND CANOPY OF CONSERVED AND PROTECTED TREES THAT ARE GROWING OVER SIDEWALK, ROADWAY AND/OR ON-SITE CONSTRUCTION ACTIVITIES SHALL BE OVERSEEN AND/OR CONDUCTED BY AN I.S.A CERTIFIED ARBORIST TO ENSURE PROPER REDUCTION CUTS AND PRUNING IS CONDUCTED TO MAINTAIN THE STRUCTURAL INTEGRITY AND HEALTH OF THE TREE. TREES SHALL BE PRUNED TO ADHERE TO A MINIMUM OF EIGHT FEET (8') CLEARANCE OVER SIDEWALKS (PEDESTRIAN ACTIVITIES) AND SIXTEEN FEET (16') CLEARANCE OVER PARKING AREAS/ROADWAYS.
21. WILDLIFE NOTIFICATION: THE CONTRACTOR SHALL CONTACT THE LANDSCAPE ARCHITECT WHO SHALL PROPOSE PLANT SUBSTITUTIONS UPON WRITTEN NOTIFICATION OF NUISANCE ANIMAL EXISTENCE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPLACE ANY/ALL INSTALLED PLANT MATERIAL DESTROYED/DAMAGED BY WILDLIFE WITHIN THE MAINTENANCE PERIOD.
22. TURNOVER: CONTRACTOR SHALL CONTACT OWNERS REPRESENTATIVE FOR A TURNOVER DATE TO INCLUDE A WALK-THROUGH AND ACCEPTANCE OF WORK BY THE LANDSCAPE ARCHITECT OR OWNER. ANY WORK DEEMED UNACCEPTABLE SHALL BE CORRECTED IMMEDIATELY AND RE-INSPECTED AS SCHEDULED.
23. MAINTENANCE: CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE TO BEGIN AFTER EACH PLANT HAS BEEN INSTALLED AND SHALL CONTINUE 90 DAYS AFTER FINAL WRITTEN ACCEPTANCE BY THE OWNER. MAINTENANCE SHALL INCLUDE WATERING, PRUNING, WEEDING, MULCHING, MOWING, REPLACEMENT OF SICK OR DEAD PLANTS, AND ANY OTHER CARE NECESSARY IN ORDER TO MAINTAIN PROPER PLANT HEALTH AND SOIL MOISTURE CONTENT.
24. GUARANTEE: CONTRACTOR SHALL GUARANTEE AND REPLACE ALL INSTALLED PLANT MATERIAL FOR ONE (1) CALENDAR YEAR STARTING FROM THE TURNOVER DATE FOR WORK FOUND ACCEPTABLE. ANY CORRECTED WORK SHALL HAVE A PROPORTIONAL EXTENSION OF WARRANTY ONCE APPROVED. ANY SICK OR DEAD MATERIAL SHALL BE REPLACED IMMEDIATELY. THE LANDSCAPE CONTRACTOR SHALL NOT BE RESPONSIBLE TO HONOR ANY WARRANTY FOR THE LOSS OF ANY PLANT MATERIAL CAUSED BY FLOODING, FIRE, ABNORMAL FREEZING TEMPERATURES, WINDS OVER 50 MPH, LIGHTNING, ANY OTHER NATURAL DISASTER, OR ANY LOSS/DAMAGE CAUSED BY VANDALISM OR NEGLIGENCE ON THE PART OF THE OWNER.
25. CALL BEFORE YOU DIG: CONTRACTOR SHALL NOTIFY SUNSHINE 811 AND HAVE UTILITIES LOCATED, PRIOR TO DIGGING, BY CALLING 811. CONTRACTOR SHALL NOT PLANT TREES WITHIN 3' OF AN UNDERGROUND UTILITY, EITHER AS LOCATED OR AS SHOWN ON THE PLAN, WITHOUT FIRST OBTAINING WRITTEN PERMISSION FROM OWNER'S REPRESENTATIVE.
26. RECORD DRAWINGS: THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AS-BUILT 'REDLINED' MARK-UPS OF THE LANDSCAPE AND IRRIGATION IMPROVEMENTS. THESE AS-BUILT 'REDLINES' SHALL BE REPRESENTED ON ZEV COHEN & ASSOCIATES, INC. PLAN SHEETS AND PROVIDED TO THE LANDSCAPE ARCHITECT.

IRRIGATION NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING 'REDLINED' MARK-UPS OF THE IRRIGATION IMPROVEMENTS AND PROVIDE TO THE LANDSCAPE ARCHITECT.
2. AN AUTOMATIC TIME CONTROLLED IRRIGATION SYSTEM WITH A RAIN SENSOR SHALL BE INSTALLED TO PROVIDE 100% HEAD TO HEAD COVERAGE OF ALL NEW PLANTINGS. IRRIGATION PLAN SHALL BE PROVIDED UPON SUBSTANTIAL SITE PLAN APPROVAL.

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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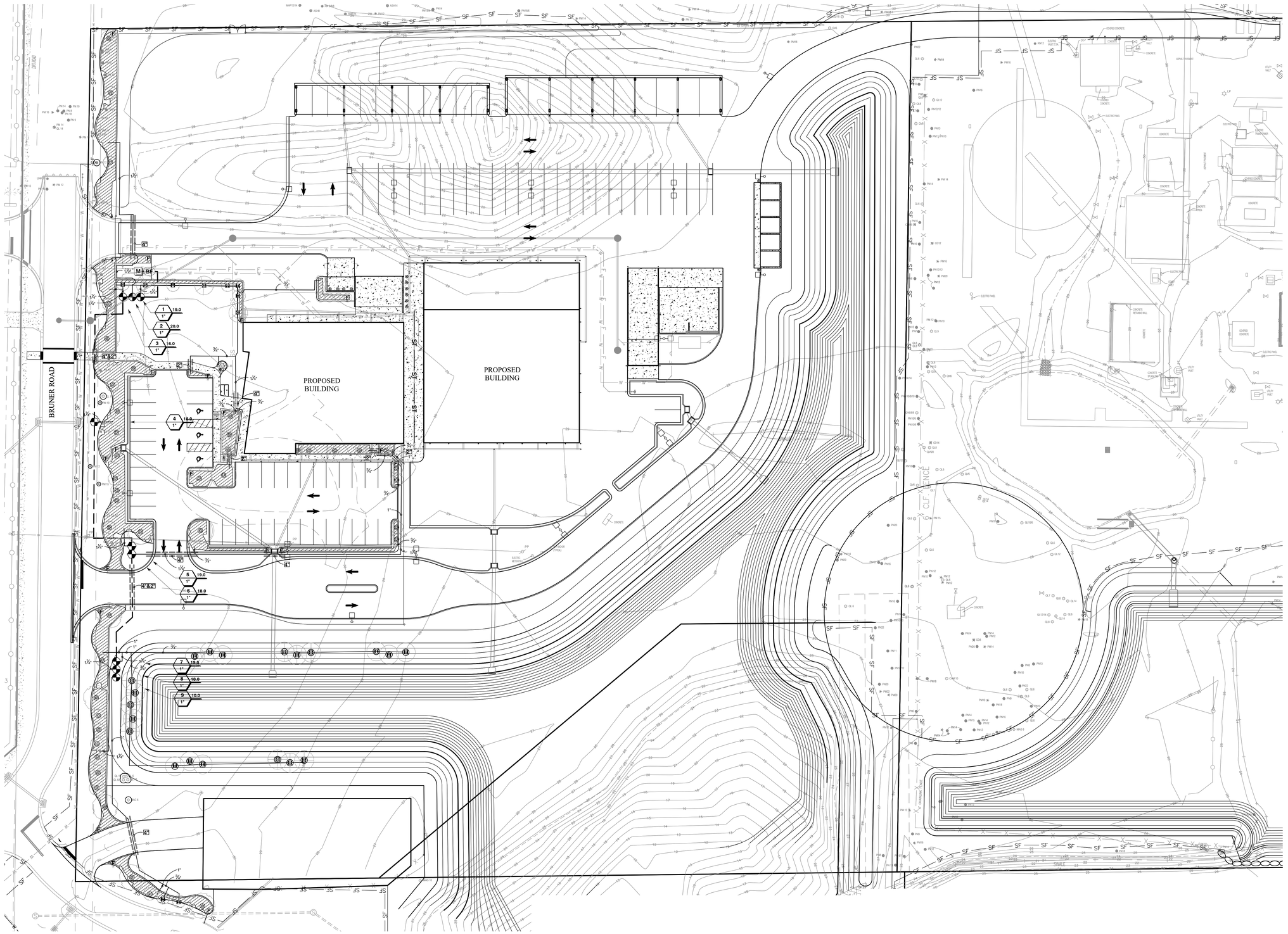
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LANDSCAPE PLAN & DETAILS

LA4

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SCALE : 1" = 30'

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1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
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PORT ORANGE, FL 32129

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MARK	DESCRIPTION	DATE

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JAKE STEHR, RLA, NO. 6667462

COMM. NO.: 2021815
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IRRIGATION PLAN & DETAILS

IR1

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IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL	QTY	ARC	PSI	GPM	RADIUS
H	Two Hunter PCB 25	30 x2	360	30	2 x.25	3'

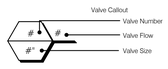
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
F	Hunter PROS-12 with GPM Irrigation Products GDFN	21
◎	Two Hunter HE-60B	42 x2
	Area to Receive Dripline Hunter HDL-10-12 In-Line Pressure Compensating Landscape Dripline with Built-In Check Valve. 1.0GPH emitters at 12.0" O.C. Dripline laterals spaced at 16.0" apart, with emitters offset for triangular pattern. Install dripline on both sides of plant material.	9,400 s.f.

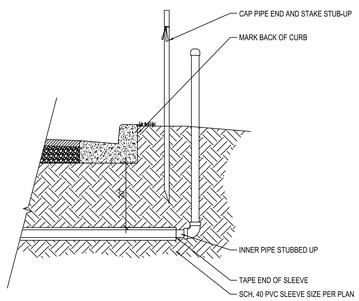
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	Hunter PCZ-101 in a Jumbo Valve Box	3
	Hunter PGV-101 in a 10" Valve Box. Install a Hunter HY151 filter and Senniger 40 psi pressure regulator prior to each valve group. Install filter and pressure regulator in a Jumbo Valve Box.	6
BF	Zurn 975XL 1-1/2" Reduced Pressure Backflow device	1
C	Hunter PC-1200-PL 12 Station Controller	1
S	Hunter MINI-CLIK Rain Sensor	1
M	Water Meter 1" (see civil plans)	1
———	Irrigation Lateral Line: PVC Class 160	1,700 l.f.
— — — —	Irrigation Mainline: PVC Class 200 2"	420 l.f.
═══	Pipe Sleeve: PVC Schedule 40	

WATERING SCHEDULE

NUMBER	MODEL	TYPE	PRECIP	GPM
1	Hunter	Area for Dripline	1.26 in/h	19.0
2	Hunter	Area for Dripline	1.26 in/h	20.0
3	Hunter	Area for Dripline	1.26 in/h	16.0
4	Hunter	Area for Dripline	1.26 in/h	18.0
5	Hunter	Area for Dripline	1.26 in/h	19.0
6	Hunter	Area for Dripline	1.26 in/h	18.0
7	Hunter	Area for Dripline	1.26 in/h	19.0
8	Hunter	Area for Dripline	1.26 in/h	18.0
9	Hunter	Area for Dripline	1.26 in/h	10.0

AVERAGE GALLONS PER DAY: 427





SLEEVING ROUGH-IN DETAIL

SCALE: NTS

UNDERGROUND IRRIGATION SPECIFICATIONS

1.0 GENERAL

1.1 SUMMARY: Includes but not limited to:
- A. Furnishing and installing sprinkler system as described in Contract Documents complete with accessories necessary for proper functioning.

1.2 SYSTEM DESCRIPTION:
- A. Design Requirements:
  - 1. Layout of Irrigation Heads:
    - a. Location of heads shown on Drawings is approximate. Actual placement may vary slightly as is required to achieve full, even coverage without spraying onto buildings, sidewalks, fences, etc.

1.3 QUALITY ASSURANCE:
- A. Regulatory Requirements:
  - 1. Work and materials shall be in accordance with latest rules and regulations, and other applicable state or local laws. Nothing in Contract Documents is to be construed to permit work not conforming to these codes.
- B. Pre-Installation Conference:
  - 1. Meet with Owner and Landscape Architect to discuss and clarify all aspects of job requirements prior to commencing work of this Section.
- C. System Adjustments:
  - 1. Minor adjustments in system will be permitted to avoid existing fixed obstructions.
  - 2. Mainline, laterals, and valves are shown for clarity purposes only. All irrigation equipment to be with landscape area. Mainline, laterals and valves to be installed as far away from existing and new specimen trees as possible.
- D. 1. Documentation and submittal of actual water supply performance prior to commencing installation.

1.4 SUBMITTALS:
- A. Record Drawings:
  - 1. Prepare an accurate as-built drawing as installation proceeds to be submitted prior to final inspection. Drawing shall include:
    - a. Detail and dimension changes made during construction.
    - b. Significant details and dimensions not shown in original Bidding Documents.
  - 2. Maintain, at job site, one copy of Contract Documents (as defined in General Conditions) and relevant shop drawings.
  - 3. Clearly mark each document "PROJECT RECORD COPY" and maintain in good condition for use of the Landscape Architect and Owner.
  - 4. As-built drawing shall be clearly drawn.
  - 5. Submit product literature for all sprinklers, valves, pipe, wire, wire connectors and controller.
  - 6. Final payment for system will not be authorized until accurate and complete submittals are delivered to the Landscape Architect.
- B. Instruction Manual:
  - 1. Provide instruction manual which lists complete instructions for system operation and maintenance.

1.5 PRODUCT STORAGE:
- A. During construction and storage, protect materials from damage and prolonged exposure to sunlight.

1.6 WARRANTY:
- A. Standard one (1) year warranty stipulated in General Conditions shall include:
  - 1. Completed system including parts and labor.
  - 2. Filling and repairing depressions and replacing plantings due to settlement of irrigation trenches for one (1) year following final acceptance.
  - 3. System adjustment to supply proper coverage to areas to receive water.

1.7 MAINTENANCE:
- A. Extra Materials:
  - 1. In addition to installed system, furnish Owner with the following items at close-out:
    - a. Two sprinkler head bodies of each size and type.
    - b. Two nozzles for each size and type.
    - c. Two adjusting keys for each sprinkler head cover type.

2.0 PRODUCTS:

2.1 PIPE, PIPE FITTINGS, AND CONNECTIONS:
- A. Pipe shall be continuously and permanently marked with Manufacturer's name, size, schedule, type, and working pressure.
- B. Pipe:
  - 1. Pressure Lines: as indicated on plans.
  - 2. Lateral Lines: as indicated on plans.
  - 3. Risers: sch. 80 PVC, gray
- C. Fittings:
  - 1. Schedule 40 PVC.
- D. Sleeving:
  - 1. Schedule 40 PVC.

2.2 SPRINKLER HEADS:
- A. Conform to requirements shown on Drawings as to type, radius of throw, pressure, and discharge.

2.3 AUTOMATIC SPRINKLER SYSTEM:
- A. Control valves shall be of size and type indicated on Drawings.
- B. Control wire shall be 14 gauge single strand UL listed for direct bunal. All wire connections shall be made with 3M-DBY wire connectors. Install two spare control wires with the entire mainline.

2.4 VALVES:
- A. Electric Valves:
  - 1. Make and model shown on Drawings.
- B. Automatic Controller:
  - 1. Make and model shown on Drawings.

2.5 VALVE ACCESSORIES:
- A. Valve Boxes:
  - 1. Ametek or Brooks heavy duty valve box with locking lid or Landscape Architect approved equal.
  - 2. Do not install more than one (1) valve in a single box.
  - 3. Valve boxes shall be large enough for easy removal or maintenance of valves.

3.0 EXECUTION:

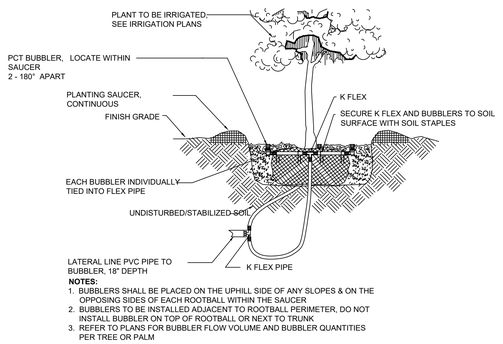
3.1 PREPARATION:
- A. Protection:
  - 1. Work of others damaged by this Section during course of its work shall be replaced or repaired by original installer at this Section's expense.

3.2 INSTALLATION:
- A. Trenching and Backfilling:
  - 1. Over-excavate trenches by two (2") inches and bring back to indicated depth by filling with fine, rock-free soil or sand.
  - 2. Cover pipe both top and sides with two (2") inches of material specified in paragraph above. In no case shall there be less than two (2") inches of rock-free soil or sand surrounding pipe.
- B. Installation of Plastic Pipe:
  - 1. Install plastic pipe in a manner to provide for expansion and contraction as recommended by Manufacturer.
  - 2. Unless otherwise indicated on Drawings, install main lines with a minimum cover of eighteen (18") inches based on finish grade. Install lateral lines with a minimum cover of twelve (12") inches based on finish grade
  - 3. Locate no sprinkler head closer than twelve (12") inches from building foundation. Heads immediately adjacent to mowing strips, walks or curbs shall be one (1") inch below top of mowing strip, walk or curb and have a minimum of one (1") inch clearance between head and mowing strip, walk or curb.
  - 4. Drawings show arrangement of piping. Should local conditions necessitate rearrangement, obtain approval of Landscape Architect prior to proceeding with work.
  - 5. Cut plastic pipe square. Remove burrs at cut ends prior to installation so unobstructed flow will result.
  - 6. Make solvent weld joints in the following manner:
    - a. Clean mating pipe and fitting with clean, dry cloth and apply one (1) coat of P-70 primer to each.
    - b. Apply uniform coat of 711 solvent to outside of pipe.
    - c. Apply solvent to fitting in similar manner.
    - d. Reapply a light coat of solvent to pipe and quickly insert into fitting.
    - e. Give pipe or fitting a quarter turn to insure even distribution of solvent and make sure pipe is inserted to full depth of fitting socket.
    - f. Hold in position for fifteen (15) seconds minimum or long enough to secure joint.
    - g. Wipe off solvent appearing on outer shoulder of fitting.
    - h. Do not use an excessive amount of solvent thereby causing an obstruction to form on the inside of pipe.
    - i. Allow joints to set at least 24 hours before applying pressure to PVC pipe.
  - 7. Tape threaded connection with teflon tape.
- C. Control Valves and Controller:
  - 1. Install controller, control wires, and valves in accordance with Manufacturer's recommendations and according to applicable electrical code.
  - 2. Install valves in plastic boxes with reinforced heavy duty plastic covers. Locate valve box tops at finish grade.
  - 3. Install remote control valves in valve boxes positioned over valve so all parts of valve can be reached for service. Set cover of valve box even with finish grade.
  - 4. Install all valve boxes over nine (9") inches of gravel for drainage.
- D. Sprinkler Heads:
  - 1. Prior to the installation of sprinkler heads, open control valves and use full head of water to flush out system.
  - 2. Set sprinkler heads perpendicular to finish grade.
  - 3. Set lawn sprinkler heads adjacent to existing walks, curbs, and other paved areas to grade.
- E. Dripline:
  - 1. Stake dripline every eight feet along dripline laterals.

3.3 ADJUSTMENT AND CLEANING:
- A. Adjust heads to proper grade when turf is sufficiently established to allow walking on it without appreciable harm. Such lowering or raising of of heads shall be part of the original contract with no additional charge to the Owner.
- B. Adjust sprinkler heads for proper distribution and trim to ensure spray does not fall on building.
- C. Adjust watering time of valves to provide proper amounts of water to all plants.

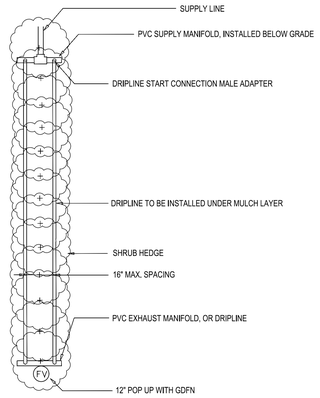
3.4 DEMONSTRATION:
- A. After system is installed and approved, instruct Owners Representative in complete operation and maintenance.

END OF SECTION



NOTES:
1. BUBBLERS SHALL BE PLACED ON THE UPHILL SIDE OF ANY SLOPES & ON THE OPPOSING SIDES OF EACH ROOTBALL WITHIN THE SAUCER
2. BUBBLERS TO BE INSTALLED ADJACENT TO ROOTBALL PERIMETER. DO NOT INSTALL BUBBLER ON TOP OF ROOTBALL OR NEXT TO TRUNK
3. REFER TO PLANS FOR BUBBLER FLOW VOLUME AND BUBBLER QUANTITIES PER TREE OR PALM

BUBBLER APPLICATION IRRIGATION DETAIL



DRIPLINE LAYOUT

SCALE: NTS

Crawford Irrigation Design, Inc.
IRRIGATION DESIGN AND CONSULTATION SERVICES
Edgewater, Florida
Tel: (386) 424-0027
EMAIL: cid@atlantic.net

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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300 INTERCHANGE BLVD., STE. C
DAYTONA BEACH, FL 32174
WWW.ZEVCOHEN.COM

REVISIONS		
MARK	DESCRIPTION	DATE

SEAL

JAKE STEHR, RLA, NO. 6667402

COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
DRAWN BY: SMG

IRRIGATION PLAN & DETAILS

IR2

PERMIT/BID DOCUMENTS

R:\2021\5 PORT ORANGE PUBLIC WORKS\FINAL ENGINEERING PLANS\CAD\IR\2021015 IR.DWG - PRINTED: 10/1/2024 11:33 AM

DESIGN CRITERIA

D1 ALL WORK SHALL CONFORM TO AT LEAST THE MINIMUM STANDARDS OF THE FLORIDA BUILDING CODE (FBC), EIGHTH EDITION (2023).

D2 DESIGN LOAD VALUES ARE INDICATED ON THE APPROPRIATE SHEETS AS FOLLOWS:
FOUNDATION DESIGN - SEE FOUNDATION NOTE F2 ON THIS SHEET
ROOF FRAMING DESIGN - SHEET S102
WIND DESIGN - SHEET S004

D3 TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THE STRUCTURAL PLANS AND SPECIFICATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE BUILDING CODE.

D4 EVERY REASONABLE EFFORT HAS BEEN MADE TO ENSURE COORDINATION BETWEEN THESE DRAWINGS AND THE BOUND STRUCTURAL SPECIFICATIONS. SHOULD THERE BE ANY DISCREPANCIES, THE CONTRACTOR SHALL THEN REQUEST A CLARIFICATION IN WRITING.

SPECIALTY ENGINEERING REQUIREMENTS

SE1 EXTERIOR CURTAIN WALLS SHALL BE DESIGNED BY THE VENDOR'S SPECIALTY ENGINEER AND SHALL INCLUDE FRAME, GLASS, GLAZING AND CONNECTIONS. SHOP DRAWINGS & CALCULATIONS SHALL BE SUBMITTED FOR REVIEW AND MUST BE SIGNED, DATED AND SEALED BY A STRUCTURAL ENGINEER REGISTERED IN THE SAME STATE AS THE PROJECT LOCATION. DESIGN LOADING(S) SHALL CONFORM TO ALL REQUIREMENTS OF THE BUILDING CODE (SEE DESIGN CRITERIA FOR APPLICABLE BUILDING CODE). THE VENDOR SHALL PROVIDE WINDOW WALL REACTIONS TO THE ARCHITECT.

SE2 FLAGPOLES AND SITE LIGHTING POLES SHALL BE DESIGNED BY THE POLE VENDOR'S SPECIALTY ENGINEER AND SHALL INCLUDE POLES, FOUNDATIONS AND CONNECTIONS. SHOP DRAWINGS & CALCULATIONS SHALL BE SUBMITTED FOR REVIEW AND MUST BE SIGNED, DATED AND SEALED BY A STRUCTURAL ENGINEER REGISTERED IN THE SAME STATE AS THE PROJECT LOCATION. MINIMUM DESIGN LOADS SHALL CONFORM TO FP 1001-17 "SPECIFICATIONS FOR DESIGN LOADS OF METAL FLAGPOLES".

SE3 EXTERIOR LIGHT STEEL FRAMING, INCLUDING BUT NOT LIMITED TO: WALLS, EXTERIOR CEILINGS, FASCIAS AND SOFFITS SHALL BE DESIGNED BY A SPECIALTY ENGINEER. STRUCTURAL ELEMENTS HAVE BEEN PROVIDED FOR THE ATTACHMENT OF THE LIGHT STEEL FRAMING. THE LIGHT STEEL SYSTEM SUPPLIER SHALL DESIGN AND DETAIL ALL CONNECTIONS TO THESE ELEMENTS. ANY FURTHER ELEMENTS REQUIRED FOR THE SUPPORT SHALL BE DESIGNED AND SUPPLIED AS PART OF THE LIGHT STEEL SYSTEM. SHOP DRAWINGS & CALCULATIONS SHALL BE SUBMITTED FOR REVIEW AND MUST BE SIGNED, DATED AND SEALED BY AN ENGINEER REGISTERED IN THE SAME STATE AS THE PROJECT LOCATION. DESIGN LOADING(S) SHALL CONFORM TO ALL REQUIREMENTS OF THE BUILDING CODE (SEE DESIGN CRITERIA FOR THE APPLICABLE BUILDING CODE) AND MAXIMUM DEFLECTIONS SHALL BE AS FOLLOWS: L/600 (BRICK VENEER), L/360 (STUCCO) & L/240 (FLEXIBLE FINISHES). A CERTIFIED TESTING AGENCY SHALL BE ENGAGED TO PERFORM INDUSTRY STANDARD INSPECTIONS TO ENSURE CONFORMANCE WITH PLANS AND SPECIFICATIONS (IF PROVIDED). SUBMIT REPORTS TO ARCHITECT AND ENGINEER.

SE4 PROVIDE ENGINEERED SUBMITTALS, SIGNED AND SEALED BY A STRUCTURAL ENGINEER REGISTERED IN THE SAME STATE AS THE PROJECT LOCATION, FOR ALL MECHANICAL, ELECTRICAL AND PLUMBING SUPPORTS OR ATTACHMENTS NOT INCLUDED WITHIN THE CONSTRUCTION DOCUMENTS FOR ALL ITEMS THAT REQUIRE ANYTHING OTHER THAN THE MANUFACTURER'S STANDARD HARDWARE OR ARE EXPOSED TO WIND LOADS. AN EXAMPLE OF POSSIBLE ITEMS THAT THIS WOULD APPLY TO ARE, INCLUDING BUT NOT LIMITED TO, ROOFTOP AND/OR WALL MOUNTED DUCTS, PIPES AND TRANSFORMERS.

FLORIDA PRODUCT APPROVAL / NOTICE OF ACCEPTANCE

FPA1 THE STRUCTURAL ROOF DECK(S) FOR THIS PROJECT HAVE BEEN DESIGNED TO BE COMPLIANT WITH THE CODES AND PRESSURES LISTED HEREIN. ANY PRODUCTS INSTALLED OVER THE STRUCTURAL DECK(S) SHALL HAVE BEEN TESTED AS AN ASSEMBLY, INCLUSIVE OF THE STRUCTURAL DECK, AND SHALL BE SUBMITTED FOR APPROVAL WITH THE FRONT-END CLEARLY IDENTIFIED. FAILURE TO PROVIDE THIS INFORMATION SHALL BE CAUSE FOR REJECTION BY THE ARCHITECT AND BBM STRUCTURAL ENGINEERS, INC. ALL WARRANTIES MUST BE PART OF THE ROOFING SUBMITTAL. ANY WARRANTY CONTAINING LANGUAGE WHICH "EXCLUDES GALE AND/OR HURRICANE FORCE WIND DAMAGE", OR "EXCLUDES DAMAGE FROM GALE AND/OR HURRICANE FORCE WINDS", OR ANY OTHER SIMILAR VERBIAGE, SHALL BE REJECTED AND THE ENTIRE PRODUCT ASSEMBLY SHALL NOT BE PERMITTED FOR USAGE ON THE PROJECT.

FPA2 RATIONAL ANALYSIS OF THE ROOF SYSTEM SHALL NOT BE PERMITTED WITHOUT THE WRITTEN CONSENT OF THE OWNER, ARCHITECT AND ENGINEER, AND THEN, ONLY WHERE PERMITTED BY THE LOCAL JURISDICTION HAVING DIRECT AUTHORITY.

GENERAL

G1 THE GENERAL CONTRACTOR SHALL REVIEW AND DETERMINE THAT DIMENSIONS ARE COORDINATED BETWEEN ARCHITECTURAL AND STRUCTURAL DRAWINGS PRIOR TO FABRICATION OR START OF CONSTRUCTION.

G2 THE GENERAL CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE, THE WORK PERSONS AND OTHER PEOPLE DURING CONSTRUCTION. HE SHALL SUPERVISE AND DIRECT THE WORK AND BE RESPONSIBLE FOR ALL CONSTRUCTION.

G3 NO STRUCTURAL MEMBER SHALL BE CUT, NOTCHED OR OTHERWISE REDUCED IN STRENGTH.

G4 THE GENERAL CONTRACTOR SHALL COORDINATE ARCHITECTURAL MECHANICAL AND ELECTRICAL DRAWINGS FOR ANCHORED, EMBEDDED AND SUPPORTED ITEMS WHICH AFFECT THE STRUCTURAL DRAWINGS AND NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES.

G5 ALL SHOP DRAWING SUBMITTALS SHALL BE SUBMITTED VIA ELECTRONIC MEDIA (i.e. PDF OR DWF FORMAT). HARD COPY SUBMITTALS WILL NOT BE ACCEPTED.

1. SUBMITTALS SHALL NOT BE SECURED IN ANY FORMAT THAT WILL PREVENT COMMENTS FROM BEING ADDED.
2. SUBMITTALS THAT ARE REQUIRED TO BE SIGNED AND SEALED SHALL BE SUBMITTED WITH A VISIBLE INK SEAL OR SHADED RAISED SEAL AT TIME OF FIRST SUBMITTAL, AND SHALL BE DIGITALLY SIGNED THAT MEETS THE REQUIREMENTS OF THE STATE BOARD WHERE THE PROJECT IS LOCATED.
3. SUBMITTALS THAT ARE MARKED **PRELIMINARY** OR ARE OTHERWISE INCOMPLETE WILL BE RETURNED REJECTED AND OR NOT REVIEWED. SUBMITTALS SHALL BE IN FINAL OR COMPLETED STATE PRIOR TO SUBMISSION TO BBM.

G6 ANY SUBMITTALS RECEIVED BY ARCH/ENG THAT HAVE NOT BEEN CHECKED BY THE GC AND HIS SUB-CONTRACTOR SHALL BE RETURNED WITHOUT REVIEW.

G7 ALL SECTIONS AND DETAILS SHALL BE CONSTRUED TO BE TYPICAL OR SIMILAR UNLESS ANOTHER SECTION OR DETAIL IS NOTED.

G8 ANY CONFLICTS NOTICED, OR OBSERVED, BETWEEN THE WRITTEN SPECIFICATIONS AND THE CONSTRUCTION DOCUMENTS DURING PROJECT BIDDING OR PROJECT CONSTRUCTION SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE STRUCTURAL ENGINEER-OF-RECORD. IF SUCH DISCREPANCY IS NOT NOTICED OR BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER-OF-RECORD FOR WRITTEN CLARIFICATION, THE CONTRACTOR/SUB-CONTRACTOR SHALL PROVIDE, AT PROJECT BID OR DURING PROJECT CONSTRUCTION, THE MORE STRINGENT AND/OR MORE COSTLY OF THE TWO ITEMS IN THE BID AND/OR FINAL INSTALLATION.

G9 "BBM STRUCTURAL ENGINEERS" ASSUMES NO RISK OR LIABILITY FOR THE SITE SAFETY OR WELL-BEING OF ANY CONTRACTOR, SUB-CONTRACTOR NOR THEIR EMPLOYEES DURING THE CONSTRUCTION OF THE PROJECT CONTAINED IN THESE DOCUMENTS.

G10 GENERAL CONTRACTOR/CONSTRUCTION MANAGER SHALL SUPPLY ALL SUB-CONTRACTORS WITH THE STRUCTURAL GENERAL NOTE SHEETS AS WELL AS THE STRUCTURAL DRAWINGS.

G11 THE STRUCTURAL STEEL AND OPEN WEB STEEL JOISTS SHALL BE FABRICATED AND ERECTED IN FULL CONFORMANCE WITH THE "OSHA STEEL ERECTION STANDARD". IF THE CONSTRUCTION DRAWINGS DEVIATE FROM THE OSHA STANDARD THEN THE FABRICATOR SHALL PROVIDE SUBMITTALS THAT CLEARLY INDICATE THE DEVIATION WITH A REVISION CLOUD AND REQUEST APPROVAL FROM "BBM" TO MAKE THE CHANGE SO THAT CONFORMANCE WITH THE OSHA STANDARD IS ASSURED.

G12 THE CONTRACTOR'S MEANS AND METHODS SHALL FULLY CONFORM TO THE REQUIREMENTS OF SEI/ASCE 37 (DESIGN LOADS ON STRUCTURES DURING CONSTRUCTION) UNTIL ALL OF THE STRUCTURAL ELEMENTS ARE IN PLACE AND HAVE RECEIVED THE INSPECTOR'S APPROVAL.

G13 REFER TO ARCHITECTURAL DRAWINGS FOR ROOF COVERINGS. ROOFS SHALL BE INSPECTED BY A LICENSED ENGINEER/ARCHITECT AND A REPRESENTATIVE OF THE ROOFING MANUFACTURER, AND REPORTS SHALL BE SUBMITTED TO THE OWNER AND ARCHITECT.

FOUNDATIONS

F1 THE FOUNDATION AND SLAB-ON-GRADE DESIGN CONTAINED HEREIN IS BASED SOLELY UPON THE PROJECT'S GEOTECHNICAL REPORT (REPORT NUMBER G22121, DATED JUNE 23,2022, AS PREPARED BY BECHTOL ENGINEERING AND TESTING, INC). BBM HAS RELIED EXCLUSIVELY ON THE CONTENTS AND RECOMMENDATIONS WITHIN THIS REPORT, BUT ACCEPTS NO RESPONSIBILITY WHATSOEVER FOR ITS CONTENTS OR ACCURACY. THE GENERAL CONTRACTOR/CONSTRUCTION MANAGER SHALL MAKE THEMSELVES FAMILIAR WITH THE REPORT BEFORE THE COMMENCEMENT OF CONSTRUCTION.

F2 FOUNDATION DESIGN IS BASED ON A NET ALLOWABLE SOIL BEARING PRESSURE OF 2000 PSF. COMPACTION UNDER ALL FOUNDATIONS SHALL ALSO BE AS STATED IN NOTE SOG1.

F3 A CERTIFIED TESTING AGENCY SHALL BE ENGAGED TO PERFORM INDUSTRY-STANDARD SOIL DENSITY TESTS TO ENSURE CONFORMANCE WITH GEOTECHNICAL SOILS REPORT. SUBMIT REPORTS TO ARCHITECT AND ENGINEER.

F4 CONTRACTOR, IN CONJUNCTION WITH GEOTECHNICAL FIELD REPRESENTATIVE, SHALL DETERMINE IF ANY UNSUITABLE CONDITIONS ARE DISCOVERED DURING EXCAVATION WHICH WOULD PREVENT ATTAINMENT OF THE DESIGN SOIL PRESSURE RECOMMENDED BY THE SOILS REPORT.

F5 FOOTINGS SHALL BE CAST TO THE SCHEDULED SIZE AND SHALL NOT BE OVERSIZED BY MORE THAN 6" ON ANY SIDE FOR FOOTING WIDTH OF AT LEAST 6'-0". FOR FOOTINGS LESS THAN 6'-0" IN WIDTH THE MAXIMUM OVERSIZING SHALL BE 3".

F6 CONTRACTOR SHALL BE PREPARED FOR AND SHALL INCLUDE COST OF FORMING FOUNDATIONS SHOULD THE EARTH NOT PROVIDE ADEQUATE BANK STABILITY.

SLAB ON GRADE

SOG1 UNLESS NOTED OTHERWISE IN THE GEOTECHNICAL REPORT, COMPACT INTERIOR FILL TO 95% OF MODIFIED PROCTOR MAXIMUM DRY DENSITY (ASTM D1557). SOIL COMPACTION SHALL BE FIELD-CONTROLLED BY A REPRESENTATIVE TECHNICIAN OF A QUALIFIED LABORATORY. EACH LAYER OF FILL SHALL NOT EXCEED 12" THICK AND SHALL BE COMPACTED PRIOR TO PLACEMENT OF NEXT LAYER.

SOG2 MAXIMUM SPACING OF CONTROL JOINTS (i.e. SAWCUT JOINT OR CONSTRUCTION JOINT) SHALL BE AS SET IN THE TABLE BELOW, OR AS NOTED ON PLANS. THE MORE STRINGENT SHALL APPLY. PATTERNS SHALL BE APPROXIMATELY SQUARE WITH A RATIO OF LONG SIDE TO SHORT SIDE NOT EXCEEDING 1.5 TO 1. SEE SLAB-ON-GRADE DETAILS FOR ADDITIONAL INFORMATION.

SLAB THICKNESS (IN)	★ 3/4" OR LARGER AGGREGATE SPACING (FT)
4	12
5	13
6	14
7 AND GREATER	15

★ MIX DESIGNS CONTAINING AGGREGATE LESS THAN 3/4" ARE NOT ACCEPTABLE.

SOG3 GENERAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF SJ'S AND CJ'S WITH ARCHITECTURAL FLOOR FINISHES TO ENSURE SLAB JOINTS DO NOT READ THROUGH.

SOG4 SLAB THICKNESS SHALL BE INCREASED AS REQUIRED TO PROVIDE ADEQUATE SUPPORT FOR CRANE LOADS WITHOUT CRACKING SLAB.

SOG5 WAREHOUSE SLABS SHALL BE POWER-TROWELLED TO A HARD, SMOOTH, BURNISHED FINISH. THE FINAL TROWEL PASS SHALL BE DONE BY MACHINE, NOT BY HAND. A SPECIAL METALLIC OR MINERAL AGGREGATE SURFACE HARDENER SHALL BE PROVIDED FOR HARD WHEELED INDUSTRIAL VEHICULAR TRAFFIC FLOORS. WET CURE THE SLAB FOR A MINIMUM OF 7 DAYS.

SOG6 THE WAREHOUSE SLAB HAS BEEN DESIGNED FOR THE ALLOWABLE DISTRIBUTED LOADS NOTED ON PLAN(S). ANY AND ALL LOADS PLACED UPON THE SLAB DURING THE CONSTRUCTION OR POST-CONSTRUCTION PHASE WHICH EXCEED THE DESIGN LOADS ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR/SUB-CONTRACTOR OR THE TENANT.

POST-INSTALLED ANCHORS

PIA1 POST-INSTALLED ANCHORS SHALL ONLY BE USED WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE STRUCTURAL ENGINEER-OF-RECORD (SEOR) PRIOR TO INSTALLING POST-INSTALLED ANCHORS IN PLACE OF MISSING OR MISPLACED CAST-IN-PLACE ANCHORS. CARE SHALL BE TAKEN IN PLACING POST-INSTALLED ANCHORS TO AVOID CONFLICTS WITH EXISTING REBAR. HOLES SHALL BE DRILLED AND CLEANED AND PRODUCT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII). SUBSTITUTION REQUESTS, FOR PRODUCTS OTHER THAN THOSE SPECIFIED BELOW, SHALL BE SUBMITTED BY THE CONTRACTOR TO THE STRUCTURAL ENGINEER-OF-RECORD ALONG WITH CALCULATIONS THAT ARE PREPARED & SEALED BY A REGISTERED PROFESSIONAL ENGINEER IN THE SAME STATE AS PROJECT LOCATION. THE CALCULATIONS SHALL DEMONSTRATE THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING EQUIVALENT OR BETTER PERFORMANCE VALUES OF THE SPECIFIED PRODUCT USING THE APPROPRIATE DESIGN PROCEDURE AND/OR STANDARD(S) AS REQUIRED BY THE BUILDING CODE.

PIA2 THE CONTRACTOR SHALL ARRANGE AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL OF THEIR ANCHORING PRODUCTS SPECIFIED. THE STRUCTURAL ENGINEER OF RECORD MUST RECEIVE DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTOR'S PERSONNEL WHO INSTALL ANCHORS ARE TRAINED PRIOR TO THE COMMENCEMENT OF INSTALLING ANCHORS. ADDITIONALLY, INSTALLATION OF ADHESIVE ANCHORS IN HORIZONTAL TO VERTICALLY OVERHEAD ORIENTATION SHALL BE DONE BY CERTIFIED ADHESIVE ANCHOR INSTALLER (AAI) AS CERTIFIED THROUGH ACI AND IN ACCORDANCE WITH ACI 318-19 (SECTION 17.2.3). PROOF OF CURRENT CERTIFICATION SHALL BE SUBMITTED PRIOR TO COMMENCEMENT OF INSTALLATION.

PIA3 CONCRETE ANCHORS:

A. MECHANICAL ANCHORS FOR USE IN CRACKED AND UNCRACKED CONCRETE SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.2 AND ICC-ES AC193, PRE-APPROVED MECHANICAL ANCHORS INCLUDE:
   1. DEWALT "POWER-STUD+ SD1" (ICC-ES ESR-2818)
   2. DEWALT "POWER-STUD SD2, SD4 (30466) AND SD6 (31666)" (ICC-ES ESR-2502)
   3. DEWALT "SCREW-BOLT+" (ICC-ES ESR-3889)
   4. DEWALT "SNAKE+" (ICC-ES ESR-2272)
   5. DEWALT "MINI-UNDERCUT+" (ICC-ES ESR-3912)
   6. HILTI KWIK BOLT-TZ2 EXPANSION ANCHOR SAFE SET SYSTEM WITH AT MODULE FOR APPLICABLE SIZES (ICC-ES ESR-4266)
   7. HILTI KWIK BOLT 1 EXPANSION ANCHOR SAFE SET SYSTEM WITH HOLLOW DRILL BIT AND VACUUM AND AT MODULE FOR APPLICABLE SIZES PER IAPMO UES ER-975
   8. HILTI KWIK HUS-EZ (KH-EZ), KH-EZ CRC, KH-EZ S5316, KH-EZ C, KH-EZ E, KH-EZ I, AND KH-EZ P SCREW ANCHOR SAFE SET SYSTEM WITH HOLLOW DRILL BIT AND VACUUM PER ICC-ES ESR-3027
   9. SIMPSON STRONG-TIE "STRONG-BOLT 2" (ICC-ES ESR-3037)
   10. SIMPSON STRONG-TIE "TITEN-HD" (ICC-ES ESR-2713)
   11. SIMPSON STRONG-TIE "STAINLESS STEEL TITEN HD" (IAPMO UES ER-493) (316 OR 304 STAINLESS STEEL)

B. ADHESIVE ANCHORS FOR USE IN CRACKED AND UNCRACKED CONCRETE SHALL BE INSPECTED AS FOLLOWS: AT THE ONSET OF EACH APPLICATION A MANUFACTURER'S REPRESENTATIVE MUST BE PRESENT TO WITNESS AT LEAST FIVE COMPLETE INSTALLATIONS. INSTALLERS MUST BE TRAINED BY THE MANUFACTURER AND MANUFACTURER SHALL SUBMIT DOCUMENTATION TO THE CONTRACTOR INDICATING TRAINING HAS TAKEN PLACE. TRAINED INSTALLERS SHALL PROVIDE WRITTEN DOCUMENTATION TO THE CONTRACTOR THAT ALL ANCHORS HAVE BEEN INSTALLED PER THE MPII. CONTRACTOR SHALL SUBMIT THIS DOCUMENTATION TO THE SEOR. ADHESIVE ANCHORS SHALL BE INSTALLED IN CONCRETE HAVING MINIMUM AGE OF 21 DAYS. HOLES SHALL BE DRY AT THE TIME OF INSTALLATION. ADHESIVES SHALL HAVE MAX IN-SERVICE SHORT-TERM TEMPERATURE OF 150°F, AND MAX IN-SERVICE LONG-TERM TEMPERATURE OF 110°F. PRIOR TO INSTALLATION OF ADHESIVE ANCHORS IN HORIZONTAL OR UPWARDLY INCLINED ORIENTATIONS RESISTING SUSTAINED TENSION LOADS, INSTALLERS ARE REQUIRED TO BE CERTIFIED IN ACCORDANCE WITH THE ACI / CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM AND MUST BE CONTINUOUSLY INSPECTED. ANCHORS SHALL ALSO HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC308. PRE-APPROVED ADHESIVE ANCHORS INCLUDE THE FOLLOWING PRODUCTS:
   1. DEWALT
      a. "PURE 220+" WITH DUSTX+ HOLLOW DRILL BIT SYSTEM OR USING TRADITIONAL BLOW OUT METHOD PER ICC-ES ESR-5144.
      b. AC200+ WITH DUSTX+ HOLLOW DRILL BIT SYSTEM OR USING TRADITIONAL BLOW OUT METHOD PER ICC-ES ESR-4027.
   2. DEWALT AC200+ GOLD (ICC-ES ESR-4027)
   3. HILTI
      a. HILTI HIT-HY 200 V3 SAFE SET SYSTEM WITH THE HILTI HIT-Z ROD PER ICC ESR-4868.
      b. HILTI HIT-HY 200 V3 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT (TE-CD OR TE-YD) AND VACUUM WITH HAS-E THREADED ROD PER ICC ESR-4868.
      c. HILTI HY 200 V3 ADHESIVE ANCHOR USING TRADITIONAL CLEANING METHOD, 2 BLOWS OF COMPRESSED AIR (90 PSI MINIMUM, OIL FREE COMPRESSOR), 2 BRUSHES WITH SAME SIZE AS HOLE (WIRE BRUSH AND 2 MORE BLOWS, (2x2x2 CLEANING METHOD) PER ICC ESR-4868.
      d. HILTI HIT-RE 500-V3 EPOXY ADHESIVE ANCHORING SYSTEM WITH HAS-E THREADED ROD PER ICC ESR-3814 FOR SLOW CURE APPLICATIONS.
      e. HILTI KWIK-X DUAL ACTION ANCHOR SAFESET SYSTEM WITH KHC CAPSULE ADHESIVE AND KWIK-HUS EZ PER ICC ESR-5065.
   4. SIMPSON STRONG-TIE "SET-3G" (ICC-ES ESR-4057)
   5. SIMPSON STRONG-TIE "SET-XP" (ICC-ES ESR-2508)
   6. SIMPSON STRONG-TIE "AT-XP" (IAPMO UES ER-263)
   7. SIMPSON STRONG-TIE "ET-HP" (ICC-ES ESR-3372)

PIA4 MASONRY ANCHORS:

A. ANCHORAGE TO SOLID-GROUTED CONCRETE MASONRY
   1. MECHANICAL AND CONCRETE SCREW ANCHORS FOR USE IN SOLID-GROUTED CONCRETE MASONRY SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC01 OR AC106, RESPECTIVELY. PRE-APPROVED MECHANICAL AND CONCRETE SCREW ANCHORS INCLUDE:
      a. DEWALT "POWER-STUD+ SD1" (ICC-ES ESR-2966)
      b. DEWALT "SCREW-BOLT+" (ICC-ES ESR-4042)
      c. HILTI KWIK BOLT-TZ2 EXPANSION ANCHOR PER ICC-ES ESR-4561
      d. HILTI KWIK BOLT-1 EXPANSION ANCHOR PER IAPMO UES ER-677
      e. HILTI KH-EZ, KH-EZ CRC, KH-EZ S5316, KH-EZ C, AND KH-EZ P SCREW ANCHORS PER ICC-ES ESR-3056
      f. SIMPSON STRONG-TIE "STRONG-BOLT 2" (IAPMO UES ER-240)
      g. SIMPSON STRONG-TIE "TITEN-HD" (ICC-ES ESR-1056)
   2. ADHESIVE ANCHORS FOR USE IN SOLID-GROUTED CONCRETE MASONRY SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC58. PRE-APPROVED ADHESIVE ANCHORS INCLUDE:
      a. DEWALT AC100+ GOLD (ICC-ES ESR-3200)
      b. HILTI HIT-HY 270 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT AND VACUUM PER ICC-ES ESR-4143
      c. HILTI HIT-HY 200 V3 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT AND VACUUM PER ICC ESR-4868
      d. SIMPSON STRONG-TIE "SET-XP" (IAPMO UES ER-265)
      e. SIMPSON STRONG-TIE "AT-XP" (IAPMO UES ER-281)
      f. SIMPSON STRONG-TIE "ET-HP" (IAPMO UES ER-241)

B. ANCHORAGE TO HOLLOW CONCRETE MASONRY / UNREINFORCED CLAY BRICK MASONRY
   1. SCREW ANCHORS FOR USE IN HOLLOW CONCRETE MASONRY SHALL HAVE BEEN TESTED AND QUALIFIED IN ACCORDANCE WITH ICC-ES AC106. PRE-APPROVED SCREW ANCHORS INCLUDE:
      a. SIMPSON STRONG-TIE "TITEN-HD" (ICC-ES ESR-1056)
   2. ADHESIVE ANCHORS WITH SCREEN TUBES FOR USE IN HOLLOW CONCRETE MASONRY / UNREINFORCED CLAY BRICK MASONRY SHALL BE TESTED AND QUALIFIED IN ACCORDANCE WITH ICC-ES AC59 OR AC60, AS APPROPRIATE. THE APPROPRIATE SCREEN TUBE SHALL BE USED AS RECOMMENDED BY THE ADHESIVE MANUFACTURER. PRE-APPROVED ADHESIVE ANCHORS WITH SCREEN TUBES INCLUDE:
      a. DEWALT AC100+ GOLD (ICC-ES ESR-3200)-HOLLOW CONCRETE MASONRY
      b. DEWALT AC100+ GOLD (ICC-ES ESR-4105)-CLAY BRICK MASONRY
      c. HILTI HY 270 ADHESIVE ANCHOR (ICC-ES ESR-4143)
      d. SIMPSON STRONG-TIE "SET-XP" (IAPMO UES ER-265)
      e. SIMPSON STRONG-TIE "ACRYLIC-TIE" (ICC-ES ESR-5791)

PIA5 POWDER-ACTUATED FASTENERS (PAF) SHALL BE BY SIMPSON STRONG-TIE (ICC-ES ESR-2138), HILTI (ICC-ES ESR-1663 AND ESR-2269), DEWALT "POWER DRIVEN FASTENERS" (ICC-ES ESR-2024) OR ENGINEER-APPROVED EQUAL.

PIA6 GAS-ACTUATED FASTENERS (GAF) SHALL BE BY SIMPSON STRONG-TIE (ICC-ES ESR-2911), HILTI (ICC-ES ESR-1752), DEWALT "TRAK-IT GS FASTENERS" (ICC-ES ESR-3275) OR ENGINEER-APPROVED EQUAL.

PIA7 REFER TO LIGHT-GAGE FRAMING NOTES (IF APPLICABLE) FOR ADDITIONAL INFORMATION.

PIA8 CORDLESS DIRECT FASTENERS (CDF) SHALL BE BY DEWALT (ICC-ES ESR-4076) OR ENGINEER-APPROVED EQUAL.

PRE-ENGINEERED BUILDING

PE1 A CERTIFIED TESTING AGENCY SHALL BE ENGAGED TO PERFORM INDUSTRY-STANDARD INSPECTIONS TO ENSURE CONFORMANCE WITH PLANS AND SPECIFICATIONS (IF PROVIDED). SUBMIT REPORTS TO ARCHITECT AND ENGINEER.

PE2 ALL STRUCTURAL STEEL SHALL BE ASTM A36 UNLESS NOTED OTHERWISE.

PE3 "BBM STRUCTURAL ENGINEERS" REQUIRE STRUCTURAL SUBMITTALS FOR REVIEW AS AN INDICATION THAT INTENT HAS BEEN UNDERSTOOD AND THAT SPECIFIED CRITERIA HAVE BEEN USED. STRUCTURAL SUBMITTALS SHALL BEAR THE IMPRESSED SEAL AND SIGNATURE OF THE SPECIALTY ENGINEER LICENSED TO PRACTICE IN THE STATE OF FLORIDA.

PE4 STRUCTURAL SUBMITTALS SHALL IDENTIFY THE PROJECT AND LIST LOADING AND OTHER DESIGN CRITERIA. FABRICATION AND ERECTION DRAWINGS SHALL INDICATE IN DETAIL THE CONSTRUCTION OF THE STANDARD STRUCTURE USED OR AS MODIFIED TO COMPLY WITH THE REQUIREMENTS OF THE PARTICULAR PROJECT. THEY SHALL INDICATE ALL CONNECTION DETAILS, OPENINGS AND OTHER SPECIAL DETAILS. THEY SHALL SHOW THE MAGNITUDE AND LOCATION OF BUILDING REACTIONS ON THE FOUNDATION UNDER ALL DESIGN CONDITIONS. CALCULATIONS SUPPORTING THE DESIGN SHALL BE SUBMITTED NOT ONLY FOR THE STANDARD STRUCTURE BUT FOR MODIFICATIONS AND FOR RELATED COMPONENTS REQUIRING STRUCTURAL DESIGN.

PE5 ANCHOR ROD DIAMETER SHALL BE DETERMINED BY METAL BUILDING MANUFACTURER. LENGTH AND TYPE OF ROD REQUIRED TO TRANSMIT LOADS TO FOUNDATION SHALL BE BY "BBM STRUCTURAL ENGINEERS."

PE6 FOUNDATION DESIGN REACTIONS HAVE BEEN INDICATED IN THE DRAWINGS. IF REACTIONS ARE HIGHER NOTIFY ARCHITECT AND ENGINEER IMMEDIATELY.

PE7 ALL COLUMNS BASES ARE DESIGNED AS "PIN" CONNECTED. NO MOMENT CONNECTED BASES ARE ALLOWED.

PE8 ROOF PURLINS SHALL BE BRACED AT TOP AND BOTTOM CHORDS AT THIRD POINTS, MINIMUM AND IN ACCORDANCE WITH A.I.S.I. ROOFING SHEETS SHALL NOT BE CONSIDERED AS ACCEPTABLE FOR TOP CHORD BRACING, UNLESS DOCUMENTATION IS PROVIDED OTHERWISE.

PE9 NO FABRICATION SHALL BEGIN UNTIL METAL BUILDING MANUFACTURER RECEIVES REVIEWED, APPROVED SUBMITTALS FROM THE ENGINEER.

PE10 GRIND SLAB SMOOTH OF ANY IRREGULARITIES PRIOR TO PLACING FRAMING.

PE11 WHERE CLEAR SPAN FRAME BRACES AN EXTERIOR HARD WALL (I.E. CMU OR TILT-UP PANEL) ATTACHMENT TO WALL SHALL BE MADE AFTER DEAD LOAD IS APPLIED.

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CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

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BBM PROJECT #21156

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BORA ERBILEN, P.E.
Florida Professional Engineer No. 55996

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MARK	DESCRIPTION	DATE

COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
DRAWN BY: TC/BE

STRUCTURAL GENERAL NOTES

A1 STRUCTURAL GENERAL NOTES
3/4" = 1'-0"

S001
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CONCRETE AND REINFORCING

C1 A CERTIFIED TESTING AGENCY SHALL BE ENGAGED TO PERFORM INDUSTRY STANDARD TESTING INCLUDING SLUMP TESTS AND CYLINDER BREAKS TO ENSURE CONFORMANCE WITH PLANS AND SPECIFICATIONS (IF PROVIDED). SUBMIT REPORTS TO ARCHITECT AND ENGINEER.

C2 CONCRETE WORK SHALL CONFORM TO ACI 318-19 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE.

C3 ALL CONCRETE SHALL HAVE THE FOLLOWING PROPERTIES:

LOCATION	28 DAY STRENGTH	SLUMP	COARSE AGGREGATE(S)	COMMENTS	EXPOSURE CATEGORIES & CLASSES (PER ACI 318-19 SECTION 19.3.1)			
					F	S	W	C
FOUNDATIONS & WALLS	3000 PSI	4" +/- 1"	1"		F0	S0	W0	C0
SLAB-ON-GRADE: FOOT TRAFFIC	3000 PSI	4" +/- 1"	1"		F0	S0	W0	C0
SLAB-ON-GRADE: INDUSTRIAL VEHICULAR TRAFFIC	4000 PSI (MIN CEMENT CONTENT = 520 lb/yd³)	4" +/- 1"	3/8" & 1 1/2"		F0	S0	W0	C0
TIE BEAMS AND TIE COLUMNS (MAX 50' BETWEEN COLD JOINTS)	3000 PSI	6" +/- 1"	3/8"		F0	S0	W0	C0

NOTES:
1. SLUMP FOR RAMPS AND SLOPING SURFACES SHALL NOT EXCEED 4".
2. ALL CONC MIXES SHALL HAVE A MAXIMUM SAND TO TOTAL AGGREGATE RATIO OF 0.50.
3. A 2" OR 3" PUMP SHALL BE ACCEPTABLE FOR COLUMNS AND TIE BEAMS BUT WILL NOT BE ALLOWED FOR FOUNDATIONS, SLABS, TILT-UP PANELS AND CONCRETE BEAMS.
4. READY MIX SUPPLIER SHALL DESIGN THE MIXES THAT CONTAIN MULTIPLE AGGREGATES TO BE WELL GRADATED.
5. SLABS SHALL NOT BE AIR ENTRAINED.
6. FOR SLABS THAT SHALL RECEIVE MOISTURE SENSITIVE FLOORING:
   a. CONTRACTOR SHALL WORK WITH THE READY MIX SUPPLIER TO PROVIDE A MIX DESIGN THAT WILL BE AT OR BELOW 75% RELATIVE HUMIDITY AT THE TIME THE FLOORING IS SCHEDULED TO BE INSTALLED.
   b. DO NOT USE LIGHTWEIGHT AGGREGATES.
   c. PROVIDE A MIX WITH GOOD SELF-DESICCATING PROPERTIES. CONSIDER ADDING 2%-4% SILICA FUME.
   d. DO NOT HARD TROWEL THE SURFACE BUT INSTEAD PROVIDE A LIGHTLY TROWELLED SURFACE.

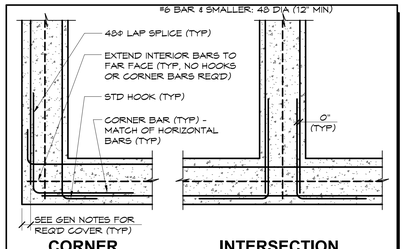
C4 CONCRETE MIX DESIGN SUBMITTALS:
1. EACH MIX DESIGN SHALL BE LABELED TO INDICATE THE AREA IN WHICH THE CONCRETE IS TO BE PLACED (I.E. FOUNDATIONS, SLAB- ON-GRADE, COLUMNS, ETC.). FAILURE TO DO SO WILL CAUSE DELAY AND/OR REJECTION OF SUBMITTALS.
2. PROPOSED MIX DESIGN SHALL BE IN ACCORDANCE WITH METHOD 1 OR METHOD 2 OF ACI 301. PROVIDE SUPPORTING DATA IN TABULAR FORM FOR EACH SEPARATE PROPOSED MIX.
3. SUBMIT CONCRETE MIX DESIGN FOR EACH PROPOSED CLASS OF CONCRETE.

C5 REBAR SHALL CONFORM TO ASTM A615 GRADE 60. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A1064 AND SHALL BE LAPPED MINIMUM ONE MESH + 2" WHERE SPLICED. ALL REINFORCING SHALL BE DOMESTICALLY PRODUCED. ALL REBAR THAT IS TO BE WELDED SHALL BE LOW ALLOY ASTM A706 GRADE 60.

C6 SPLICES AND ANCHORAGE OF REINFORCING SHALL BE AS FOLLOWS (UNLESS OTHERWISE NOTED):

WELDED WIRE FABRIC: 8"
ALL OTHER (UNLESS SCHEDULED OTHERWISE): #7 BAR & LARGER: 60 DIA

C7 REINFORCEMENT IN WALLS, FOOTINGS AND BEAMS SHALL BE CONTINUOUS AND LAPPED 48 BAR DIA AT SPLICE UNLESS OTHERWISE NOTED. HOOK AND LAP ALL CORNER AND INTERSECTING BARS. (SEE REINF DEVELOPMENT DETAIL).

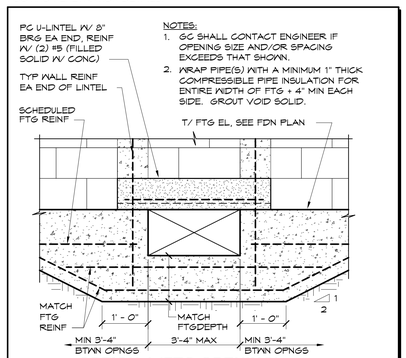


REINF DEVELOPMENT DETAIL

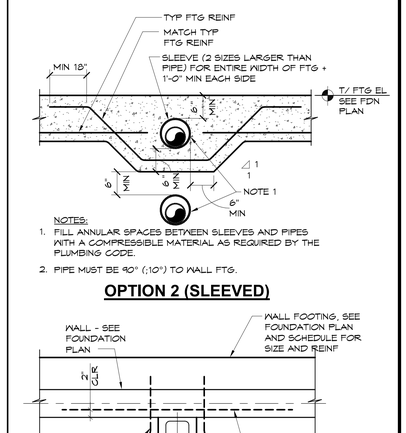
C8 COVER FOR REINFORCING SHALL BE AS FOLLOWS:

CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH:	3"
CONCRETE EXPOSED TO EARTH OR WEATHER:	
#6 THRU #18 BARS:	2"
#5 BAR, W31 OR D31 WIRE AND SMALLER:	1 1/2"

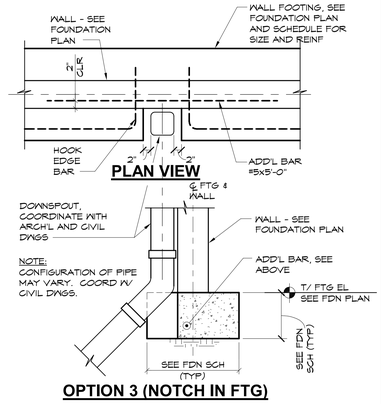
C9 FOOTING PENETRATION DETAILS:



OPTION 1 (FTG OPENING)



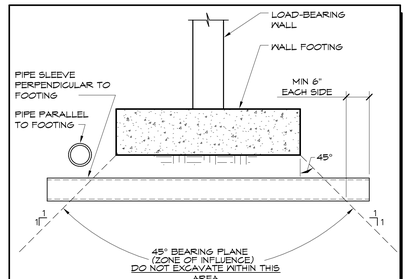
OPTION 2 (SLEEVED)



OPTION 3 (NOTCH IN FTG)

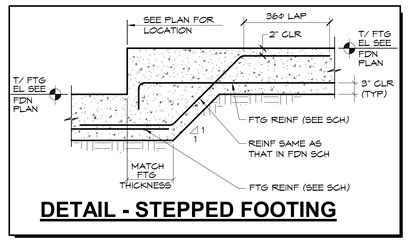
DETAIL - FOOTING PENETRATIONS

C10 FOOTING EXCAVATION DETAIL:



DETAIL - FOOTING EXCAVATIONS

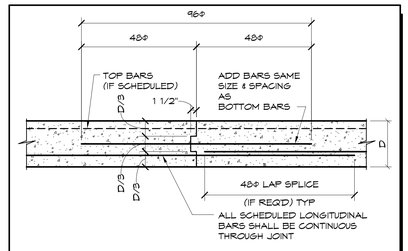
C11 STEPPED FOOTING DETAIL (IF REQUIRED):



DETAIL - STEPPED FOOTING

C12 BASE CONSTRUCTION PRICE SUBMITTED BY CONTRACTOR/SUBCONTRACTOR SHALL INCLUDE 1000# OF BOTH #5 AND #6 REINFORCING STEEL AND 100 MAN HOURS (TOTAL) OF LABOR FOR INSTALLATION OF THIS REINFORCING AS DIRECTED BY THE ARCHITECT/ENGINEER.

C13 FOOTING CONSTRUCTION JOINT (IF REQUIRED):



DETAIL - FOOTING CONSTRUCTION JOINT

ABBREVIATIONS

AAC	AUTOCLAVED AERATED CONCRETE
AB	ANCHOR BOLT
ABV	ABOVE
A.C.I.	AMERICAN CONCRETE INSTITUTE
ADDL	ADDITIONAL
AFF	ABOVE FINISH FLOOR
AGGR	AGGREGATE
A.I.S.C.	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
A.I.S.I.	AMERICAN IRON AND STEEL INSTITUTE
AL	ALUMINUM
ALT	ALTERNATE
AR	ANCHOR ROD
ARCH	ARCHITECT(URAL)
ASD	ALLOWABLE STRESS DESIGN
ASTM	AMERICAN SOCIETY OF TESTING MATERIALS
A.W.S.	AMERICAN WELDING SOCIETY
B/	BOTTOM OF
BB	BOND BEAM
BLDG	BUILDING
BLKG	BLOCKING
BLW	BELOW
BM	BEAM
BOT	BOTTOM
BP	BASE PLATE
BRDG	BRIDGING
BRG	BEARING
BRK	BRICK
BS	BOTH SIDES
BTJ	BOLTED TIE JOIST
BTWN	BETWEEN
C/C	CENTER TO CENTER
CANT	CANTILEVER
CB	CONCRETE BEAM
CC	CONCRETE COLUMN
CFMF	COLD FORMED METAL FRAMING
CFS	COLD-FORMED STEEL
CIP	CAST-IN-PLACE
CJ	CONSTRUCTION JOINT (OR CONTROL JOINT)
℄, CL	CENTERLINE
CLR	CLEAR(ANCE)
CM	CONSTRUCTION MANAGER
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
COORD	COORDINATE
CSK	COUNTER SINK
CTR	CENTER
CTRD	CENTERED
CY	CUBIC YARD
DBA	DEFORMED BAR ANCHOR
DIA	DIAMETER
DIAG	DIAGONAL
DL	DEAD LOAD
DN	DOWN
DTL	DETAIL
DWG	DRAWING
DWL	DOWEL
EA	EACH
EE	EACH END
EF	EACH FACE
EJ	EXPANSION JOINT
ENG	ENGINEER
EOS	EDGE OF SLAB
EL	ELEVATION
EQ	EQUAL
EQ SP	EQUAL SPACE(S) (ING)
ES	EACH SIDE
EW	EACH WAY
EXP	EXPANSION
EXT	EXTERIOR
F/	FACE OF
FBC	FLORIDA BUILDING CODE
FD	FLOOR DRAIN
FDN	FOUNDATION
FF	FINISHED FLOOR
FIN	FINISH
FL	FLOOR
FLG	FLANGE
FMG	FRAMING
FS	FAR SIDE
FT	FOOT
FTG	FOOTING
ga	GAUGE
GALV	GALVANIZE(D)
GB	GRADE BEAM
GC	GENERAL CONTRACTOR
GFC	GROUT FILLED CELL(S) / COURSE
GLB	GLU-LAM BEAM
GR	GRADE
HC	HOLLOW-CORE
HDG	HOT DIPPED GALVANIZED
HK	HOOK
HORIZ	HORIZONTAL
HP	HIGH POINT
HS	HEADED STUD
HSS	HOLLOW STRUCTURAL SECTION
ID	INSIDE DIAMETER
IF	INSIDE FACE
INT	INTERIOR
JST	JOIST
JT	JOINT
K	KIP
KO	KNOCK-OUT
lb, #	POUND(S)
LG	LONG
LL	LIVE LOAD
LLBB	LONG LEG BACK-TO-BACK
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LNTL	LINTEL
LSL	LONG SLOTTED
LOC	LOCATION
LONG	LONGITUDINAL
LP	LOW POINT
LRFD	LOAD & RESISTANCE FACTOR DESIGN
LW	LONG WAY
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MBM	METAL BUILDING MFR
MC	MASONRY COLUMN
MCJ	MASONRY CONTROL JT
MCN	MOMENT CONNECTION
ME	MONOLITHIC EDGE
MECH	MECHANICAL
MEZZ	MEZZANINE
MF	MONOLITHIC FOOTING
MFR	MANUFACTURE(ER)
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MS	METAL STUD
MTL	METAL
MWF	MONOLITHIC WALL FOOTING
N/C	NOT IN CONTRACT
NS	NEAR SIDE
NTS	NOT TO SCALE
OA	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OH	OPPOSITE HAND
OHD	OVERHEAD
OPNG	OPENING
OPP	OPPOSITE
PAF	POWDER-ACTUATED FASTENER(S)
PB	PRE-CAST BEAM
PEMB	PRE-ENGINEERED METAL BUILDING
PERP	PERPENDICULAR
PC	PRECAST
PL, PL	PLATE
PLC	PLACED
PLF	POUNDS PER LINEAR FOOT
PLYWD	PLYWOOD
PNL	PANEL
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PTN	PARTITION
R	RADIUS
RC	REINFORCED CONCRETE
REF	REFERENCE
REINF	REINFORCE(D) (ING)
REQ	REQUIRE
REQD	REQUIRED
RF	ROOF
RM	ROOM
RP	RADIUS POINT
RTN	RETURN
R/W	REINFORCED WITH
SCH	SCHEDULE
SDI	STEEL DECK INSTITUTE
SECT	SECTION
SF	STEPPED FOOTING
SHT	SHEET
SHW	SHEAR WALL
SIM	SIMILAR
SJ	SAWCUT JOINT
SJI	STEEL JOIST INSTITUTE
SL	SLOPE
SLBB	SHORT LEG BACK-TO-BACK
SOG	SLAB ON GRADE
SP	SPACE(S)
SPECS	SPECIFICATIONS
SQ	SQUARE
SS	STAINLESS STEEL
SSL	SHORT SLOTTED
STD	STANDARD
STIFFR	STIFFENER
STL	STEEL
STR	STRENGTH
STRL	STRUCTURAL
SW	SHORT WAY
SYMM	SYMMETRICAL
SYP	SOUTHERN YELLOW PINE
T&B	TOP AND BOTTOM
TB	TIE BEAM
TC	TIE COLUMN
TEMP	TEMPERATURE
THK	THICK
TOPG	TOPPING
TRANS	TRANSVERSE
TYP	TYPICAL
T/	TOP OF
UNO	UNLESS NOTED OTHERWISE
V/F	VERIFY IN FIELD
VERT	VERTICAL
W	WOOD
W/	WALL FOOTING
WO	WINDOW OPENING (MASONRY)
WP	WORKING POINT
WS	WATERSTOP
WWF	WELDED WIRE FABRIC
W/	WITH

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CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

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Florida Professional Engineer No. 55996

REVISIONS		
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STRUCTURAL GENERAL NOTES & ABBREVIATIONS

S002
PERMIT/BID DOCUMENTS

A1 STRUCTURAL GENERAL NOTES — 3/4" = 1'-0"

A14 ABBREVIATIONS — 3/4" = 1'-0"

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MASONRY

M1 MASONRY CONSTRUCTION MATERIALS AND INSPECTIONS SHALL CONFORM TO THE LATEST EDITION OF THE ACI BUILDING CODE REQUIREMENTS FOR CONCRETE MASONRY STRUCTURES (TMS 402-2016), SPECIFICATIONS FOR MASONRY STRUCTURES (TMS 602-2016) ASTM C476-19, ASTM C1019-20 AND NCMA TEK 107.

M2 CONCRETE BLOCKS SHALL CONFORM TO ASTM C-90. (f'm = 2000 PSI) (2000 PSI ON THE NET AREA).

M3 MORTAR SHALL COMPLY WITH ASTM C270, TYPE 'M' FOR RETAINING WALLS AND WALLS BELOW GRADE, TYPE 'S' FOR TYPICAL WALLS. (COMPRESSIVE STRENGTH = 2500 PSI AND 1800 PSI, RESPECTIVELY). SITE TESTED MORTAR CUBES SHALL ACHIEVE A MINIMUM OF 80% OF THE DESIGN COMPRESSIVE STRENGTH)

M4 BLOCK SHALL NOT BE MOISTENED BEFORE GROUTING.

M5 ALL MASONRY CROSS WEBS SHALL BE FULLY BEDDED IN MORTAR AROUND CELLS TO BE GROUTED.

M6 REINFORCE WALLS WITH LADDER TYPE (ASTM A-153, #9 GAGE WIRE) DEFORMED REINFORCEMENT EQUAL TO DUR-O-WAL IN BED JOINTS AT 16" OC UNO, MEASURED VERTICALLY. PLACE PER MFR'S INSTRUCTIONS. LAP ALL HORIZONTAL JOINT REINFORCING 6" MIN.

M7 VERTICAL REINFORCING MUST HAVE A MINIMUM CLEARANCE OF 1/2" TO INSIDE FACE. VERTICAL REINFORCEMENT IN WALLS SHALL BE SECURED AND LATERALLY SUPPORTED AGAINST DISPLACEMENT AT INTERVALS NOT EXCEEDING 192 x (BAR DIAMETER) OR 10 FT (WHICHEVER IS LESS) WHENEVER A CLEANOUT IS REQUIRED. SEE GROUTING DETAIL NOTE FOR CLEANOUT REQUIREMENTS.

M8 ANY MASONRY THAT IS BELOW GRADE SHALL BE FULLY GROUTED UP TO FINISHED FLOOR.

M9 GROUT PLACEMENT STOPPED FOR (1) HOUR OR MORE SHOULD BE STOPPED 1 1/2" BELOW THE TOP OF THE MASONRY UNIT TO PROVIDE A KEY FOR SUBSEQUENT GROUTING.

M10 TYPICAL VERTICAL REINFORCING SIZE AND SPACING SHALL BE ABOVE AND BELOW ALL WALL OPENINGS.

M11 TEMPORARY BRACING AND SHORING OF WALLS TO PROVIDE STABILITY DURING CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

M12 REINFORCE MASONRY OPENINGS LESS THAN 2'-0" WIDE, WITH HORIZ JOINT REINF PLACED IN (2) HORIZ JOINTS APPROXIMATELY 8" APART, IMMEDIATELY ABOVE THE GROUT FILLED LINTEL AND IMMEDIATELY BELOW THE GROUT FILLED SILL. EXTEND REINFORCING A MINIMUM OF 2'-0" BEYOND JAMBS OF THE OPENING EXCEPT AT CONTROL JOINTS.

M13 PROVIDE FILLED PRECAST U-LINTELS AS MANUFACTURED BY CAST- CRETE OR APPROVED EQUAL WITH (2) #5 CONT AT ALL OPENINGS WHERE BEAMS ARE NOT SHOWN, SCHEDULED OR NOTED 2'-0" WIDE AND GREATER. LINTELS SHALL HAVE MINIMUM UNFILLED CAPACITY OF 400 lb/LF AND BEAR NOMINAL 8" (MIN 8") EACH END ON A GROUT FILLED CELL. PROVIDE PRE-CAST LINTEL MFR'S STANDARD TABULATED LOAD TABLES AS EVIDENCE THAT THE MINIMUM CAPACITIES AS LISTED IN THE BEAM SCHEDULE ARE SATISFIED. REFER TO MASONRY WALL BEAM SCHEDULE FOR TYPICAL PRECAST LINTEL SPANS AND DETAILS.

M14 STOPPING AND RESUMING WORK: RACK BACK 1/2-UNIT LENGTH IN EACH COURSE. DO NOT TOOTH. CLEAN EXPOSED SURFACES OF SET MASONRY. REMOVE LOOSE MASONRY UNITS AND MORTAR PRIOR TO LAYING FRESH MASONRY.

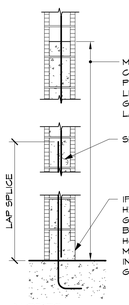
M15 DO NOT APPLY UNIFORM LOADS TO MASONRY WALLS FOR (3) DAYS.

M16 DO NOT APPLY CONCENTRATED LOADS TO MASONRY WALLS FOR (7) DAYS.

M17 EXTEND ALL VERTICAL WALL REINFORCEMENT TO WITHIN 2" OF TOP OF WALL OR BEAM UNLESS NOTED OTHERWISE. TERMINATE REINFORCING WITH STANDARD ACI 90 DEGREE HOOK IF ROOF JOISTS AND/OR TRUSSES BEAR ON TOP OF WALL AND THERE IS NO PARAPET. IF PARAPET EXISTS, HOOK IS NOT REQUIRED.

M18 REFER TO ARCHITECTURAL DRAWINGS FOR WATERPROOFING DETAILS AT MASONRY CONTROL JOINTS.

M19 GROUT FOR FILLED CELLS SHALL BE PLACED IN CONFORMANCE WITH ASTM C476-19 AND AS INDICATED BELOW:

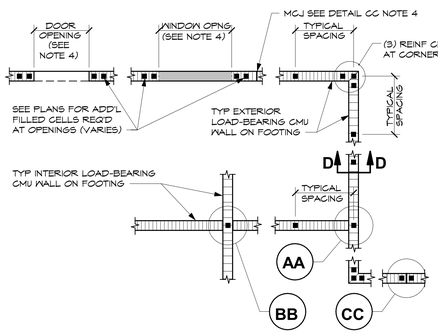


NOTES:

1. BUTTER AROUND ALL CELLS THAT ARE TO BE FILLED WITH GROUT TO ENSURE GROUT DOES NOT LEAK OUT.
2. DO NOT GROUT UNTIL MORTAR HAS SET SUFFICIENTLY TO WITHSTAND THE PRESSURE OF THE GROUT. WAIT NOT LESS THAN 24 HOURS.
3. PLACE GROUT WITHIN 90 MINUTES FROM INTRODUCING WATER IN THE MIXTURE AND PRIOR TO INITIAL SET.
4. MAXIMUM WALL HEIGHT FROM TOP OF FOOTING OR PREVIOUS GROUT POURS LAID UP AT ONE TIME SHALL BE 4'-0".
5. THE MINIMUM CONTINUOUS UNOBSTRUCTED CLEAR AREA IN CELL TO RECEIVE GROUT MUST BE NOT LESS THAN 3"x3". MORTAR FINS MUST BE REMOVED AS BLOCK PLACEMENT PROCEEDS. MORTAR DROPPINGS MUST BE KEPT OUT OF CELLS WHICH ARE TO BE GROUTED.

GROUTING DETAIL

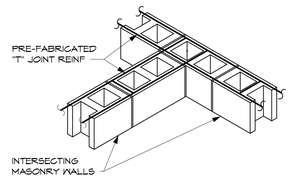
M20 TYPICAL MASONRY DETAILS:



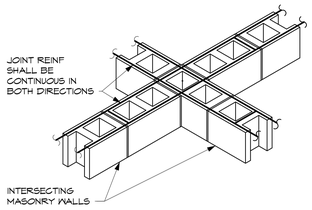
NOTES:

1. SEE DETAIL "CC" FOR LOCATING MASONRY CONTROL JOINTS. CONTRACTOR SHALL SUBMIT MCJ PLAN TO ARCHITECT FOR APPROVAL.
2. SEE ARCHITECTURAL DRAWINGS FOR OPENING SIZES AND LOCATIONS.
3. SEE F'DN PLAN NOTES FOR REINFORCED FILLED CELL SIZE & SPACING.
4. MULTIPLE FILLED CELLS MAY BE REQUIRED AT JAMBS. ADDITIONAL BARS WILL BE SHOWN ON PLAN(S). IF NONE ARE SHOWN, THEN A SINGLE TYPICAL REINFORCED JAMB CELL IS SUFFICIENT.
5. SEE MASONRY NOTES ON GENERAL NOTE SHEETS FOR HORIZONTAL JOINT REINFORCING AND OTHER ADDITIONAL INFORMATION.

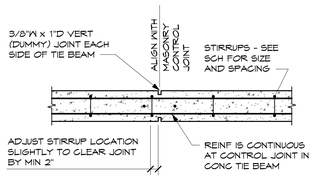
ILLUSTRATIVE PLAN OF VARIOUS CMU WALL CONDITIONS NTS



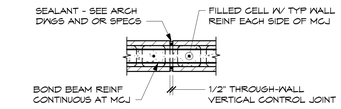
AA WALL INTERSECTION



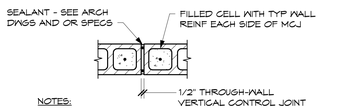
BB WALL INTERSECTION



MCJ @ TIE BEAM



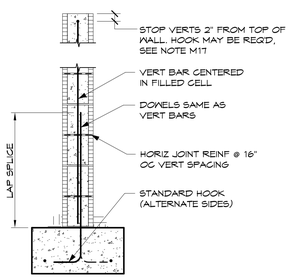
MCJ @ BOND BEAM



NOTES:

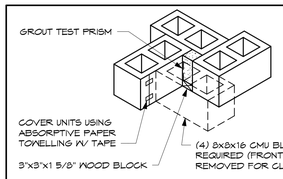
1. THROUGH-WALL JOINT SHALL BE CONTINUOUS WITHOUT INTERRUPTION FROM FOUNDATION TO TOP OF WALL.
2. TERMINATE TYPICAL HORIZONTAL JOINT REINFORCING 2" FROM JOINT.
3. MAXIMUM SPACING OF CONTROL JOINTS SHALL BE 1 1/2 x (WALL HEIGHT) OR 25'-0", WHICHEVER IS LESS.
4. MASONRY CONTROL JOINTS IN CMU WALLS SHALL NOT BE LOCATED WITHIN 16" OF ANY JAMB.

CC MAS CONTROL JOINT (MCJ)



DD TYPICAL FILLED CELL DETAILS

M21 JOB SITE MIXING OF GROUT SHALL NOT BE PERMITTED. TESTING SHALL CONFORM TO ASTM C1019. SEE TEST MOLD DETAIL BELOW. SEE SCHEDULE BELOW FOR COMPRESSIVE STRENGTH AND SLUMP REQUIREMENTS.



DETAIL - MASONRY GROUT TEST MOLD (ASTM C-1019)

MASONRY GROUT SHALL HAVE THE FOLLOWING PROPERTIES:

LOCATION	28 DAY STRENGTH	SLUMP	COARSE AGGREGATE
FILLED CELL, PRECAST LINTELS & BOND BEAMS	2500 PSI	8" TO 11"	3/8"
HOLLOW METAL FRAMES, 4" PARTITION BLOCK	2500 PSI	8" TO 11"	NONE

NOTES:
1. ALL MASONRY GROUT SHALL CONFORM TO ASTM C 476.
2. COURSE AGGREGATES SHALL CONFORM TO ASTM C 404.
3. DO NOT TEST GROUT USING CYLINDERS AS THIS IS CONTRARY TO ASTM C476-19 AND IS STRICTLY PROHIBITED.

M22 MINIMUM LAP SPLICES FOR REINFORCED CMU PER EIGHTH EDITION (2023) FBC FOR LRFD DESIGNS.

CMU WALLS WITH CENTERED VERTICAL REINFORCING						
#4	#5	#6	#7	#8	#9 (NOTE 1)	#10 (NOTE 2)
15"	23"	35"	48"	72"	82"	

CMU WALLS WITH EACH FACE VERTICAL REINFORCING						
#4	#5	#6	#7	#8	#9 (NOTE 1)	#10 (NOTE 2)
23"	36"	54"	69"	72"	82"	

NOTES:
1. #9 BARS ARE NOT ALLOWED IN 8" CMU BUT ACCEPTABLE FOR 10" AND 12" CMU. MAXIMUM BAR DIAMETER SHALL NOT EXCEED ONE-EIGHTH OF THE NOMINAL WALL THICKNESS.
2. #10 BARS SHALL BE SPLICED USING MECHANICAL CONNECTORS AND SHALL ONLY BE ALLOWED IN 12" CMU.
3. EPOXY COATED BARS SHALL NOT BE USED.

STRUCTURAL STEEL

S51 A CERTIFIED TESTING AGENCY SHALL BE ENGAGED TO PERFORM INDUSTRY STANDARD INSPECTIONS TO ENSURE CONFORMANCE WITH PLANS AND SPECIFICATIONS (IF PROVIDED). SUBMIT REPORTS TO ARCHITECT AND ENGINEER.

S52 FABRICATE AND ERECT STRUCTURAL STEEL IN CONFORMANCE WITH THE LATEST VERSION OF AISC 360-16.

S53 MATERIAL SPECIFICATIONS:

ALL STEEL SHALL BE PRODUCED DOMESTICALLY.

ROLLED SHAPES, PLATES AND BARS: ASTM A36, EXCEPT WIDE-FLANGE & WT SECTIONS, WHICH SHALL BE ASTM A992.

HOLLOW STRUCTURAL SECTION (HSS): ASTM A500, GRADE C.

ANCHOR BOLTS, RODS, NUTS AND WASHERS: PER BASE PLATE SCHEDULE.

HEADED STUDS: ASTM A108, GRADE 1015 THROUGH 1020, COLD-FINISHED CARBON STEEL, ANS D1.1, TYPE B.

BOLTED STRUCTURAL CONNECTIONS: UNLESS NOTED OTHERWISE, ALL BOLTS SHALL BE 3/4"ø ASTM A325, TYPE N. BOLTS INDICATED LESS THAN 5/8"ø SHALL BE ASTM A307.

WELDED CONNECTIONS: ELECTRODES - E70XX UNO (LOW HYDROGEN). FILLET WELDS SHALL BE 3/16" UNO.

S54 HIGH-STRENGTH FIELD-BOLTED CONNECTIONS SHALL BE INSTALLED, TIGHTENED, TESTED AND INSPECTED ACCORDING TO "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS" BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS (RCSC). ALL BOLTS IN STEEL TO STEEL CONNECTIONS SHALL BE BROUGHT TO A "SNUG-TIGHT" CONDITION, AS DEFINED IN THE SPECIFICATION. ALL BOLTS IN STEEL TO EMBED CONNECTIONS SHALL BE FINGER-TIGHT WITH PEENED THREADS. SLIP-CRITICAL (SC) BOLTS MUST BE FULLY TENSIONED PER SPECIFICATION.

S55 STANDARD SHEAR CONNECTIONS HAVE BEEN DESIGNED AND THE NECESSARY INFORMATION MAY BE FOUND IN THE SCHEDULES. THE ULTIMATE (i.e. FACTORED) REACTIONS HAVE BEEN PROVIDED AT EACH END OF EACH MEMBER SHOULD THE FABRICATOR WISH TO RE-ENGINEER THE CONNECTIONS TO THEIR PREFERENCES. SHOULD THE FABRICATOR WISH TO RE-ENGINEER THE CONNECTIONS, THEY MUST PROVIDE SUBMITTALS & CALCULATIONS THAT HAVE BEEN PREPARED AND SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE SAME STATE AS THE PROJECT LOCATION.

S56 BRACE AND MAINTAIN ALL STEEL IN ALIGNMENT UNTIL OTHER PARTS OF CONSTRUCTION NECESSARY FOR PERMANENT SUPPORT ARE COMPLETED. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING TEMPORARY SHORING AS REQUIRED FOR THE STABILITY OF THE STEEL FRAME UNTIL ALL STRUCTURAL ELEMENTS HAVE BEEN COMPLETED AND BUILDING IS ENCLOSED.

S57 ALL WELDING SHALL CONFORM TO THE REQUIREMENTS OF "THE STANDARD CODE FOR WELDING IN BUILDING CONSTRUCTION" OF THE AMERICAN WELDING SOCIETY.

S58 GROUT FOR COLUMN BASE PLATES AND PRESET BEARING PLATES SHALL BE NON-SHRINK, NON-METALLIC GROUT (5000 PSI MIN).

S59 SUBMIT SHOP DRAWINGS INDICATING ALL SHOP AND ERECTION DETAILS INCLUDING PROFILES, SIZES, SPACING AND LOCATIONS OF STRUCTURAL MEMBERS, CONNECTION ATTACHMENTS, FASTENERS, LOADS AND TOLERANCES.

S510 ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A123 FOR MEMBERS AND ASTM A153 FOR CONNECTION ELEMENTS, EXCEPT THAT ALL ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS) SHALL BE BLAST CLEANED AND COATED IN ACCORDANCE WITH THE STRUCTURAL STEEL AND PAINT SPECIFICATIONS.

S511 STRUCTURAL STEEL SHALL RECEIVE A SHOP COAT OF PRIMER (COLOR AS DIRECTED BY ARCHITECT) EXCEPT THOSE AREAS WHICH WILL RECEIVE SPRAY-ON FIRE PROTECTION, OR WHERE HEADED STUDS ARE TO BE WELDED.

S512 PROVIDE ALLOWANCE FOR 300 FEET OF L3x3x1/4 AND LABOR TO INSTALL SAME AT ARCHITECT OR ENGINEER'S DIRECTION. CREDIT OWNER WITH ALL MATERIAL AND LABOR NOT USED.

S513 STEEL BEAMS SHALL BE CAMBERED AS INDICATED ON THE FRAMING PLAN(S). IF NO CAMBER IS SPECIFIED, THE FABRICATOR SHALL ENSURE THAT THE "NATURAL" CAMBER IN ALL ERECTED BEAMS OCCURS IN AN UPWARD DIRECTION.

S514 THE STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN FULL CONFORMANCE WITH THE "OSHA STEEL ERECTION STANDARD". IF THE CONSTRUCTION DRAWINGS DEVIATE FROM THE OSHA STANDARD THEN THE FABRICATOR SHALL PROVIDE SUBMITTALS THAT CLEARLY INDICATE THE DEVIATION WITH A REVISION CLOUD AND REQUEST APPROVAL FROM BBM TO MAKE THE CHANGE SO THAT CONFORMANCE WITH THE OSHA STANDARD IS ASSURED.

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE
PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
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BBM PROJECT #21156

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BORA ERBILEN, P.E.
Florida Professional Engineer No. 55996

REVISIONS		
MARK	DESCRIPTION	DATE

COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
DRAWN BY: TC/BE

STRUCTURAL GENERAL NOTES

S003
PERMIT/BID DOCUMENTS

A1 STRUCTURAL GENERAL NOTES
3/4" = 1'-0"

9/27/2024 11:00:10 AM
Autodesk Docs://2021815 Port Orange Field Operations/2021815_PORT ORANGE FIELD OPERATIONS_S_R2023.rvt

STEEL JOISTS

SJ1 A CERTIFIED TESTING AGENCY SHALL BE ENGAGED TO PERFORM INDUSTRY STANDARD INSPECTIONS TO ENSURE CONFORMANCE WITH PLANS AND SPECIFICATIONS (IF PROVIDED). SUBMIT REPORTS TO ARCHITECT AND ENGINEER.

SJ2 ALL DESIGN, FABRICATION AND ERECTION OF STEEL JOISTS AND BRIDGING SHALL BE IN STRICT ACCORDANCE WITH THE SPECIFICATIONS OF STEEL JOIST INSTITUTE (OPEN WEB STEEL JOIST SJI PUBLICATION SJI 100-2015, AND JOIST GIRDERS SJI 200-2015) AND RECOMMENDED CODE OF STANDARD PRACTICE.

SJ3 THE ENDS OF ALL BRIDGING LINES TERMINATING AT WALLS OR BEAMS SHALL BE ANCHORED TO THE WALL OR BEAM.

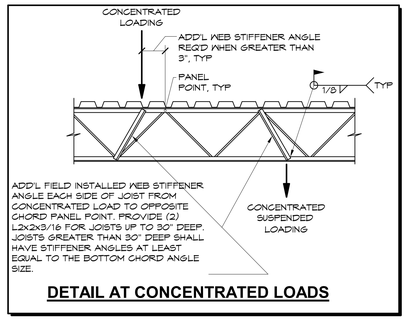
SJ4 ALL STEEL JOISTS ARE TO BE CAMBERED AS SPECIFIED BY STEEL JOIST INSTITUTE.

SJ5 PROVIDE BOTTOM AND/OR TOP CHORD EXTENSIONS AS SHOWN ON DRAWINGS.

SJ6 UNLESS NOTED OTHERWISE, MINIMUM JOIST BEARING SHALL BE 2 1/2" FOR K-SERIES JOISTS, 4" FOR LH, DLH AND SLH 15-18, AND 6" FOR SLH 19-25 ON A STEEL MEMBER OR EMBED PLATE.

SJ7 BRIDGING SHALL BE FURNISHED AND INSTALLED TO MEET THE SIZE AND SPACING REQUIREMENTS OF THE SJI STANDARD SPECIFICATIONS FOR OPEN WEB STEEL JOISTS. ALL BRIDGING AND BRIDGING ANCHORS SHALL BE COMPLETELY INSTALLED BEFORE CONSTRUCTION LOADS ARE PLACED ON THE JOISTS.

SJ8 ALL HANGERS, CURBS AND/OR ROOFTOP FRAMES TO SUPPORT MECHANICAL EQUIPMENT, ETC., TO BE SUPPORTED BY THE JOISTS SHALL BE LOCATED AT THE PANEL POINTS OF THE JOISTS IF POSSIBLE. HOWEVER, IF THE CONCENTRATED LOAD MUST BE LOCATED FURTHER THAN 3" FROM A PANEL POINT, PROVIDE WEB STIFFENER ANGLES. WEB STIFFENERS MUST BE INSTALLED EACH SIDE OF JOIST FROM CONCENTRATED LOAD TO OPPOSITE CHORD PANEL POINT BEFORE LOAD IS APPLIED. SEE DETAIL BELOW:



DETAIL AT CONCENTRATED LOADS

SJ9 CONTRACTOR TO FURNISH BAR JOIST CERTIFICATIONS SIGNED AND SEALED BY AN ENGINEER REGISTERED IN THE SAME STATE AS THE PROJECT LOCATION. THE SPECIALTY ENGINEER FOR THE STEEL JOIST SUPPLIER SHALL ALSO CERTIFY THAT THE STEEL JOIST BOTTOM CHORDS WILL SAFELY RESIST THE WIND UPLIFTS, CONSIDERING THE SPACING OF BRIDGING.

SJ10 PROVIDE UPLIFT BRIDGING PER TABULATED PRESSURES ON THIS SHEET.

SJ11 ALL ITEMS SUSPENDED FROM JOISTS (I.E. CATWALKS, BALCONIES, OPERABLE PARTITIONS, ETC.) SHALL BE INSTALLED AFTER DEAD LOAD HAS BEEN APPLIED.

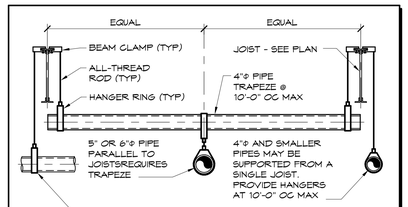
SJ12 BOLTED TIE JOISTS (BTJ) ARE USED IN STEEL FRAMES WHERE COLUMNS ARE NOT FRAMED IN AT LEAST TWO DIRECTIONS WITH STRUCTURAL STEEL MEMBERS. JOIST(S) AT COLUMN LINES SHALL BE FIELD BOLTED AT THE COLUMNS WITH TWO 1/2"ø BOLTS TO PROVIDE LATERAL STABILITY DURING CONSTRUCTION.

SJ13 STEEL JOISTS SHALL RECEIVE SHOP COAT OF PRIMER (COLOR AS DIRECTED BY ARCHITECT) EXCEPT THOSE AREAS WHICH WILL RECEIVE SPRAY-ON FIRE PROTECTION.

SJ14 ANY STEEL JOIST WITHIN A 4'-0" DISTANCE FROM A PARALLEL SUPPORT SHALL BE FABRICATED IN SUCH A WAY THAT CAMBER OF THE JOIST WILL NOT CAUSE A PROBLEM INSTALLING THE METAL DECK. CAMBER SHALL BE INTERPOLATED USING SJI STANDARD CAMBER SCHEDULE AND REDUCED BASED ON THE REDUCTION OF TRIBUTARY SPACING USING A 5'-0" SPACING AS STANDARD FOR REQUIRED CAMBER.

SJ15 IN THE EVENT THAT FIRE SPRINKLERS ARE REQUIRED FOR THIS PROJECT, THE STEEL FABRICATOR SHALL PROVIDE A DIMENSIONED JOIST BRIDGING AND JOIST GIRDER BOTTOM CHORD BRACE PLAN ALONG WITH DETAILS TO THE SPRINKLER CONTRACTOR. THE FABRICATOR AND SPRINKLER CONTRACTOR SHALL COORDINATE WITH EACH OTHER TO ENSURE THAT ANY CONFLICTS ARE RESOLVED BEFORE ANY FABRICATION BEGINS.

SJ16 ALL PIPES MUST BE SUPPORTED AS SHOWN BELOW:



NOTES:
1. LOCATE HANGERS WITHIN 6" OF THE JOIST TOP CHORD PANEL POINTS.
2. PIPES LARGER THAN 6" SHALL BE SUBMITTED TO ARCHITECT FOR APPROVAL PRIOR TO FABRICATION OF JOISTS. INCLUDE LOCATION OF PIPE AND PREFERRED HANGING DETAIL IF OTHER THAN INDICATED ABOVE. JOISTS SHALL BE SPECIALLY DESIGNED BY THE FABRICATOR TO SUPPORT PIPES LARGER THAN 6". THE WEIGHT OF THE PIPES LARGER THAN 6" IS NOT INCLUDED IN THESE DOCUMENTS UNLESS SPECIFICALLY INDICATED OTHERWISE. COORDINATE WITH AFFILIGABLE TRADES.
3. PIPES SUSPENDED IN CONFORMANCE WITH THIS DETAIL WILL LIMIT THE PIPE SYSTEM WEIGHT TO 3.5 PSF EQUIVALENT DISTRIBUTED LOAD.

TYPICAL PIPE HANGER DETAIL

SJ17 FABRICATOR SHALL ENSURE THAT ALL OSHA REQUIREMENTS ARE MET. PARTICULAR ATTENTION SHALL BE PAID TO THE ERECTION PROCESS. BOLTED CONNECTIONS MAY BE REQUIRED. SUBMIT DETAILS FOR APPROVAL.

SJ18 THE JOIST MANUFACTURER MAY NOT INCREASE ALLOWABLE STRESSES.

SJ19 THE OPEN WEB STEEL JOISTS SHALL BE FABRICATED AND ERECTED IN FULL CONFORMANCE WITH THE "OSHA STEEL ERECTION STANDARD". IF THE CONSTRUCTION DRAWINGS DEVIATE FROM THE OSHA STANDARD THEN THE FABRICATOR SHALL PROVIDE SUBMITTALS THAT CLEARLY INDICATE THE DEVIATION WITH A REVISION CLOUD AND REQUEST APPROVAL FROM BBM TO MAKE THE CHANGE SO THAT CONFORMANCE WITH THE OSHA STANDARD IS ASSURED.

SJ20 K-SERIES STEEL JOISTS WITH SPANS 40'-0" AND LONGER SHALL BE ERECTED IN PANELS SO THAT BOLTED CONNECTIONS ARE NOT REQUIRED (EXCEPT AT THE COLUMN LINES). THE GC SHALL INSURE THAT ALL RELATED JOIST FRAMING COMPONENTS ARE COORDINATED TO MEET THIS REQUIREMENT.

SJ21 ALL ROOFS THAT EXCEED 1/4"/FT SLOPE SHALL HAVE THE JOIST BEARING SEATS SLOPED AS REQUIRED PER STEEL JOIST INSTITUTE.

STEEL ROOF DECK

RD1 SEE ROOF FRAMING PLAN(S) FOR STEEL DECK ATTACHMENT TO STRUCTURE.

RD2 STEEL ROOF DECK UNITS SHALL BE FABRICATED FROM STEEL CONFORMING TO SECTION A3 OF THE LATEST EDITION OF THE AMERICAN IRON AND STEEL INSTITUTE, SPECIFICATIONS FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS. THE STEEL USED SHALL BE GRADE 80.

RD3 IF OPTED BY GC, ALL FIELD WELDING OF DECK SHALL BE IN STRICT CONFORMANCE WITH ANSI/AWS D1.3 STRUCTURAL WELDING CODE.

RD4 ALL SCREWS SHALL COMPLY WITH ASTM 1513, ICC AC43, AND ICC AC118. FASTENERS SHALL BE INSTALLED PERPENDICULAR TO ELEMENT SO AS TO PROPERLY SEAT FASTENER HEAD, AND TORQUED PER MANUFACTURES SPECIFICATIONS, NOT TO EXCEED MAXIMUM RECOMMENDED TORQUE.

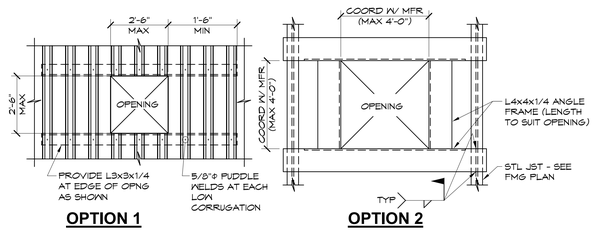
RD5 GALVANIZING SHALL CONFORM TO ASTM-A653, STRUCTURAL QUALITY AND FEDERAL SPEC. QQ-S-775.

RD6 SEE CHART BELOW FOR MINIMUM SECTION PROPERTIES REQUIRED FOR STEEL DECK. PROPERTIES SHOWN ARE REPRODUCED FROM THE VULCRAFT MANUAL.

ROOF DECK

DECK TYPE	DESIGN THICK	Ip in⁴/ft	Sp in³/ft	In in⁴/ft	Sn in³/ft
B22	0.0295	0.155	0.186	0.183	0.192
B20	0.0358	0.201	0.234	0.222	0.247
B18	0.0474	0.284	0.318	0.295	0.327

RD7 SEE PARTIAL PLAN BELOW FOR METAL DECK OPENING FRAMING:



NOTES:
- A. FOR OPENINGS WITH A MAXIMUM DIMENSION OF 6" TO 1'-0", REINFORCE OPENING WITH A 20ga GALV FLAT PLATE 1'-0" LARGER THAN THE OPENING. ATTACH WITH 1" WELDS AT EACH RIB ALL AROUND.
- B. FOR OPENINGS WITH A MAX DIMENSION OF 1'-0" TO 2'-6", SEE DETAIL OPTION 1 ABOVE.
- C. FOR OPENINGS WITH A MAX DIMENSION OF 4'-0", SEE DETAIL OPTION 2 ABOVE.

RD8 NO ITEMS SHALL BE HUNG DIRECTLY FROM THE ROOF DECK UNLESS INDICATED OTHERWISE IN THE DRAWINGS.

RD9 PROVIDE METAL CLOSURE STRIPS AT OPEN UNCOVERED ENDS AND EDGES OF ROOF DECKING AND IN VOIDS BETWEEN DECKING AND OTHER CONSTRUCTION. WELD INTO POSITION TO PROVIDE A COMPLETE ENCLOSED DECKING INSTALLATION. PROVIDE FLEXIBLE CLOSURE STRIPS INSTEAD OF METAL CLOSURES, AT CONTRACTOR'S OPTION, WHEREVER THEIR USE WILL ENSURE COMPLETE CLOSURE. INSTALL WITH ADHESIVE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

ELEVATION SYMBOL

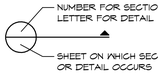
GRID ID

REVISION MARK

TYPICAL PLAN KEYNOTE SYMBOL

CHANGE IN SLAB ELEVATION

SECTION CUTS



SECTION & DETAIL ID

H10	SECTION
SCALE	

TYPICAL LINETYPES
- GRID LINE
- EXISTING
- MATCH LINE
- HIDDEN
- DASHED
- CONTINUOUS

MATERIALS
- GROUT
- STEEL
- PRECAST CONCRETE
- CONCRETE
- EARTH

SECTION HATCHES
- 8" LOAD-BRG CMU WALLS
- NON-LOAD-BRG CMU WALLS
- 12" LOAD-BRG CMU WALLS

PLAN HATCHES

SYMBOL LEGEND

WIND DESIGN CRITERIA - COVERED PARKING A

Ultimate Design Wind Speed	147 mph
Service Design Wind Speed	113.9 mph
Risk Category	II
Exposure Category	C
Enclosure Classification	Open Building

COMPONENT AND CLADDING ULTIMATE WIND PRESSURES

h = 16.3 ft; a = 3.0 ft; a2 = 9.0 sf; 4a2 = 36.0 sf

	Effective Wind Area	Clear Wind Flow (psf) Zone 3 Positive	Zone 3 Negative	Zone 2 Positive	Zone 2 Negative	Zone 1 Positive	Zone 1 Negative
Wind Pressures	<= 9 psf	100.6	-133.9	75.4	-67.6	50.3	-44.6
	> 9 psf, <= 36 psf	75.4	-67.6	75.4	-67.6	50.3	-44.6
	> 36 psf	50.3	-44.6	50.3	-44.6	50.3	-44.6

TORNADO DESIGN CRITERIA

Tornado Wind Speed	120 mph
Effecting Area	109,797 sf
Internal Pressure Coef.	0.55
	-0.18

TORNADO DESIGN NOT REQUIRED FOR RISK I OR II

WIND DESIGN CRITERIA - COVERED PARKING B

Ultimate Design Wind Speed	147 mph
Service Design Wind Speed	113.9 mph
Risk Category	II
Exposure Category	C
Enclosure Classification	Open Building

COMPONENT AND CLADDING ULTIMATE WIND PRESSURES

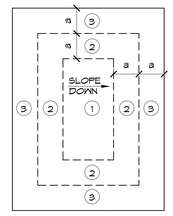
h = 16.0 ft; a = 3.0 ft; a2 = 9.0 sf; 4a2 = 36.0 sf

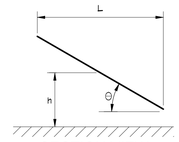
	Effective Wind Area	Clear Wind Flow (psf) Zone 3 Positive	Zone 3 Negative	Zone 2 Positive	Zone 2 Negative	Zone 1 Positive	Zone 1 Negative
Wind Pressures	<= 9 psf	100.2	-133.5	75.2	-67.4	50.1	-44.5
	> 9 psf, <= 36 psf	75.2	-67.4	75.2	-67.4	50.1	-44.5
	> 36 psf	50.1	-44.5	50.1	-44.5	50.1	-44.5

TORNADO DESIGN CRITERIA

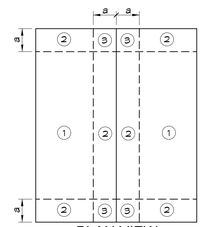
Tornado Wind Speed	120 mph
Effecting Area	109,797 sf
Internal Pressure Coef.	0.55
	-0.18

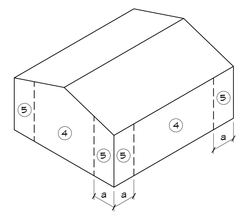
TORNADO DESIGN NOT REQUIRED FOR RISK I OR II





NOTES:
1. A (kd) OF 0.85 HAS BEEN USED IN THE DEVELOPMENT OF THESE VALUES. THE USE OF THESE VALUES SHALL ONLY BE APPLIED WHEN USED IN CONJUNCTION WITH LOAD COMBINATIONS SPECIFIED IN SECTIONS 2.3 AND 2.4 OF ASCE 7-22.
2. PRESSURES AND SUCTIONS ON SOFFITS SHALL BE THE SAME AS CORRESPONDING WALL ZONES 4 & 5.
3. IF THE STRUCTURE IS AN EHPA OR IS INSURED BY FACTORY MUTUAL (FM) THE GROSS UPLIFT DESIGN PRESSURES SHOWN HEREIN SHALL BE DOUBLE FOR ROOF COVERINGS.
4. THE "ULTIMATE" WIND LOADS SHOWN IN THE COMPONENTS AND CLADDING SCHEDULE SHALL BE MULTIPLIED BY 0.6 TO REDUCE THEM DOWN TO "SERVICE" LEVEL FOR ALL TESTED ASSEMBLIES, INCLUDING BUT NOT LIMITED TO DOORS, WINDOWS AND ROOF ASSEMBLIES.





NOTES:
1. A (kd) OF 0.85 HAS BEEN USED IN THE DEVELOPMENT OF THESE VALUES. THE USE OF THESE VALUES SHALL ONLY BE APPLIED WHEN USED IN CONJUNCTION WITH LOAD COMBINATIONS SPECIFIED IN SECTIONS 2.3 AND 2.4 OF ASCE 7-22.
2. PRESSURES AND SUCTIONS ON SOFFITS SHALL BE THE SAME AS CORRESPONDING WALL ZONES 4 & 5.
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4. THE "ULTIMATE" WIND LOADS SHOWN IN THE COMPONENTS AND CLADDING SCHEDULE SHALL BE MULTIPLIED BY 0.6 TO REDUCE THEM DOWN TO "SERVICE" LEVEL FOR ALL TESTED ASSEMBLIES, INCLUDING BUT NOT LIMITED TO DOORS, WINDOWS AND ROOF ASSEMBLIES.
5. DEAD LOAD OF 12 PSF (NO FURTHER REDUCTION ALLOWED) SHALL BE USED TO CONVERT GROSS UPLIFT TO NET UPLIFT FOR OPEN WEB JOIST DESIGN.

WIND DESIGN CRITERIA - WAREHOUSE

Ultimate Design Wind Speed	147 mph
Service Design Wind Speed	113.9 mph
Risk Category	III
Exposure Category	C
Enclosure Classif.	Enclosed...
Internal Pressure Coef.	+/-0.18

COMPONENT AND CLADDING ULTIMATE WIND PRESSURES

h = 23.0 ft; a = 4.2 ft

Roof Area	Surface Pressure (psf) 10 sf	100 sf	200 sf	300 sf
Negative Zone 1	-95.2	-50.9	-37.5	-29.7
Negative Zone 2	-125.8	-68.7	-51.5	-51.5
Negative Zone 3	-169.1	-96.5	-96.5	-96.5
Positive All Zones	34.1	24.0	21.0	21.0
Overhang Zone 1	-130.6	-79.3	-63.8	-54.6
Overhang Zone 2...	-161.1	-97.1	-77.9	-76.7
Overhang Zone 2 ezone 5	-172.9	-102.0	-80.6	-78.2
Overhang Zone 3	-200.4	-114.9	-112.8	-111.6

Overhang pressures in the table above assume an internal pressure coefficient (Gcpi) of 0.0
Overhang soffit pressure equals adj wall pressure (which includes internal pressure of 7.9 psf)

Wall Area	Surface Pressure (psf) 10 sf	100 sf	200 sf	300 sf
Negative Zone 4	-51.1	-44.2	-42.1	-39.3
Negative Zone 5	-62.9	-49.0	-44.8	-39.3
Positive Zone 4 & 5	47.2	40.2	38.1	35.4

TORNADO DESIGN...

Tornado Wind Speed	120 mph
Effecting Area	109,797 sf
Internal Pressure Coef.	0.55
	-0.18

TORNADO DESIGN MUST BE CONSIDERED

WIND DESIGN CRITERIA - ADMINISTRATION

Ultimate Design Wind Speed	147 mph
Service Design Wind Speed	113.9 mph
Risk Category	III
Exposure Category	C
Enclosure Classif.	Enclosed Building
Internal Pressure Coef.	+/-0.18

COMPONENT AND CLADDING ULTIMATE WIND PRESSURES

h = 21.5 ft; a = 3.6 ft

Roof Area	Surface Pressure (psf) 10 sf	100 sf	200 sf	300 sf
Negative Zone 1	-98.9	-50.2	-37.0	-29.3
Negative Zone 2	-124.1	-67.8	-50.8	-50.8
Negative Zone 3	-162.9	-95.3	-95.3	-95.3
Positive All Zones	33.6	23.7	20.7	20.7
Overhang Zone 1	-128.9	-78.2	-63.0	-54.1
Overhang Zone 2 ezon...	-158.9	-95.8	-76.8	-75.6
Overhang Zone 2 ezone 5	-170.6	-100.6	-79.5	-77.1
Overhang Zone 3	-197.7	-113.3	-111.3	-110.1

Overhang pressures in the table above assume an internal pressure coefficient (Gcpi) of 0.0
Overhang soffit pressure equals adj wall pressure (which includes internal pressure of 7.8 psf)

Wall Area	Surface Pressure (psf) 10 sf	100 sf	200 sf	300 sf
Negative Zone 4	-50.4	-43.5	-41.5	-38.8
Negative Zone 5	-62.0	-48.3	-44.2	-38.8
Positive Zone 4 & 5	46.5	39.7	37.6	34.9

TORNADO DESIGN CRITERIA

Tornado Wind Speed	120 mph
Effecting Area	109,797 sf
Internal Pressure Coef.	0.55
	-0.18

TORNADO DESIGN MUST BE CONSIDERED

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
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BBM PROJECT #21156

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Florida Professional Engineer No. 55996

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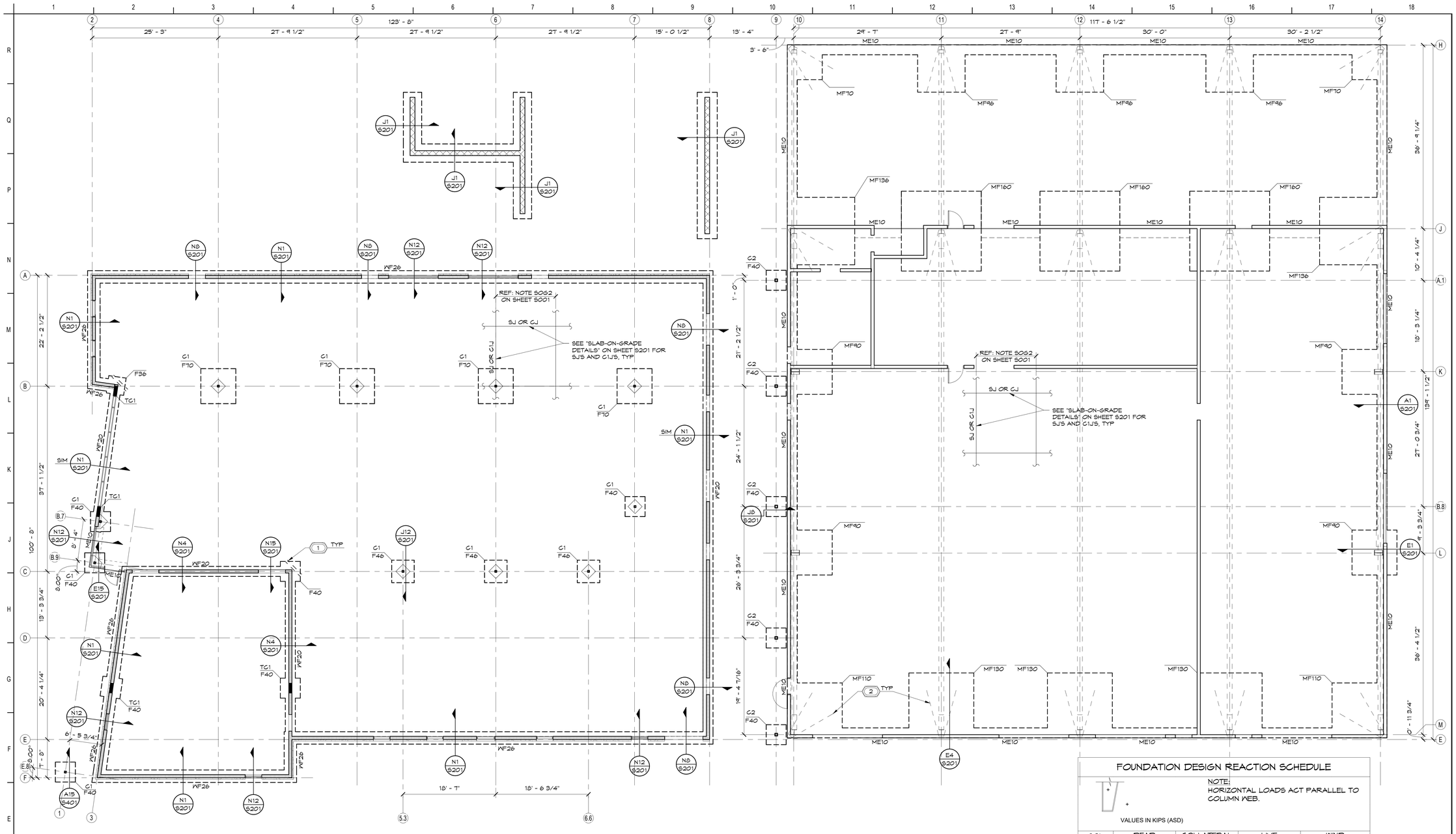
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STRUCTURAL GENERAL NOTES & WIND DESIGN CRITERIA

S004
PERMIT/BID DOCUMENTS

A1	STRUCTURAL GENERAL NOTES	A5	SYMBOL LEGEND	A10	WIND DESIGN CRITERIA
3/4" = 1'-0"		3/4" = 1'-0"		12" = 1'-0"	

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FOUNDATION PLAN NOTES (ADMINISTRATION BLDG):

1. FLOOR SLAB SHALL BE 4" THICK CONCRETE REINF WITH 6x6-W1.4xW1.4 WWF, UNO IN ARCHITECTURAL SPECIFICATIONS, PROVIDE CLASS A (MIN 10 MIL) VAPOR RETARDER (ASTM E 1745-11) ON COMPACTED SUBGRADE. SEE "SLAB-ON-GRADE DETAILS" ON SHEET S201 FOR PLACEMENT OF REINF.

1a. FIBER-REINFORCED CONCRETE IS AN ACCEPTABLE ALTERNATIVE TO WELDED-WIRE FABRIC. REINFORCED CONCRETE FIBERS SHALL BE 100% VIRGIN POLYPROPYLENE FIBRILLATED FIBERS AS MANUFACTURED BY FIBER MESH CO. (OR APPROVED EQUAL) APPLIED AT A RATE OF 1 1/2 lbs/CY.

2. T/ SLAB EL = 100'-0" (TYP, UNO). REFERENCE ONLY - SEE CIVIL DWGS FOR ACTUAL ELEVATION.

3. T/ WALL FTG EL = 98'-8" (TYP, UNO).

4. T/ COL FTG EL = 98'-8" (TYP, UNO).

5. ALL CMU BEARING WALLS ARE 8" (TYP, UNO).

6. STEP AND/OR LOWER FOUNDATIONS WHERE SHOWN AND AS NECESSARY TO AVOID INTERFERENCE WITH OTHER TRADES. SEE CONCRETE GENERAL NOTES FOR DETAILS AND SECTIONS. PARTICULAR ATTENTION SHALL BE PAID TO DOWNSPOUTS ENSURING THAT PROPER ACTIONS HAVE BEEN TAKEN TO PREVENT PIPES FROM CONFLICTING WITH THE FOUNDATION SYSTEM.

7. ALL FTGS ARE CENTERED BENEATH BEARING WALLS AND COLUMNS (TYP, UNO).

8. REINF LOAD-BEARING CMU WALLS WITH #5 VERT BAR CENTERED IN GROUT-FILLED CELL AT ENDS, CORNERS AND AT MAX SPACING OF 32" OC. ADDITIONAL FILLED CELLS REQUIRED AT JAMBS ARE SHOWN THUS "■" ON EACH STRUCTURAL PLAN. SEE "ILLUSTRATIVE PLAN OF VARIOUS CMU WALL CONDITIONS" ON SHEET S003 FOR ADDITIONAL REQUIRED FILLED CELLS AND OTHER INFORMATION.

9. TYP SPACING OF FILLED CELLS SHALL APPLY ABOVE AND BELOW OPENINGS ALSO.

10. SEE SHEET S401 FOR SCHEDULED PRECAST BEAMS (PB) REQUIRED AT ALL MASONRY OPENINGS, UNO. PB'S SHALL BE PROVIDED FOR ALL OPENINGS BASED ON THE PB SPAN AS INDICATED IN SCHEDULE.

11. SEE SHEETS S001 THRU S004 FOR STRUCTURAL GENERAL NOTES.

12. MAINTAIN STRUCTURAL SLAB THICKNESS AT ALL FLOOR SLOPES AND DEPRESSIONS.

13. THE CONTRACTOR SHALL COORDINATE ALL UNDERGROUND UTILITIES, PIPES, ETC., WITH THE FOUNDATION PLAN AND FOUNDATION ELEVATIONS. FOOTING PENETRATION DETAILS MAY BE FOUND IN THE CONCRETE AND REINFORCING SECTION OF THE STRUCTURAL GENERAL NOTES.

NOTE TO GC:
LOCATION OF MASONRY CONTROL JOINTS (MCJ) SHALL BE COORDINATED WITH ARCHITECTURAL DRAWINGS AND SHALL NOT EXCEED REQUIREMENTS OUTLINED IN NOTE M20 ON SHT S003. FOR ADDITIONAL FILLED CELLS REQUIRED AT MASONRY CONTROL JOINTS AND NOT SHOWN ON FOUNDATION PLANS, SEE "ILLUSTRATIVE PLAN OF VARIOUS CMU WALL CONDITIONS" ON SHT S003. SUBMIT MCJ PLAN TO ARCHITECT FOR APPROVAL.

FOUNDATION PLAN KEY NOTES:

1. (2) #4x4'-0" LONG @ 3" OC PLACED 2" CLR FROM CORNER, CENTERED IN SLAB (TYP WHERE SHOWN).

2. #6x20'-0" LONG (10'-0" EA LEG) HAIRPINS, TYP.

FOUNDATION PLAN NOTES (WAREHOUSE BUILDING):

1. FLOOR SLAB SHALL BE 6" THICK CONCRETE REINF WITH #4" @ 16" OC EACH WAY OVER 3" CHAIRS. UNO IN ARCHITECTURAL SPECIFICATIONS, PROVIDE CLASS A (MIN 10 MIL) VAPOR RETARDER (ASTM E 1745-11) ON COMPACTED SUBGRADE. SEE "SLAB-ON-GRADE DETAILS" ON SHEET S201 FOR PLACEMENT OF REINF.

2. T/ SLAB EL = 100'-0" (TYP, UNO). REFERENCE ONLY - SEE CIVIL DWGS FOR ACTUAL ELEVATION.

3. SEE "FOUNDATION DESIGN INFORMATION" ON THIS SHEET FOR NET ALLOWABLE SOIL BEARING PRESSURE.

4. SEE "ANCHOR ROD SCHEDULE" ON SHEET S401.

5. FOUNDATIONS ARE DESIGNED FOR THE REACTIONS SHOWN IN "REACTION SCHEDULE" ON THIS SHEET. METAL BUILDING MANUFACTURER TO NOTIFY ENGINEER IF "FINAL REACTIONS" DIFFER SIGNIFICANTLY FROM THOSE SHOWN. CONTRACTOR SHALL BE AWARE THAT THE FOUNDATIONS MAY CHANGE SIZES AFTER "FINAL REACTIONS" ARE PROVIDED BY THE METAL BUILDING ENGINEER. COLUMN BASES ARE ASSUMED "PIN"-CONNECTED. MOMENT-CONNECTED BASES ARE NOT ALLOWED UNLESS SPECIFICALLY NOTED AS SUCH.

6. FOR LATERAL DEFLECTION DESIGN CRITERIA, SEE SCHEDULE ON SHEET S401.

7. COORDINATE ANCHOR RODS AND EDGE OF SLAB WITH METAL BLDG SUBMITTALS PRIOR TO CONSTRUCTION.

8. REF ARCH'L DWGS FOR INTERIOR WALL DIMENSIONS, ROOF SLOPES, ELEVATIONS, ETC...

FOUNDATION DESIGN REACTION SCHEDULE

NOTE:
HORIZONTAL LOADS ACT PARALLEL TO COLUMN WEB.

VALUES IN KIPS (ASD)

COL	DEAD		COLLATERAL		LIVE		WIND	
GRID	VERT	HORIZ	VERT	HORIZ	VERT	HORIZ	VERT	HORIZ
10-H	3	-1	2	-1	6	-2	-12	1
10-J	14	-5	12	-5	23	-9	-84	20
10-K	7	0	10	0	11	0	-32	-3
10-L	7	-1	11	-1	12	-1	-36	-3
10-M	9	6	8	5	15	10	-49	-42
11-H	5	-2	4	-2	8	-3	-30	5
11-J	29	-11	23	-9	47	-19	-130	27
11-M	18	13	15	10	30	21	-67	-58
12-H	5	-2	4	-2	8	-3	-30	5
12-J	29	-11	23	-9	47	-19	-130	27
12-M	18	13	15	10	30	21	-67	-58
13-H	5	-2	4	-2	8	-3	-30	5
13-J	29	-11	23	-9	47	-19	-130	27
13-M	18	13	15	10	30	21	-67	-58
14-H	3	-1	2	-1	6	-2	-12	1
14-J	14	-5	12	-5	23	-9	-84	20
14-K	7	0	10	0	11	0	-32	-3
14-L	7	-1	11	-1	12	-1	-36	-3
14-M	9	6	8	5	15	10	-49	-42

Notes:

1. THE "ULTIMATE" WIND LOADS SHOWN IN THE SCHEDULE SHALL BE MULTIPLIED BY 0.6 TO CONVERT THEM TO "SERVICE/ALLOWABLE STRESS DESIGN" LEVEL

2. DEAD, COLLATERAL, AND LIVE LOADS ARE "SERVICE/ALLOWABLE STRESS DESIGN" LEVEL

A1
1/8" = 1'-0"

FOUNDATION PLAN

9/30/2024 2:04:06 PM
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CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
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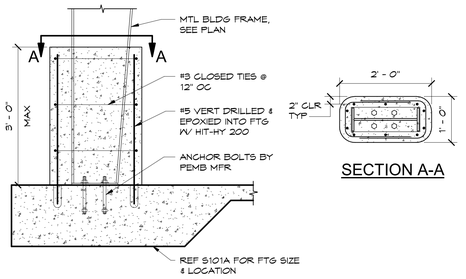
BORA ERBILEN, P.E.
Florida Professional Engineer No. 55996

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FOUNDATION PLAN

S101
PERMIT/BID DOCUMENTS



SECTION A-A

N1 | SECTION @ PEMB COLUMN ENCASEMENT

3/4" = 1'-0"

FOUNDATION DESIGN REACTION SCHEDULE

NOTE:
HORIZONTAL LOADS ACT PARALLEL TO COLUMN WEB.

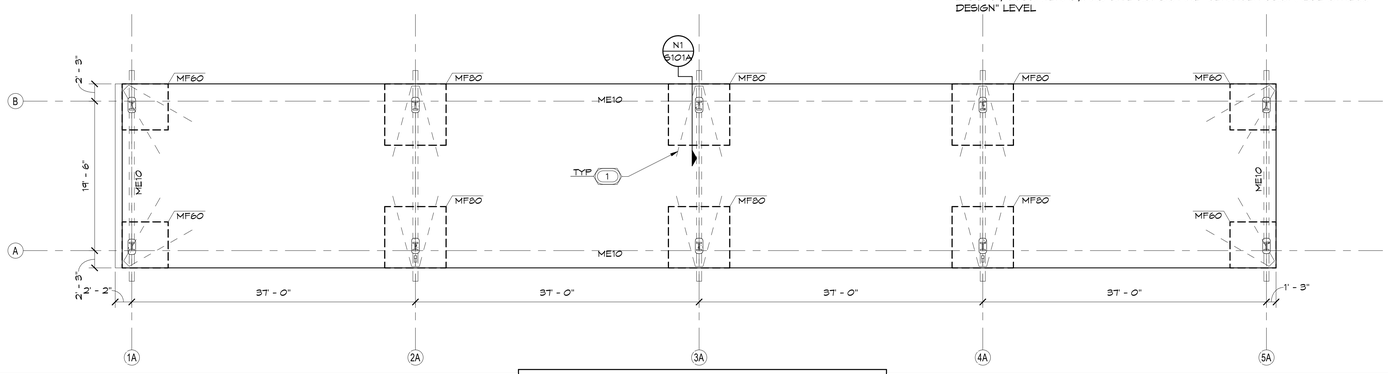
VALUES IN KIPS (ASD)

COL GRID	DEAD		COLLATERAL		LIVE		WIND	
	VERT	HORIZ	VERT	HORIZ	VERT	HORIZ	VERT	HORIZ
A-1A	3	1	1	1	4	1	-10	-1
B-1A	3	-1	1	-1	4	-1	-10	1
A-2A	5	1	2	1	8	1	-19	-2
B-2A	5	-1	2	-1	8	-1	-19	2
A-3A	5	1	2	1	8	1	-19	-2
B-3A	5	-1	2	-1	8	-1	-19	2
A-4A	5	1	2	1	8	1	-19	-2
B-4A	5	-1	2	-1	8	-1	-19	2
A-5A	3	1	1	1	4	1	-10	-1
B-5A	3	-1	1	-1	4	-1	-10	1

Notes:

1. THE "ULTIMATE" WIND LOADS SHOWN IN THE SCHEDULE SHALL BE MULTIPLIED BY 0.6 TO CONVERT THEM TO "SERVICE/ALLOWABLE STRESS DESIGN" LEVEL

2. DEAD, COLLATERAL, AND LIVE LOADS ARE "SERVICE/ALLOWABLE STRESS DESIGN" LEVEL



FOUNDATION PLAN NOTES (PARKING AREA A & B):

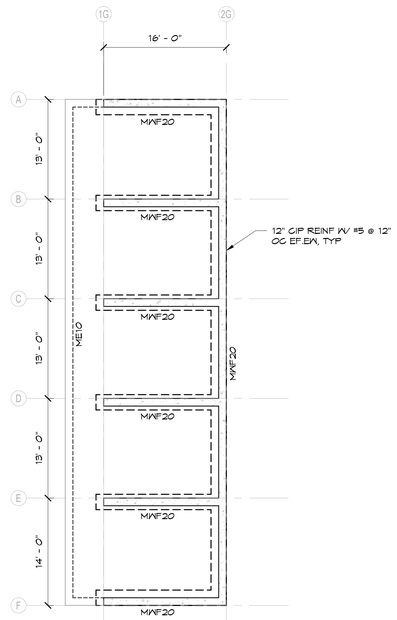
1. FLOOR SLAB SHALL BE 6" THICK CONCRETE REINF WITH #4" @ 16" OC EACH WAY OVER 3" CHAIRS. UNO IN ARCHITECTURAL SPECIFICATIONS, PROVIDE CLASS A (MIN 10 MIL) VAPOR RETARDER (ASTM E 1745-11) ON COMPACTED SUBGRADE. SEE "SLAB-ON-GRADE DETAILS" ON SHEET S201 FOR PLACEMENT OF REINF.
2. T/ SLAB EL = 100'-0" (TYP, UNO). REFERENCE ONLY - SEE CIVIL DWGS FOR ACTUAL ELEVATION.

FOUNDATION PLAN KEY NOTES:

(1) #6x20'-0" LONG (10'-0" EA LEG) HAIRPINS, TYP.

J1 | FOUNDATION PLAN - PEMB PARKING AREA A

1/8" = 1'-0"

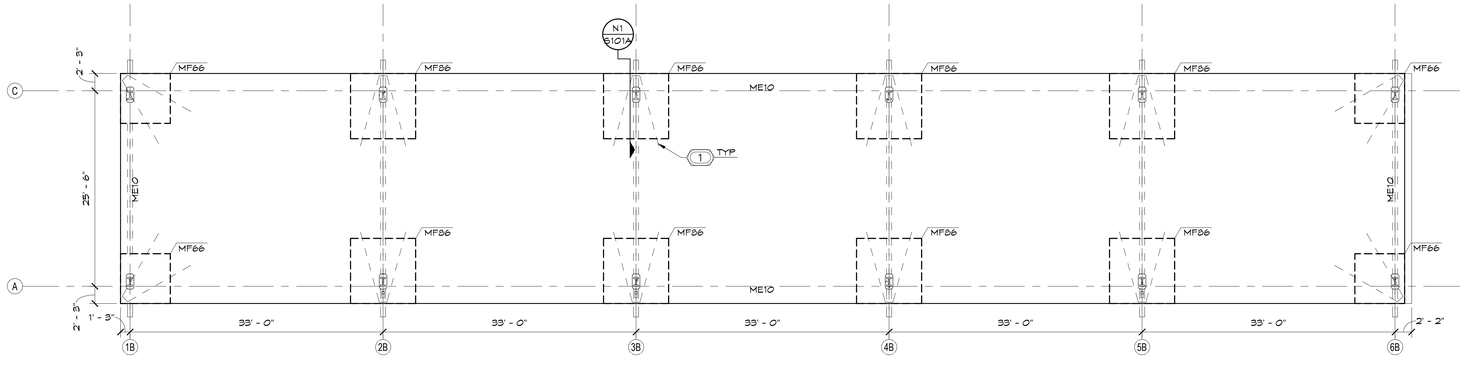


FOUNDATION PLAN NOTES (GRANULAR STORAGE):

1. FLOOR SLAB SHALL BE 6" THICK CONCRETE REINF WITH #4" @ 16" OC EACH WAY OVER 3" CHAIRS. UNO IN ARCHITECTURAL SPECIFICATIONS, PROVIDE CLASS A (MIN 10 MIL) VAPOR RETARDER (ASTM E 1745-11) ON COMPACTED SUBGRADE. SEE "SLAB-ON-GRADE DETAILS" ON SHEET S201 FOR PLACEMENT OF REINF.
2. T/ SLAB EL = 100'-0" (TYP, UNO). REFERENCE ONLY - SEE CIVIL DWGS FOR ACTUAL ELEVATION.

J14 | FOUNDATION PLAN - GRANULAR STORAGE

1/8" = 1'-0"



FOUNDATION DESIGN REACTION SCHEDULE

NOTE:
HORIZONTAL LOADS ACT PARALLEL TO COLUMN WEB.

VALUES IN KIPS (ASD)

COL GRID	DEAD		COLLATERAL		LIVE		WIND	
	VERT	HORIZ	VERT	HORIZ	VERT	HORIZ	VERT	HORIZ
A-1B	3	1	2	1	5	1	-11	-2
C-1B	3	-1	2	-1	5	-1	-11	2
A-2B	6	1	3	1	9	2	-22	-3
C-2B	6	-1	3	-1	9	-2	-22	3
A-3B	6	1	3	1	9	2	-22	-3
C-3B	6	-1	3	-1	9	-2	-22	3
A-4B	6	1	3	1	9	2	-22	-3
C-4B	6	-1	3	-1	9	-2	-22	3
A-5B	6	1	3	1	9	2	-22	-3
C-5B	6	-1	3	-1	9	-2	-22	3
A-6B	3	1	2	1	5	1	-11	-2
C-6B	3	-1	2	-1	5	-1	-11	2

Notes:

1. THE "ULTIMATE" WIND LOADS SHOWN IN THE SCHEDULE SHALL BE MULTIPLIED BY 0.6 TO CONVERT THEM TO "SERVICE/ALLOWABLE STRESS DESIGN" LEVEL

2. DEAD, COLLATERAL, AND LIVE LOADS ARE "SERVICE/ALLOWABLE STRESS DESIGN" LEVEL

A1 | FOUNDATION PLAN - PEMB PARKING AREA B

1/8" = 1'-0"

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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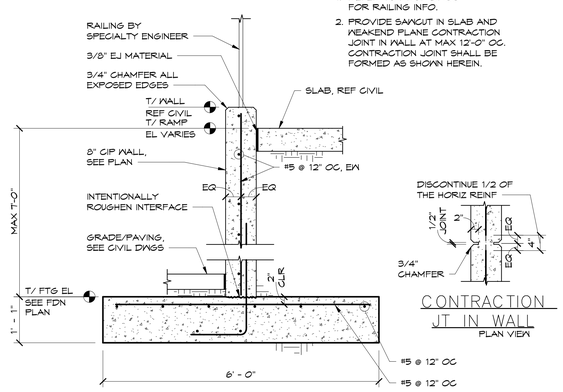
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FOUNDATION PLAN - COVERED PARKING AREAS A & B & GRANULAR STORAGE

S101A
PERMIT/BID DOCUMENTS

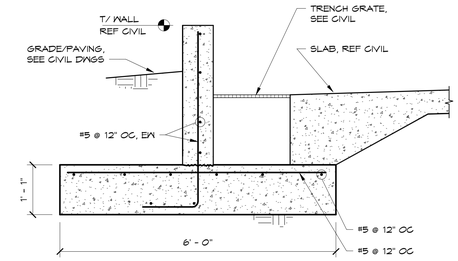
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M8

SECTION @ STREET SWEEPER RAMP

3/4" = 1'-0"



M13

SECTION @ TRENCH DRAIN

3/4" = 1'-0"

A1

FOUNDATION PLAN - RAMP AND WASH DOWN PIT

1/8" = 1'-0"

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
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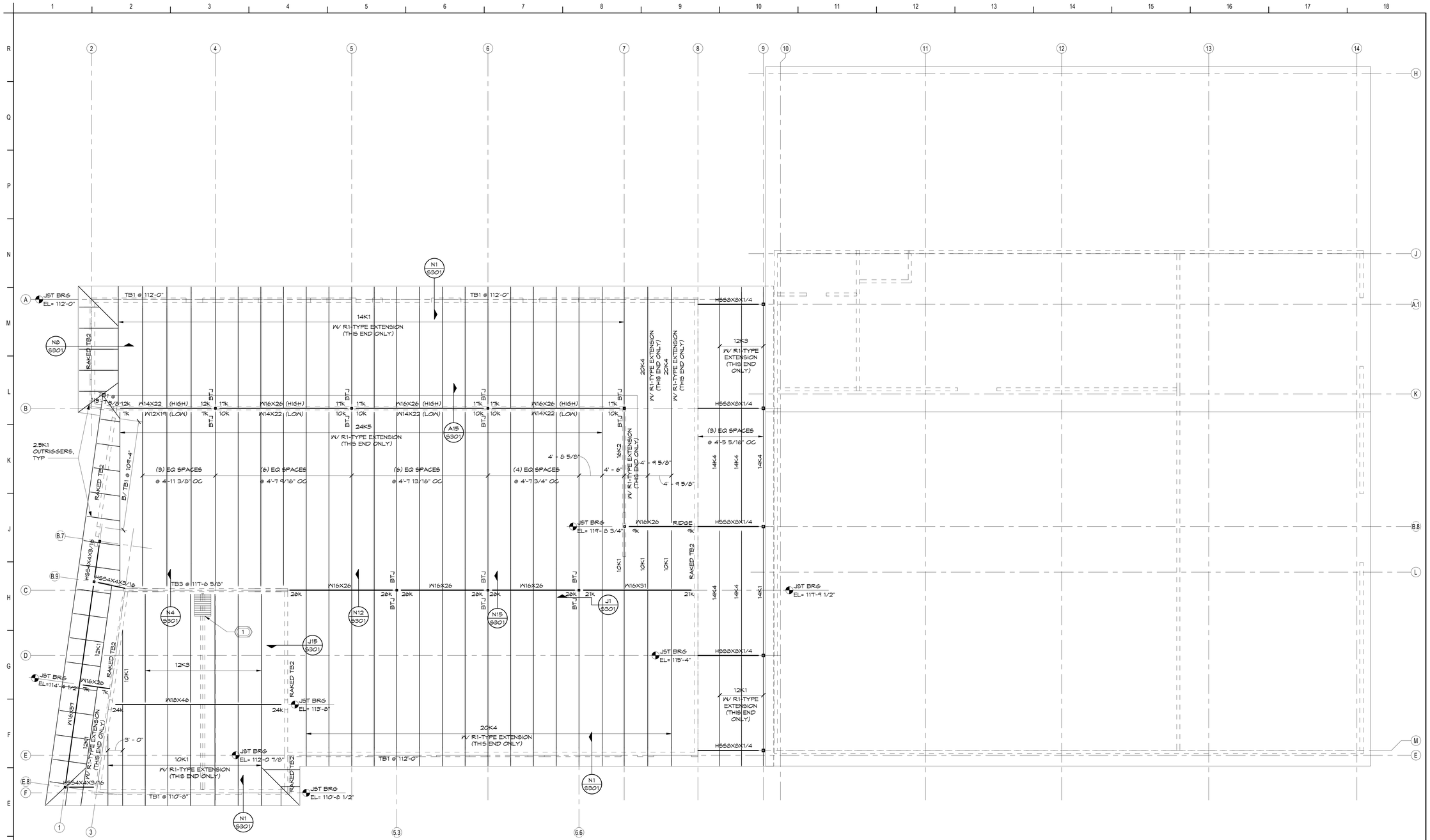
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MARK	DESCRIPTION	DATE

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STREET SWEEPER RAMP & VACCUM TRUCK WASH DOWN FOUNDATION PLAN & SECTIONS

S101B
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ROOF FRAMING PLAN NOTES:

1. RIGID INSULATION ROOFING ON 1 1/2"-22ga, TYPE "1.5B" GALV G90 METAL DECK SECURED WITH HILTI POWDER ACTUATED FASTENERS AT SUPPORTS AND #10 TEK SCREWS AT SIDELAPS ON OPEN WEB BAR JOISTS AND/OR STRUCTURAL STEEL MEMBERS. USE X-HSN-24 FOR STEEL BAR JOISTS TOP CHORD OR FLANGE THICKNESS 1/8" OR 3/8", AND X-ENP-19 L15 FOR STRUCTURAL STEEL AND STEEL BAR JOISTS WITH TOP CHORD OR FLANGE THICKNESS 1/4" OR THICKER. PROVIDE A 36/7 PATTERN AT SUPPORTS WITH SPACING AT EXTREME SIDES OF 12" OC. (3) SCREWS PER SPAN SHALL BE PROVIDED AT SIDELAPS. FLORIDA PRODUCT APPROVALS AND/OR NOTICE OF ACCEPTANCE TESTING DATA MAY REQUIRE A DIFFERENT ATTACHMENT PATTERN, DIFFERENT SIDELAP SPACING AND/OR DIFFERENT ATTACHMENT TYPE(S). PROVIDE THE MORE STRINGENT OF WHAT IS CALLED FOR HEREIN AND WHAT THE TESTED ASSEMBLY REQUIRES.

   GC OPTION TO SUBSTITUTE 5/8"ø PUDDLE WELDS IN LIEU OF HILTI FASTENERS. PROVIDE WELD WASHERS IF REQUIRED BY PRODUCT APPROVAL DOCUMENTATION OR ANY OTHER GOVERNING ENTITY.

2. SEE STRUCTURAL GENERAL NOTES FOR BRIDGING REQUIREMENTS FOR OPEN-WEB STEEL JOISTS.
3. SEE FRAMING PLAN FOR JOIST BEARING ELEVATIONS.
4. REF: ARCH'L DWGS FOR INTERIOR DRAINS, SCUPPERS, CRICKETS AND SCUTTLES.
5. "BTJ" INDICATES BOLTED TIE JOIST PER OSHA REQUIREMENTS (TYP). SEE GENERAL NOTE SJ12 FOR ADDITIONAL INFORMATION.
6. COORDINATE SIZE AND LOCATION OF ROOFTOP UNITS WITH MECHANICAL DWGS.
7. BEAM END REACTIONS AS SHOWN ON PLAN ARE ULTIMATE REACTIONS (ALREADY FACTORED).
8. ALL ROOF DRAINS (WHERE REQUIRED) SHALL BE SUPPORTED BY A L3X3X1/4 ANGLE FRAME, TYP.
9. MASONRY BOND BEAMS AND TIE BEAMS THAT ARE INDICATED ON THE PLAN SHALL BE CONTINUOUS FOR THE ENTIRE LENGTH OF THE WALL, UNO. ELEVATIONS INDICATED ON PLAN ARE TO THE TOP OF BEAM, UNO.

ROOF FRAMING PLAN KEY NOTES:

(1) SELF SUPPORTING OPERABLE PARTITION, REF OPERABLE PARTION MANUFACTURER.

NOTE TO ERECTOR:
ALL STRUCTURAL STEEL CONNECTIONS TO EMBED PLATES SHALL BE "FINGER TIGHT" WITH PEENED THREADS. ALL STRUCTURAL STEEL CONNECTIONS TO OTHER STRUCTURAL STEEL MEMBERS SHALL BE "SNUG TIGHT". NO BOLTED CONNECTION SHALL BE FULLY TENSIONED UNLESS SLIP CRITICAL (SC) BOLTS ARE SPECIFICALLY INDICATED. ADDITIONALLY, FIELD WELDING OF ANY BOLTED CONNECTION IS STRICTLY PROHIBITED UNLESS WRITTEN ACCEPTANCE IS PROVIDED BY BBM.

ROOF DESIGN LOADS

DEAD LOAD	LIVE LOAD
25 PSF	20 PSF (REDUCIBLE)

NOTES:
1. SEE TABLE ON SHEET S004 FOR GROSS UPLIFT LOADS.
2. SEE PLAN FOR CONCENTRATED LOADS.

N

A1 ROOF FRAMING PLAN
1/8" = 1'-0"

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CITY OF PORT ORANGE
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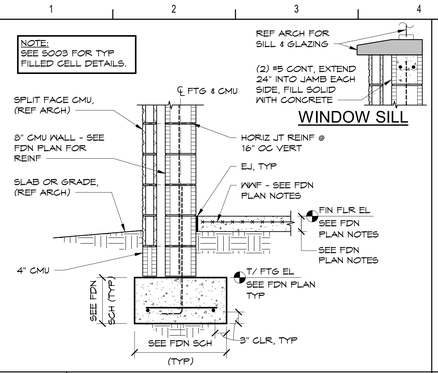
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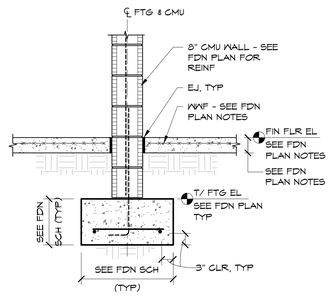
ROOF FRAMING PLAN

S102
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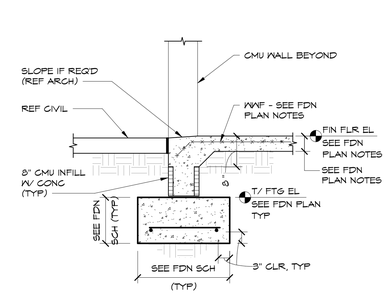
N1 | SECTION @ EXTERIOR CMU WALL

3/4" = 1'-0"



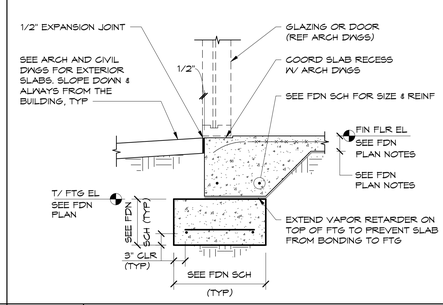
N4 | SECTION @ INTERIOR CMU WALL

3/4" = 1'-0"



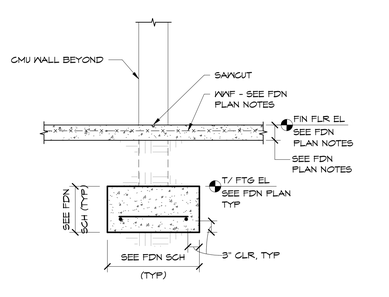
N8 | SECTION @ EXTERIOR CMU WALL OPNG

3/4" = 1'-0"



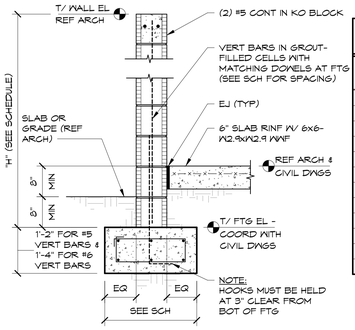
N12 | SECTION @ EXTERIOR CMU WALL OPNG

3/4" = 1'-0"



N15 | SECTION @ INTERIOR CMU WALL OPNG

3/4" = 1'-0"



J1 | TYP DUMPSTER WALL SECTION

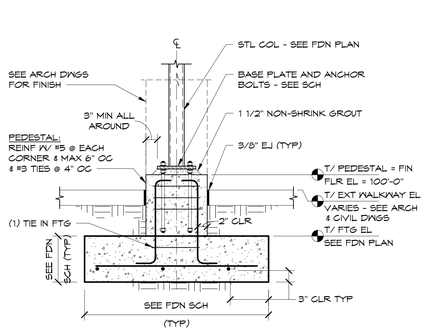
3/4" = 1'-0"

DUMPSTER WALL REINFORCING SCHEDULE

WALL H	FOOTING SIZE (W x L)	CMU WIDTH (NOMINAL)	FOOTING REINFORCING	WALL REINFORCING
UP TO 5'-4"	2'-0" x CONT	8	(3) #5 CONT T&B, #4 TIES @ 24" OC	#5 @ 48" OC
5'-5" TO 6'-8"	2'-4" x CONT	8	(3) #5 CONT T&B, #4 TIES @ 24" OC	#5 @ 48" OC
6'-9" TO 8'-0"	3'-0" x CONT	8	(3) #5 CONT T&B, #4 TIES @ 16" OC	#5 @ 48" OC
8'-1" TO 8'-8"	3'-0" x CONT	8	(3) #5 CONT T&B, #4 TIES @ 16" OC	#5 @ 32" OC
8'-9" TO 9'-4"	3'-4" x CONT	8	(3) #5 CONT T&B, #4 TIES @ 16" OC	#5 @ 24" OC
9'-5" TO 10'-0"	3'-4" x CONT	8	(3) #5 CONT T&B, #4 TIES @ 16" OC	#5 @ 16" OC
10'-1" TO 10'-8"	3'-8" x CONT	8	(4) #5 CONT T&B, #4 TIES @ 12" OC	#6 @ 16" OC
10'-9" TO 11'-4"	3'-8" x CONT	8	(4) #5 CONT T&B, #4 TIES @ 12" OC	#6 @ 8" OC
11'-5" TO 12'-0"	3'-8" x CONT	12	(4) #5 CONT T&B, #4 TIES @ 12" OC	#6 @ 48" OC
12'-1" TO 12'-8"	4'-0" x CONT	12	(4) #5 CONT T&B, #4 TIES @ 8" OC	#6 @ 40" OC
12'-9" TO 13'-4"	4'-0" x CONT	12	(4) #5 CONT T&B, #4 TIES @ 8" OC	#6 @ 32" OC
13'-5" TO 14'-0"	4'-0" x CONT	12	(4) #5 CONT T&B, #4 TIES @ 8" OC	#6 @ 24" OC

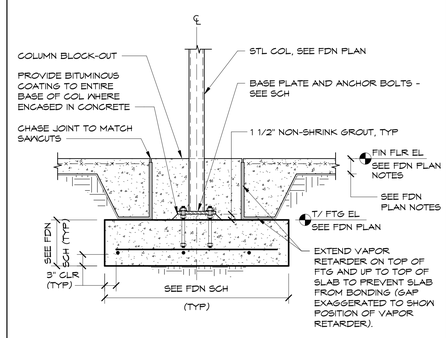
NOTE:

1. PLACE THRU-WALL CONTROL JOINTS AT 50'-0" OF MAX AND 20'-0" FROM CORNERS, DO NOT CONTINUE HORIZONTAL REINF ACROSS CONTROL JOINTS. SEE MASONRY CONTROL JOINT DETAIL.



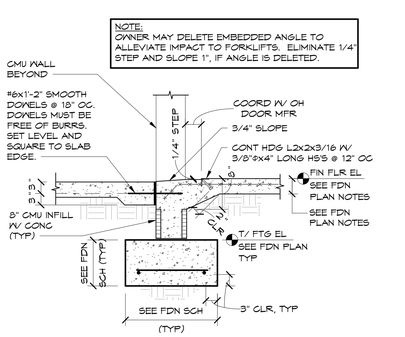
J8 | SECTION @ EXTERIOR HSS COL FTG

3/4" = 1'-0"



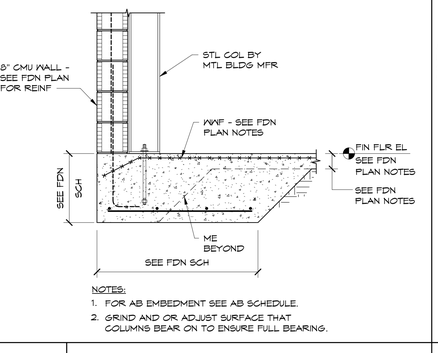
J12 | SECTION @ INT HSS COL FTG

3/4" = 1'-0"



J15 | SECTION @ OVERHEAD DOOR OPENING

3/4" = 1'-0"

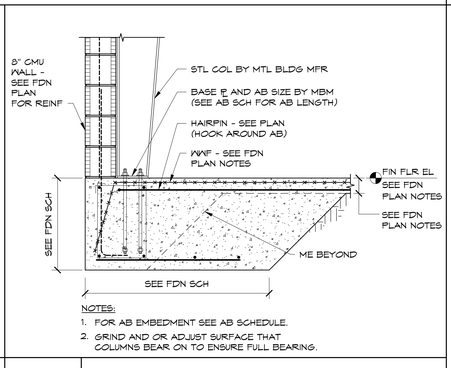


NOTES:

1. FOR AB EMBEDMENT SEE AB SCHEDULE.
2. GRIND AND OR ADJUST SURFACE THAT COLUMNS BEAR ON TO ENSURE FULL BEARING.

E1 | SECTION @ END WALL COL FTG

3/4" = 1'-0"

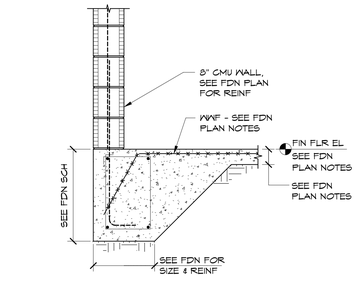


NOTES:

1. FOR AB EMBEDMENT SEE AB SCHEDULE.
2. GRIND AND OR ADJUST SURFACE THAT COLUMNS BEAR ON TO ENSURE FULL BEARING.

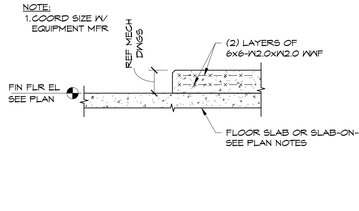
E4 | SECTION @ COL FTG

3/4" = 1'-0"



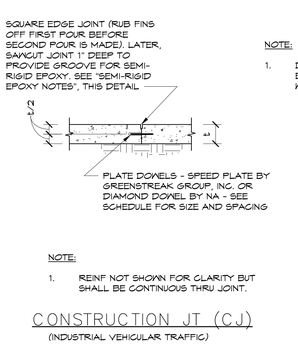
A1 | SECTION @ EXT WALL ME

3/4" = 1'-0"



A4 | HOUSE-KEEPING PAD DETAIL

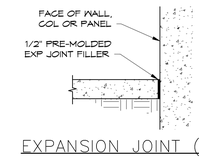
3/4" = 1'-0"



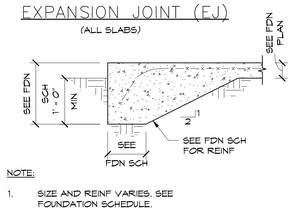
NOTE:

1. REINF NOT SHOWN FOR CLARITY BUT SHALL BE CONTINUOUS THRU JOINT.

CONSTRUCTION JT (CJ)
(INDUSTRIAL VEHICULAR TRAFFIC)



EXPANSION JOINT (EJ)
(ALL SLABS)



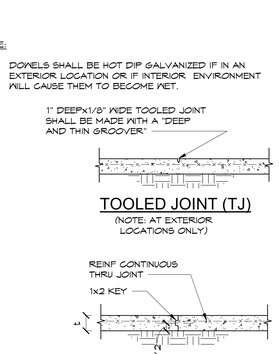
NOTE:

1. SIZE AND REINF VARIES. SEE FOUNDATION SCHEDULE.

MONOLITHIC EDGE (ME)
(ALL SLABS)

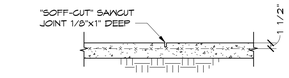
NOTE:

1. DOWELS SHALL BE HOT DIP GALVANIZED IF IN AN EXTERIOR LOCATION OR IF INTERIOR ENVIRONMENT WILL CAUSE THEM TO BECOME WET.



TOOLED JOINT (TJ)
(NOTE: AT EXTERIOR LOCATIONS ONLY)

CONSTRUCTION JOINT (CJ), KEYED
(FOOT TRAFFIC)



NOTES:

1. SLAB SHALL BE CUT AS SOON AS AGGREGATE DOES NOT DISLODGE AND BEFORE CONCRETE STARTS TO COOL. WAITING PERIOD WILL TYPICALLY VARY FROM 1 HOUR IN HOT WEATHER TO 4 HOURS IN COLD WEATHER, BUT IN NO CASE SHALL THE TIME BETWEEN FINISHING & SAWCUTTING EXCEED 8 HOURS. THE DEPTH OF THE SAWCUT SPECIFIED IN THE DETAIL SHALL BE HELD CONSTANT THROUGH- OUT THE CUTTING PROCESS. DO NOT CUT TOO DEEP OR TOO SHALLOW. ONLY PLACE AN AMOUNT OF SLAB THAT CAN BE FINISHED AND SAWCUT THE SAME DAY.
2. HAND-TOOL JOINT TO FACE OF WALL WHERE SAW BLADE CANNOT REACH.

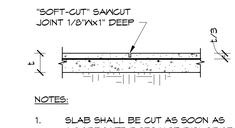
SAWCUT JOINT (SJ)
(FOOT TRAFFIC)

DOWEL SIZE AND SPACING REQUIREMENTS

SLAB DEPTH (IN)	DOWELED CONSTRUCTION JOINTS
5 TO 6	1/4" PLATE DOWEL @ 18" OC
7 TO 8	3/8" PLATE DOWEL @ 18" OC
9 TO 11	3/4" PLATE DOWEL @ 20" OC

SEMI-RIGID EPOXY NOTES:

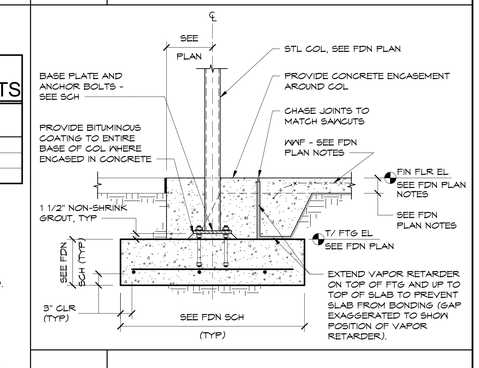
1. SEMI-RIGID EPOXY SHALL BE PROVIDED IN CONSTRUCTION AND SAWCUT JOINTS WERE EXPOSED TO TRAFFIC. EPOXY SHALL BEMM80 BY METZGER/MCGUIRE OR EUCO 700 BY EUCLID.
2. AFTER CONCRETE HAS AGED A MINIMUM OF 90 DAYS, CHASE THE JOINT WITH A CONCRETE SAW AND BLOW CLEAN W/ COMPRESSED AIR.
3. USE BACKER ROD TO CREATE VERTICAL DAM AT EA END OF THE LEG TO BE FILLED. DO NOT USE BACKER ROD AT THE BOTTOM OF THE JOINT.
4. LEAVE THE SURFACE CROWNED AND GRIND FLUSH AFTER IT HAS HARDENED.



NOTES:

1. SLAB SHALL BE CUT AS SOON AS AGGREGATE DOES NOT DISLODGE AND BEFORE CONCRETE STARTS TO COOL. WAITING PERIOD WILL TYPICALLY BARY FROM 1 HOUR IN HOT WEATHER TO 4 HOURS IN COLD WEATHER, BUT IN NO CASE SHALL THE TIME BETWEEN FINISHING & SAWCUTTING EXCEED 8 HOURS. THE DEPTH OF THE SAWCUT SPECIFIED IN THE DETAIL SHALL BE HELD CONSTANT THROUGHOUT THE CUTTING PROCESS. DO NOT CUT TOO DEEP OR TOO SHALLOW. ONLY PLACE AN AMOUNT OF SLAB THAT CAN BE FINISHED AND SAWCUT THE SAME DAY.
2. SEE "SEMI-RIGID EPOXY NOTES", THIS DETAIL.
3. HAND-TOOL JOINT TO FACE WALL WHERE SAW BLADE CANNOT REACH.

SAWCUT JOINT (SJ)
(INDUSTRIAL VEHICULAR TRAFFIC)

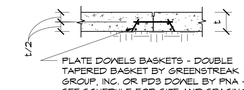


E15 | SECTION @ HSS COL FTG

3/4" = 1'-0"

DOWEL SIZE AND SPACING REQUIREMENTS @ WAREHOUSE

SLAB DEPTH (IN)	DOWELED CONSTRUCTION JOINTS	DOWELED SAWCUT JOINTS
5 TO 6	1/4" PLATE DOWEL @ 18" OC	3/8" PLATE DOWEL BASKET @ 18" OC
7 TO 8	3/8" PLATE DOWEL @ 18" OC	1/2" PLATE DOWEL BASKET @ 18" OC
9 TO 11	3/4" PLATE DOWEL @ 20" OC	3/4" PLATE DOWEL BASKET @ 18" OC



NOTE:

1. REINF NOT SHOWN FOR CLARITY BUT SHALL BE DISCONTINUOUS AS JOINT (2" CLR EA SIDE).

DOWELED SAWCUT JT (DSJ) @ WAREHOUSE
(INDUSTRIAL VEHICULAR TRAFFIC)

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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BBM PROJECT #21156

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BORA ERBILEN, P.E.
Florida Professional Engineer No. 55996

REVISIONS		
MARK	DESCRIPTION	DATE

COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
DRAWN BY: TC/BE

FOUNDATION SECTIONS AND DETAILS

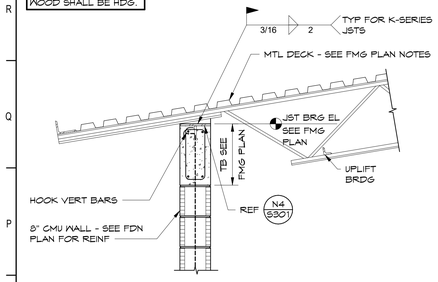
A12 | SLAB-ON-GRADE DETAILS (FOOT TRAFFIC AND INDUSTRIAL VEHICULAR TRAFFIC)

3/4" = 1'-0"

S201
PERMIT/BID DOCUMENTS

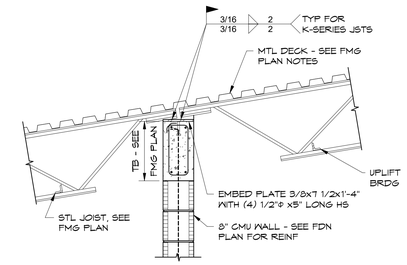
9/27/2024 11:00:24 AM
Autodesk Docs://2021815 Port Orange Field Operations/2021815_PORT ORANGE FIELD OPERATIONS_S_R2023.rvt

NOTE:
ALL STEEL MATERIAL IN CONTACT WITH PT WOOD SHALL BE HDG.



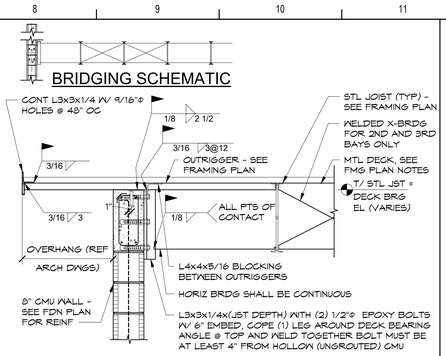
N1 SECTION @ K-SERIES JST BRG ON CMU WALL

3/4" = 1'-0"



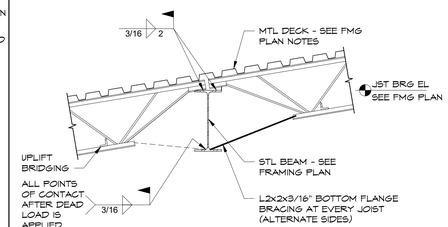
N4 SECTION @ DOUBLE JOIST BRG

3/4" = 1'-0"



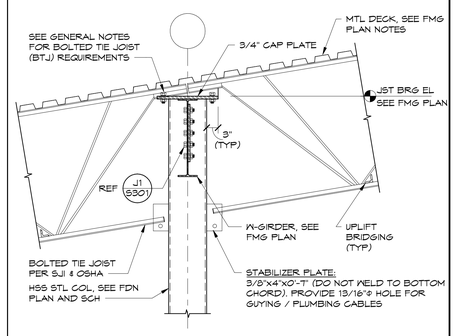
N8 SECTION @ BRIDGING

3/4" = 1'-0"



N12 SECTION @ JOIST BRG

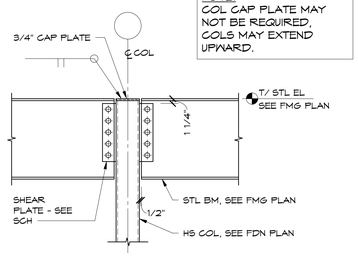
3/4" = 1'-0"



N15 SECTION @ BTJ & HSS COL

3/4" = 1'-0"

NOTE:
COL CAP PLATE MAY NOT BE REQUIRED. COLS MAY EXTEND UPWARD.

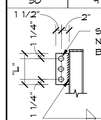


W - BEAMS

SINGLE-PLATE SHEAR CONNECTION SCHEDULE

(SHOP-WELDED, FIELD-BOLTED)

BEAM DEPTH (SEE PLAN)	NUMBER OF 3/4" DIA A325N BOLTS	PLATE LENGTH "L" (INCHES)	PLATE THICKNESS (36 KSI)	FILLET WELD SIZE (E70XX)	CAPACITY (KIPS)	
					ASD	LRFD
8, 10	2	5 1/2"	5/16	1/4	20.4	30.6
12, 14	3	8 1/2"	5/16	1/4	31.8	47.7
16	4	11 1/2"	5/16	1/4	42.4	63.6
18	5	14 1/2"	5/16	1/4	53.0	79.5
21	6	17 1/2"	5/16	1/4	63.6	95.4
24	7	20 1/2"	5/16	1/4	72.4	111.0
27	8	23 1/2"	5/16	1/4	84.7	127.0
30	9	26 1/2"	5/16	1/4	94.8	142.0

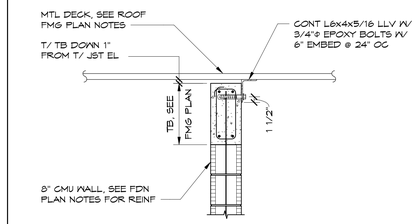


SHEAR PLATE DETAIL

NOTES:
1. FOR BEAMS NOT SHOWN HEREIN, THE FABRICATOR SHALL DESIGN THE SHEAR CONNECTION BASED ON THE REACTION SHOWN ON THE PLAN.
2. PROVIDE HORIZ SLOTS IN SHEAR PLATE.
3. BEAMS SHALL BE 50 KSI.
4. PROVIDE HARDENED WASHER OVER SLOTTED HOLES.
5. BOLTS SHALL BE INSTALLED "SNUG-TIGHT".
6. PROVIDE 3/8" MIN END PLATE FOR HSS BEAMS OR END PLATE TO MATCH BEAM THICKNESS, WHICHEVER IS LARGER.

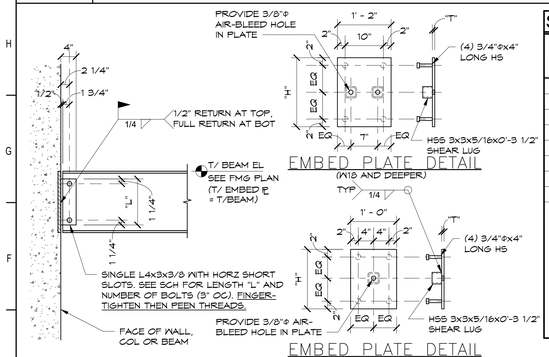
J1 TYPICAL BEAM TO HSS COL CONNECTION

3/4" = 1'-0"



J15 SECTION @ DECK BRG

3/4" = 1'-0"



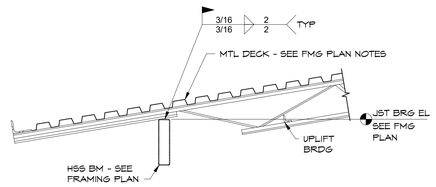
SHEAR CONNECTION SCHEDULE

BEAM SIZE (SEE PLAN)	NUMBER OF 3/4" DIA A325N BOLTS	ANGLE LENGTH "L"	EMBED PLATE		MAX ULTIMATE END REACTION (KIPS)	
			HEIGHT "H"	THICKNESS "T"	3000 PSI	4000 PSI
W8, W10	2	5 1/2"	10"	1/2"	29.4	31.8
W12	3	8 1/2"	14"	1/2"	29.4	39.2
W14, W16	4	11 1/2"	16"	5/8"	32.1	42.8
W18	5	14 1/2"	18"	5/8"	50.8	67.8
W21	6	17 1/2"	21"	3/4"	53.5	71.4
W24	7	20 1/2"	24"	3/4"	53.5	71.4
W27	8	23 1/2"	27"	3/4"	53.5	71.4
W30	9	26 1/2"	30"	3/4"	53.5	71.4

NOTES:
1. FOR BEAMS NOT SHOWN HEREIN, FABRICATOR SHALL DESIGN THE SHEAR CONNECTION BASED ON THE REACTION SHOWN ON THE PLAN.
2. PLATE AND ANGLE MATERIAL SHALL BE ASTM A36.
3. BEAM MATERIAL SHALL BE 50 KSI.
4. FABRICATOR SHALL CHECK BEAM WEB TEAR-OUT (BLOCK SHEAR) IF BEAM IS COPED.
5. PROVIDE SHORT SLOTTED HOLES IN BEAM WEB.
6. INSTALL BOLTS FINDER-TIGHT THEN PEEN THREADS.

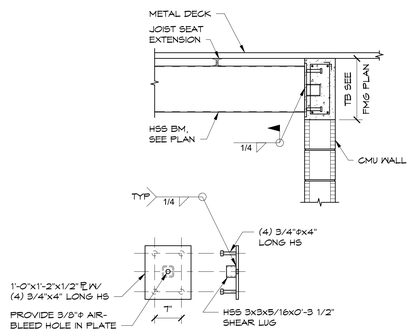
E1 TYPICAL FLOOR BEAM TO CONCRETE CONNECTION (SINGLE SHEAR)

3/4" = 1'-0"



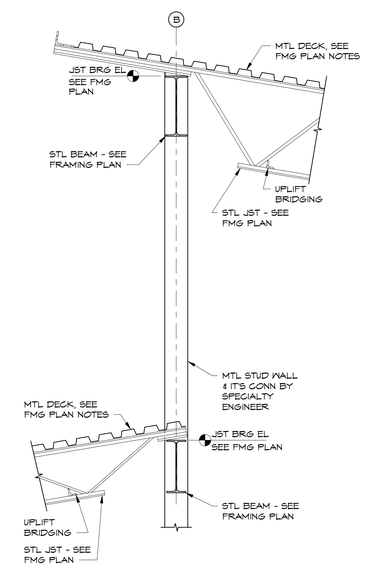
E8 SECTION @ JOIST BRG

3/4" = 1'-0"



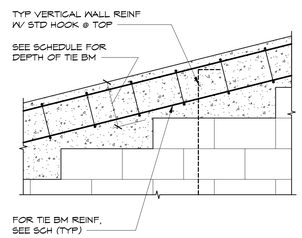
E12 HSS CONN @ TB2

3/4" = 1'-0"



A15 SECTION @ JST BRG

3/4" = 1'-0"



A1 DETAIL - RAKED TIE BEAM

3/4" = 1'-0"

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
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BORA ERBILEN, P.E.
Florida Professional Engineer No. 55996

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ISSUE DATE: 09/30/2024
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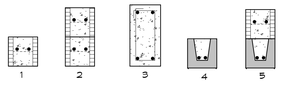
ROOF FRAMING SECTIONS AND DETAILS

S301
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MASONRY WALL BEAM SCHEDULE

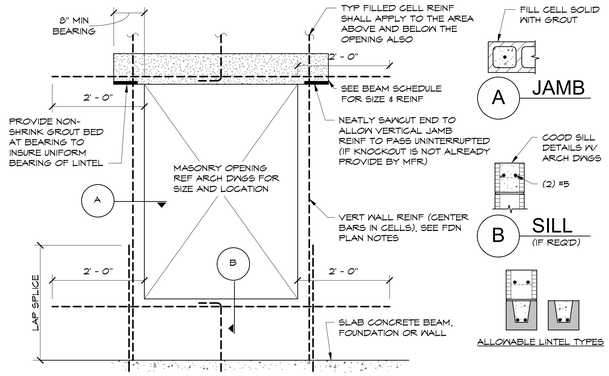
MARK	TYPE	NOMINAL SIZE (W"xD")	REINFORCING			STIRRUPS		COMMENTS
			BOT	MID	TOP	SIZE	SPACING	
BB1	1	8x8	--	(2) #5	--	--	--	
BB2	2	8x16	(2) #5	--	(2) #5	--	--	
TB1	3	8x16	(2) #5	--	(2) #5	#3	48"	
TB2	3	8x12 (MIN)	(2) #5	--	(2) #5	#3	48"	SLOPED TOP & STEPPED BOTTOM
TB3	3	8x12 (MIN)	(2) #5	--	(2) #5	#3	48"	INCREASE BEAM DEPTH AS NECESSARY TO MATCH BLOCK MODULES
PB1	4	8x8	(2) #5	--	--	--	--	MIN 1200 PLF CAP. FOR CLEAR SPAN UP TO 6'-0" (NOTE 1)
PB2	5	8x16	(2) #5	--	(2) #5	--	--	MIN 1150 PLF CAP. FOR CLEAR SPAN UP TO 12'-0" (NOTE 1)



BEAM TYPES

NOTES:

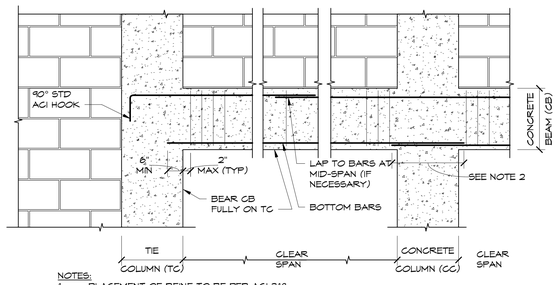
1. MIN PB CAPACITY FOR THE INDICATED SPAN MUST BE VERIFIED BY THE PRECAST MFR. AND DOCUMENTATION PROVIDED IN THE SUBMITTALS.
2. "BB" = BOND BEAM (COMPOSED OF KNOCK-OUT BLOCK)
3. "TB" = TIE BEAM (FORMED AND POURED)
4. "PB" = PRE-CAST BEAM (COMPOSED OF PRE-CAST U-LINTEL AT BOTTOM AND KNOCK-OUT BLOCK AT TOP, ALL GROUTED SOLID TO FORM INTEGRAL BEAM)



PRECAST BEAM ELEVATION

NTS

* NOTE: SOLID PRECAST LINTELS SHALL NOT BE USED.



NOTES:

1. PLACEMENT OF REINF TO BE PER ACI 318.
2. FOR BOTTOM BARS PROVIDE A CLASS "A" TENSION LAP CENTEREF OVER SUPPORT OR TERMINATE BARS AS CONDITION WARANTS.
3. SEE COLUMN SCHEDULES AND DETAILS FOR SIZE AND REINFORCING.

CONCRETE BEAM ELEVATION

A1 — MASONRY WALL BEAM SCHEDULE — 3/4" = 1'-0"

PRE-ENGINEERED METAL BUILDING DESIGN BASIS

LIVE LOAD		COLLATERAL LOAD	HORIZONTAL (DRIFT)	HORIZONTAL (WIND BEAMS SUPPORTING CMU)	HORIZONTAL (WALL BEAMS SUPPORTING METAL SIDING)	HORIZONTAL (WALL SIDING)	LIVE LOAD		WIND		BUILDING CODE
PURLINS	FRAMES						ROOF	FLOOR			
20 PSF	12 PSF	10 PSF	H100 FOR DADE / BROWARD COUNTIES; H/80 ELSEWHERE (MTL PANEL WALLS) H/200 (TILT-UP PANELS) H/200 (MASONRY WALLS)	L/360	L/180	L/240	L/240 (PURLING & ROOF PANELS)	L/360	WIND VELOCITY: RISK CATEGORY: EXPOSURE: INTERNAL PRESSURE COEFFICIENT:	147 MPH III C +/-0.18	FLORIDA BUILDING CODE 2023 (8TH EDITION)

NOTE:

1. PEMB MFR MUST SUBMIT SIGNED & SEALED CALCULATIONS.
2. METAL ROOF PANELS & WALL SIDING SHALL BE MIN 24 GA.
3. ROD AND CABEL BRACING IS NOT PERMITTED. ALL BRACING SHALL HAVE $kl/r \leq 300$.

N8 — PRE-ENGINEERED METAL BUILDING DESIGN BASIS — 12" = 1'-0"

COLUMN & BASE PLATE SCHEDULE

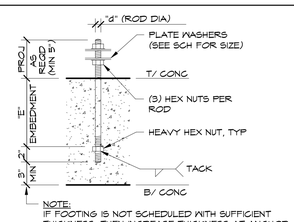
MARK	SIZE	BASE PLATE SIZE (INCHES)			ANCHOR ROD (INCHES)		COMMENTS
		A	B	T	E	d	
C1	HSS 4x4x1/4	10	10	3/4	9	3/4	
C2	HSS 6x6x1/4	12	12	3/4	9	3/4	

NOTES:

1. ANCHOR RODS SHALL BE ASTM F1554 (GRADE 36) UNO, THREADED EACH END WITH NUT AT BOTTOM. PLATE WASHER AT BOTTOM NUT IS NOT REQ'D. INCREASE FOOTING THICKNESS AT ANCHOR RODS TO PROVIDE MIN 3" COVER. SEE NOTE BELOW IN ANCHOR ROD DETAIL.
2. PLATE WASHERS SHALL HAVE HOLE WITH DIAMETER EQUAL TO ROD DIAMETER + 1/16". CIRCULAR OR SQUARE WASHERS ARE ACCEPTABLE.
3. IT SHALL BE ACCEPTABLE TO PROVIDE A HEAVY HEX HEAD BOLT IN LIEU OF THE THREADED ROD WITH HEAVY HEX NUT AT BOTTOM.

OVERSIZE HOLES AND PLATE WASHERS FOR BASE PLATES

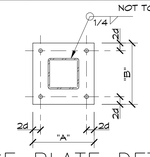
ROD DIAMETER	HOLE DIAMETER	PLATE WASHER	ROD DIAMETER	HOLE DIAMETER	PLATE WASHER
3/4"	1 5/16"	1/4"x2"x2"	1 1/2"	2 3/8"	1/2"x4"
7/8"	1 9/16"	5/16"x2 1/2"x2 1/2"	1 3/4"	2 7/8"	5/8"x4 1/2"
1"	1 7/8"	3/8"x3"x3"	2"	3 1/4"	3/4"x5"
1 1/4"	2 1/8"	1/2"x3 1/2"x3 1/2"	2 1/2"	3 3/4"	7/8"x5 1/2"



NOTE: IF FOOTING IS NOT SCHEDULED WITH SUFFICIENT THICKNESS, THEN INCREASE THICKNESS AT ANCHOR BOLTS ONLY

ANCHOR ROD DETAIL

NOT TO SCALE



BASE PLATE DETAIL

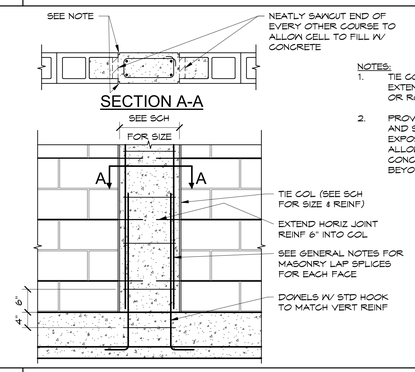
NOT TO SCALE

J8 — COLUMN & BASE PLATE SCHEDULE — 12" = 1'-0"

FOUNDATION SCHEDULE

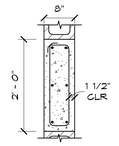
MARK	SIZE (L x W x D)	REINFORCING	REMARKS
F36	3'-6" x 3'-6" x 1'-2"	(4) #5 EA WAY, BOT	PAD FOOTING
F40	4'-0" x 4'-0" x 1'-2"	(4) #5 EA WAY, BOT	PAD FOOTING
F46	4'-6" x 4'-6" x 1'-2"	(4) #5 EA WAY, BOT	PAD FOOTING
F70	7'-0" x 7'-0" x 1'-2"	(7) #5 EA WAY, BOT	PAD FOOTING
WF20	CONT x 2'-0" x 1'-0"	(2) #5 CONT & #5 @ 48" TRANS, BOT	WALL FOOTING
WF26	CONT x 2'-6" x 1'-0"	(3) #5 CONT & #5 @ 48" TRANS, BOT	WALL FOOTING
MF60	6'-0" x 6'-0" x 1'-0"	(6) #5 EA WAY, BOT	MONOLITHIC FOOTING
MF66	6'-6" x 6'-6" x 1'-1"	(6) #5 EA WAY, BOT	MONOLITHIC FOOTING
MF70	7'-0" x 7'-0" x 1'-2"	(7) #5 EA WAY, BOT	MONOLITHIC FOOTING
MF80	8'-0" x 8'-0" x 1'-4"	(7) #6 EA WAY, BOT	MONOLITHIC FOOTING
MF86	8'-6" x 8'-6" x 1'-4"	(7) #6 EA WAY, BOT	MONOLITHIC FOOTING
MF90	9'-0" x 9'-0" x 1'-6"	(8) #6 EA WAY, BOT	MONOLITHIC FOOTING
MF96	9'-6" x 9'-6" x 1'-8"	(7) #7 EA WAY, BOT	MONOLITHIC FOOTING
MF110	11'-0" x 11'-0" x 1'-10"	(9) #7 EA WAY, BOT	MONOLITHIC FOOTING
MF130	13'-0" x 13'-0" x 2'-1"	(12) #7 EA WAY, BOT	MONOLITHIC FOOTING
MF136	13'-6" x 13'-6" x 2'-2"	(10) #9 EA WAY, BOT	MONOLITHIC FOOTING
MF160	16'-0" x 16'-0" x 2'-7"	(14) #8 EA WAY, BOT	MONOLITHIC FOOTING
MWF20	CONT x 2'-0" x 1'-0"	(2) #5 CONT & #5 @ 48" TRANS, BOT	MONOLITHIC WALL FTG
ME10	CONT x 1'-0" x 1'-4"	(1) #5 CONT, BOT	MONOLITHIC EDGE

E8 — FOUNDATION SCHEDULE — 12" = 1'-0"



NOTES:

1. TIE COLUMNS (TC'S) SHALL EXTEND UP TO THE NEXT FLOOR OR ROOF LEVEL, UNO.
2. PROVIDE REVEAL (COORD SIZE AND SHAPE WITH ARCH) AT ALL EXPOSED CONDITIONS. DO NOT ALLOW TIE COLUMN CONCRETE PASTE TO PASS BEYOND THE REVEAL.



TC1

(6) #5 VERT & #3 TIES @ 12" OC

TIE COLUMN TYPES

A8 — DETAIL - TIE COLUMN — 3/4" = 1'-0"

ALLOWABLE DISTRIBUTED LOADS UNJOINTED AISLE

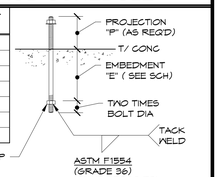
(NON-UNIFORM LOADING; VARIABLE LAYOUT) SEE "SLAB-ON-GRADE" GENERAL NOTES FOR EXCLUSIONS

SLAB THICKNESS	ALLOWABLE LOAD (PSF) (SUBGRADE k ≥50 PCI AND CONCRETE FLEXURAL STRENGTH ≥550 PSI)
4"	475
5"	595
6"	585
7"	630
8"	680
9"	715
10"	760
11"	790
12"	830

L15 — ALLOWABLE DISTRIBUTED LOADS — 12" = 1'-0"

PRE-ENGINEERED METAL BUILDING ANCHOR ROD SCHEDULE

DIAMETER "D" *	MIN. EMBEDMENT "E" **
5/8"	8"
3/4"	10"
7/8"	12"
1"	14"
1 1/8"	16"
1 1/4"	18"
1 1/2"	22"

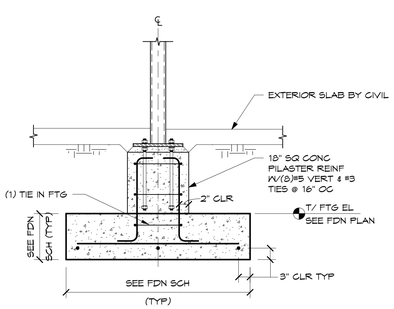


* ROD DIAMETER BY METAL BUILDING MFR
** EMBEDMENT BY "BBM STRUCTURAL ENGINEERS".

NOTES:

1. DEVELOPS FULL TENSILE CAPACITY OF SINGLE ROD WITHOUT EDGE DISTANCE OR GROUPING REDUCTIONS.
2. SEE GEN NOTS FOR ADDL ANCHOR ROD INFO.
3. IT SHALL BE ACCEPTABLE TO PROVIDE A HEAVY HEX HEAD BOLT IN LIEU OF THE THREADED ROD WITH HEAVY HEX NUT AT BOTTOM.

F15 — PEMB ANCHOR ROD SCHEDULE — 12" = 1'-0"



A15 — SECTION @ EXTERIOR HSS COL FTG — 3/4" = 1'-0"

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
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BBM STRUCTURAL
2300 Maitland Center Parkway
Suite 201
Maitland, FL 32751
p 407 - 645 - 3423
EB: 5343
BBM PROJECT #21156

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BORA ERBILEN, P.E.
Florida Professional Engineer No. 55996

REVISIONS		
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ISSUE DATE: 09/30/2024
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SCHEDULES, SECTIONS AND DETAILS

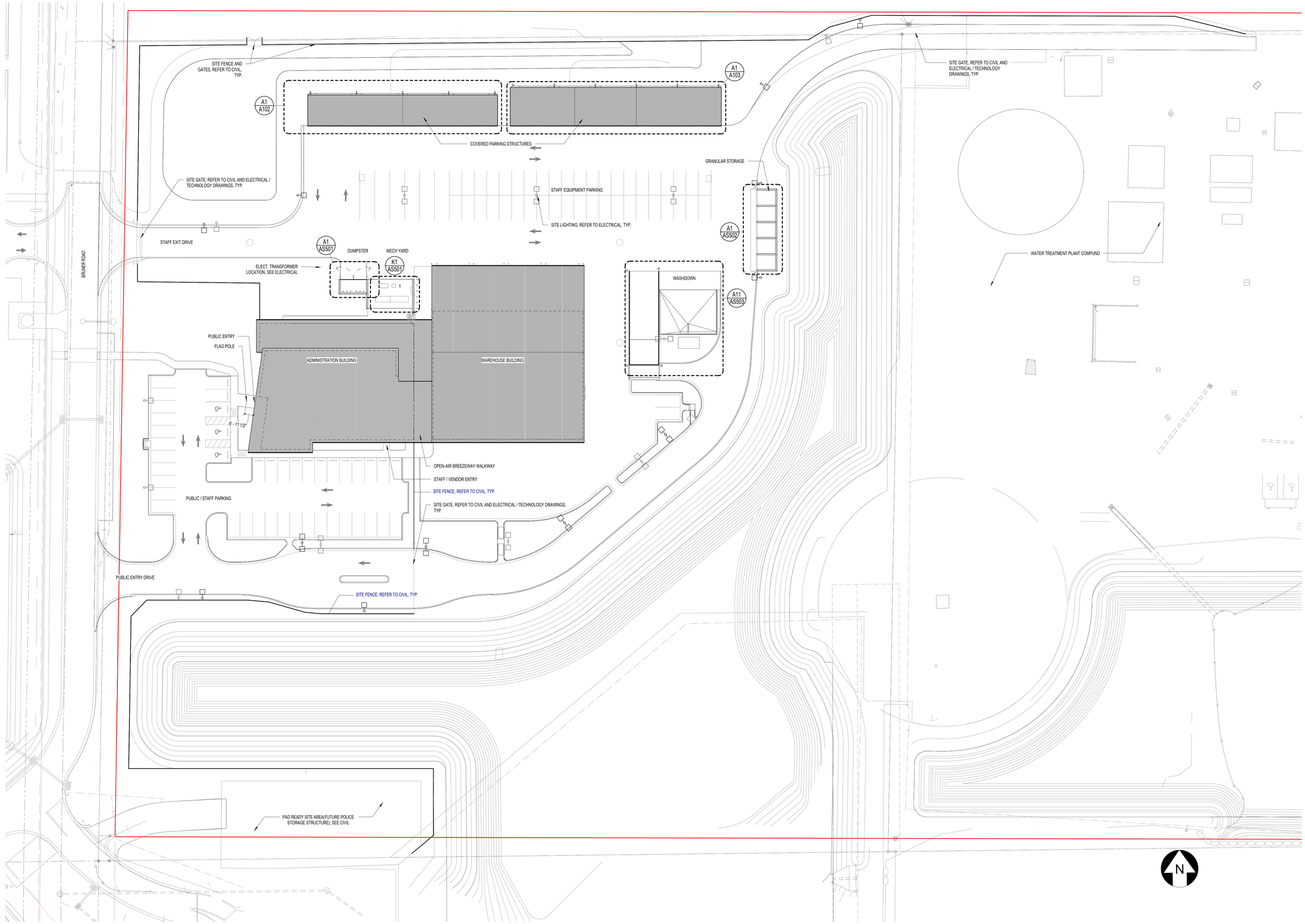
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GENERAL NOTES - SITE PLAN

1. ARCHITECTURAL SITE PLAN SHOWN FOR REFERENCE ONLY. COORDINATE WITH CIVIL DRAWINGS FOR SITE INFORMATION
2. COORDINATE WITH CIVIL DRAWINGS FOR SITE SIGNAGE AND PAVEMENT MARKING INFORMATION
3. COORDINATE WITH LANDSCAPE / SITE IRRIGATION DRAWINGS
4. COORDINATE WITH ELECTRICAL DRAWINGS FOR SITE LIGHTING INFORMATION

SITE PLAN SHOWN FOR REFERENCE ONLY. REFER TO CIVIL DRAWINGS FOR ACTUAL SITE CONDITIONS



A1 ARCHITECTURE SITE PLAN

1" = 30'-0"

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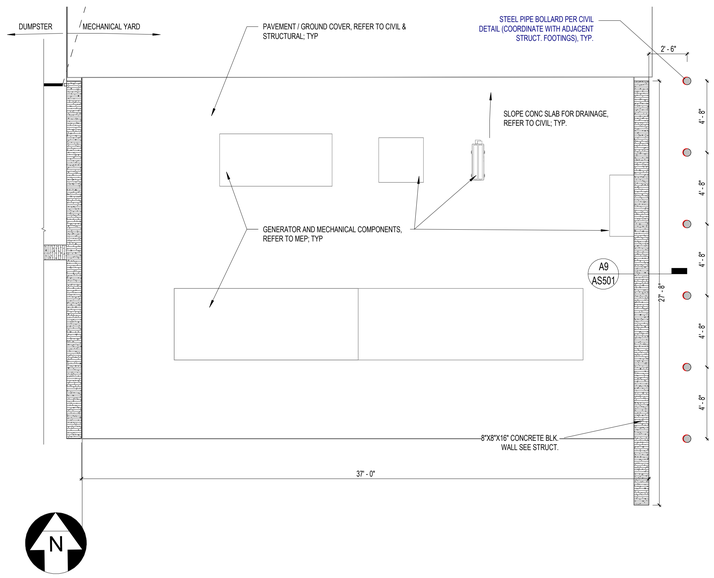
REVISIONS		
MARK	DESCRIPTION	DATE

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ISSUE DATE: 09/30/2024
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ARCHITECTURE SITE PLAN

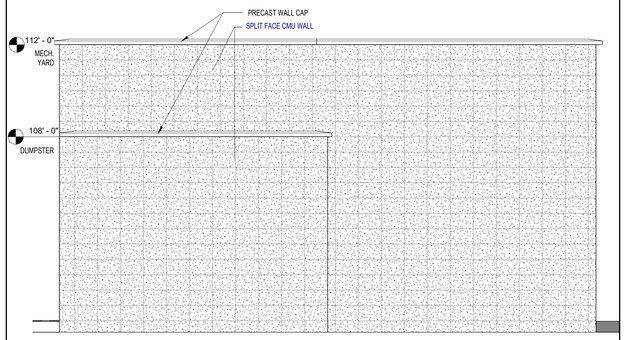
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K1 MECHANICAL YARD PLAN

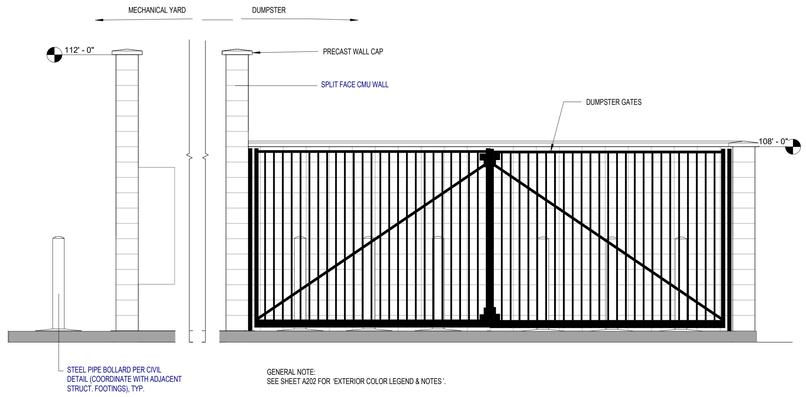
1/4" = 1'-0"



GENERAL NOTE:
SEE SHEET A202 FOR 'EXTERIOR COLOR LEGEND & NOTES'.

K7 DUMPSTER ENCLOSURE ELEVATION-1

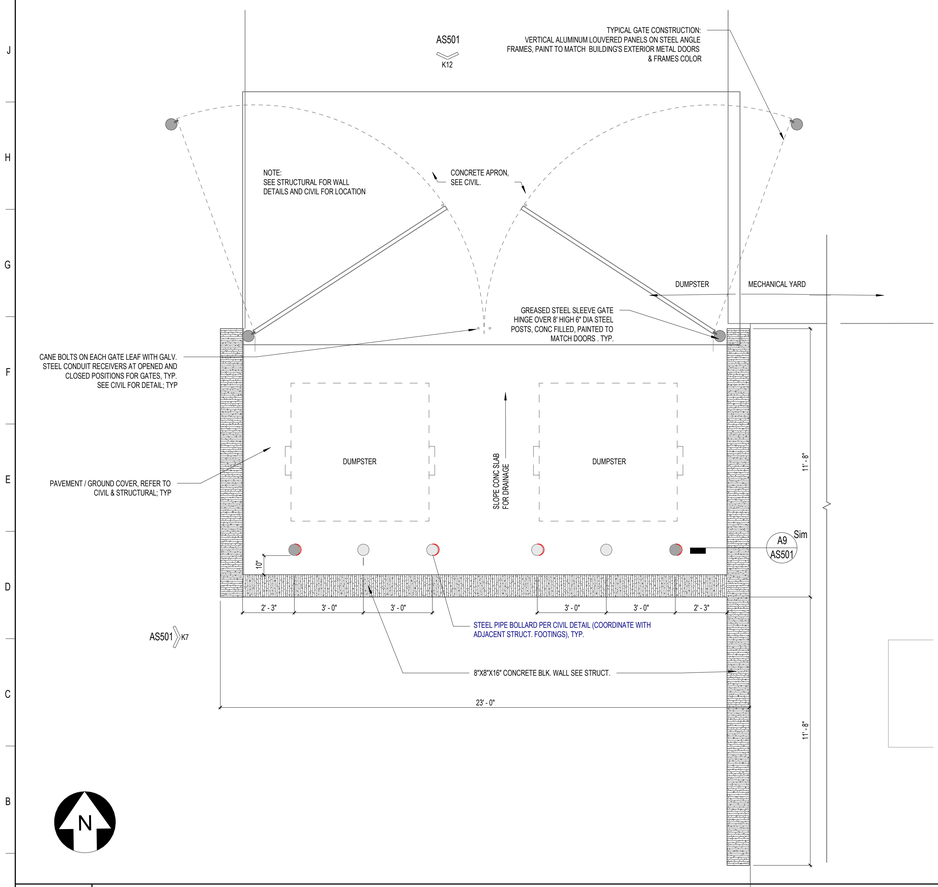
3/8" = 1'-0"



GENERAL NOTE:
SEE SHEET A202 FOR 'EXTERIOR COLOR LEGEND & NOTES'.

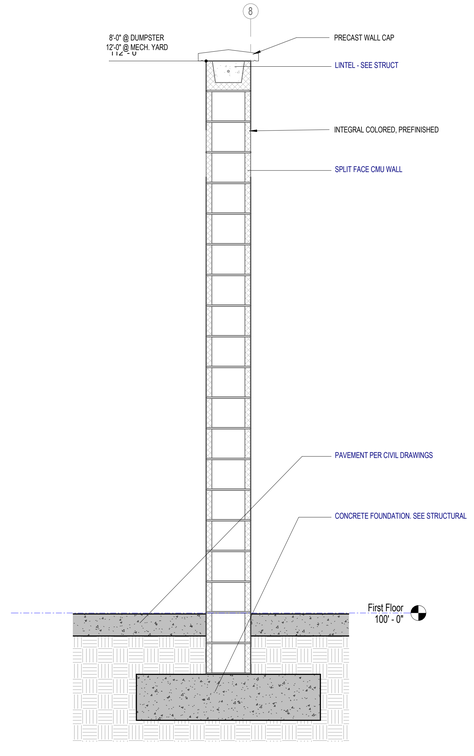
K12 DUMPSTER ENCLOSURE ELEVATION-4

3/8" = 1'-0"



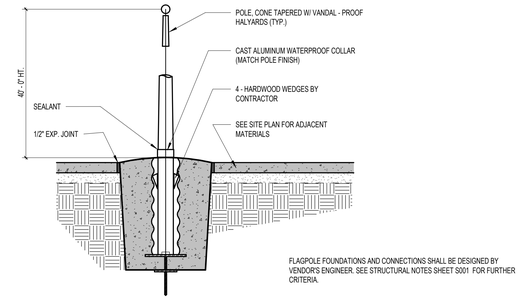
A1 DUMPSTER ENCLOSURE

3/8" = 1'-0"



A9 SITE WALL SECTION

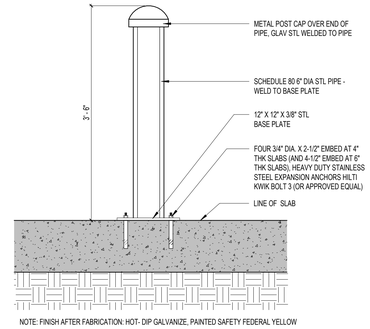
3/4" = 1'-0"



FLAGPOLE FOUNDATIONS AND CONNECTIONS SHALL BE DESIGNED BY VENDOR'S ENGINEER. SEE STRUCTURAL NOTES SHEET S001 FOR FURTHER CRITERIA.

F13 FLAG POLE DETAIL

1/2" = 1'-0"



NOTE: FINISH AFTER FABRICATION: HOT- DIP GALVANIZE, PAINTED SAFETY FEDERAL YELLOW

A13 PIPE BOLLARD DETAIL (INTERIOR LOCATIONS)

1" = 1'-0"

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MARK	DESCRIPTION	DATE
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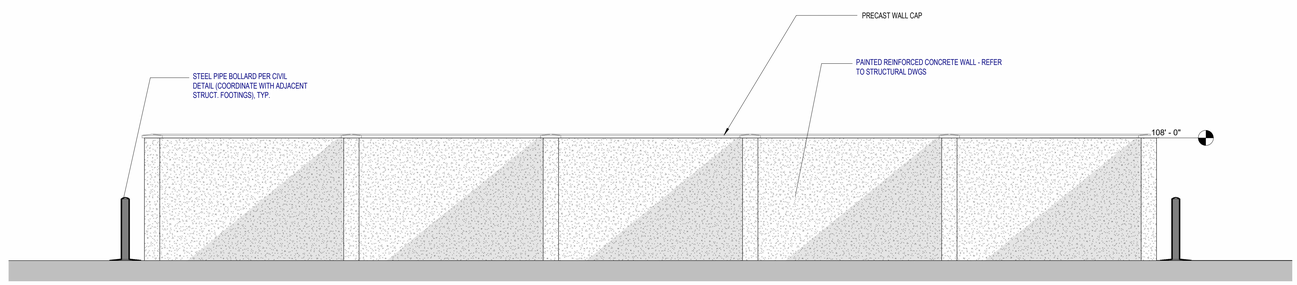
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DETAILS - SITE

AS501
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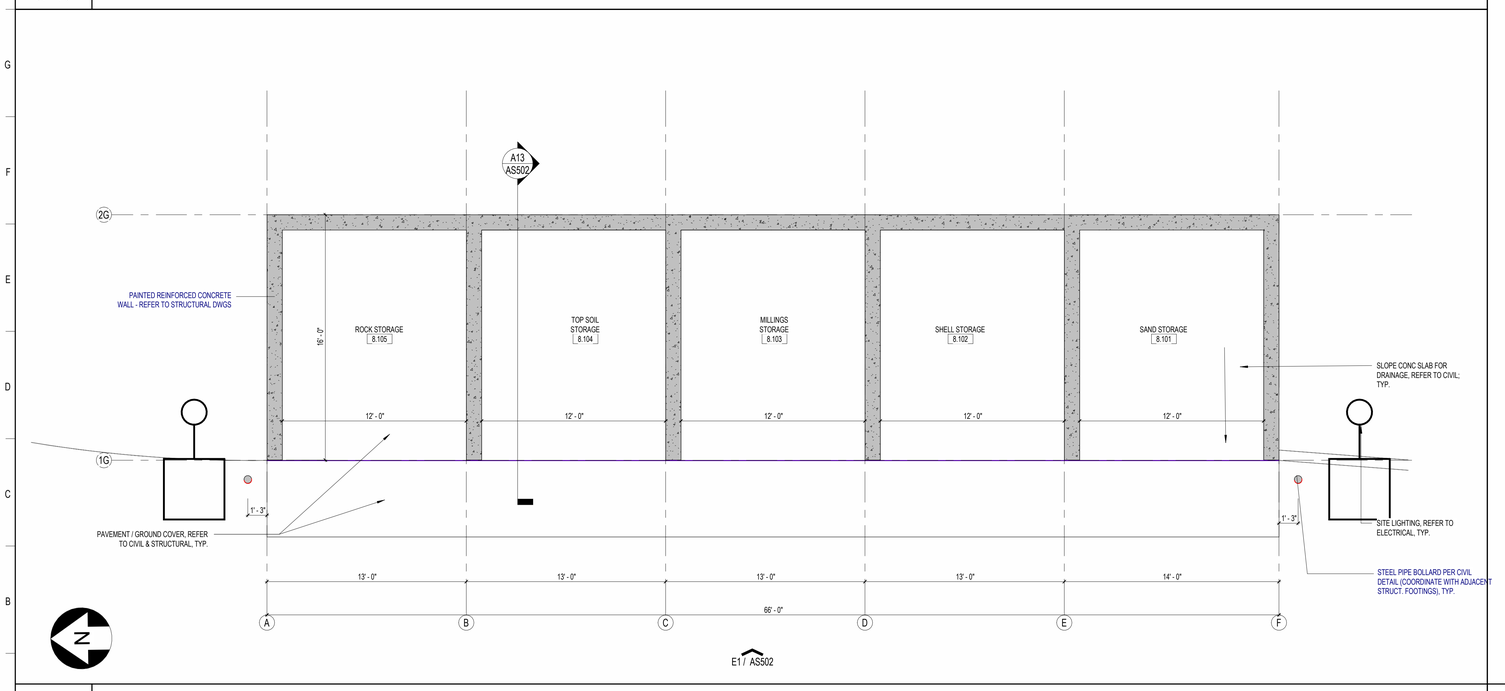
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GENERAL NOTE:
SEE SHEET A202 FOR `EXTERIOR COLOR LEGEND & NOTES`. PAINTED WALL FINISH TO MATCH CEMENT PLASTER COLOR, TYP.



E1 GRANULAR PLANGRANULAR ELEVATION

1/4" = 1'-0"

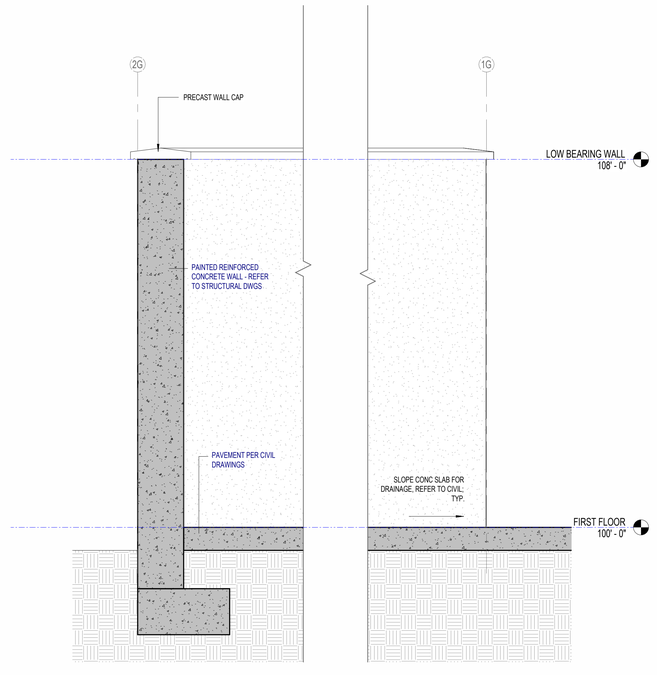


E1 / AS502

A1 GRANULAR PLAN

1/4" = 1'-0"

GENERAL NOTE:
SEE SHEET A202 FOR `EXTERIOR COLOR LEGEND & NOTES`. PAINTED WALL FINISH TO MATCH CEMENT PLASTER COLOR, TYP.



A13 GRANULAR SECTION

3/4" = 1'-0"

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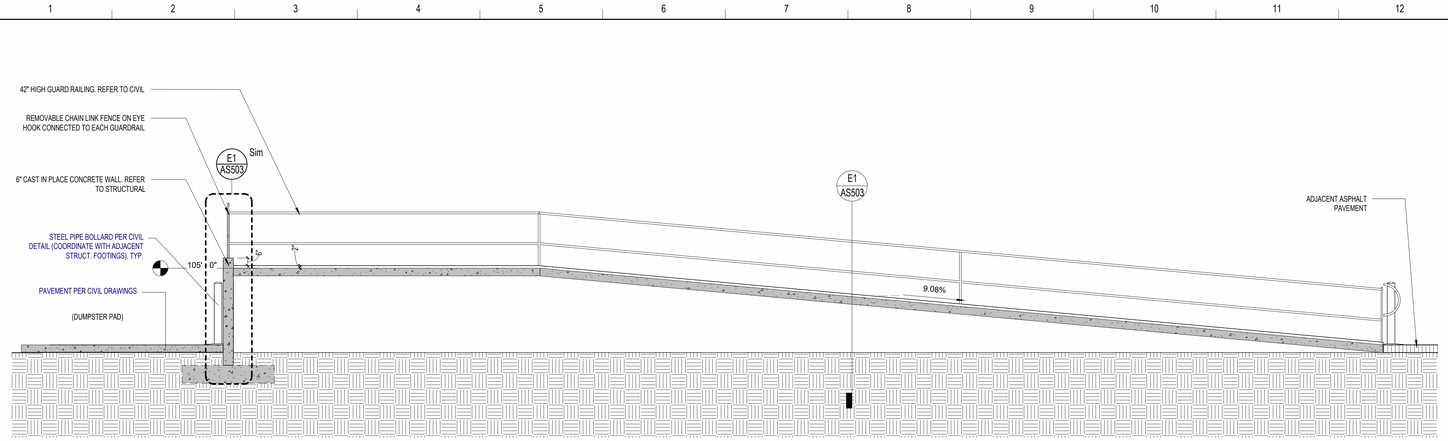
MARK	DESCRIPTION	DATE
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ISSUE DATE: 09/30/2024
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DETAILS - SITE

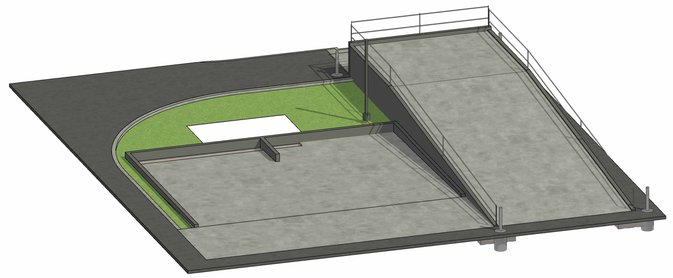
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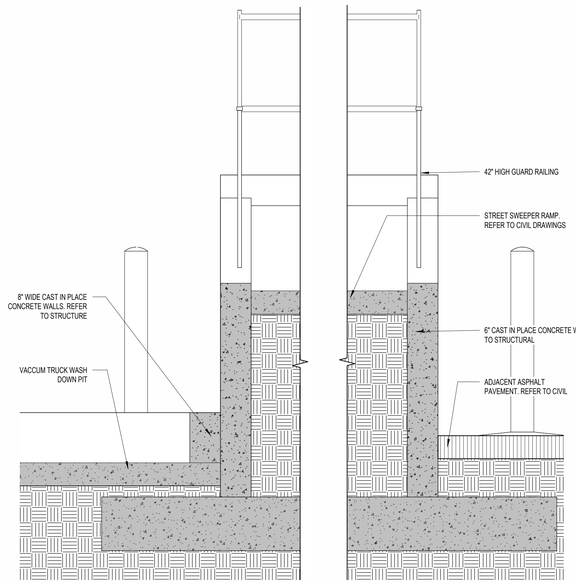


M1 STREET SWEEPER RAMP SECTION

1/4" = 1'-0"

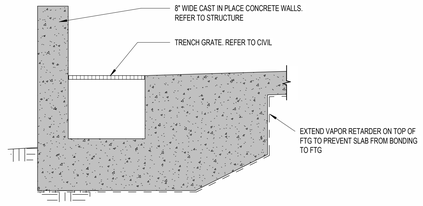


WASHDOWN 3D VIEW



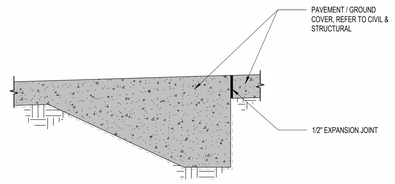
E1 STREET SWEEPER RAMP SECTION1

3/4" = 1'-0"



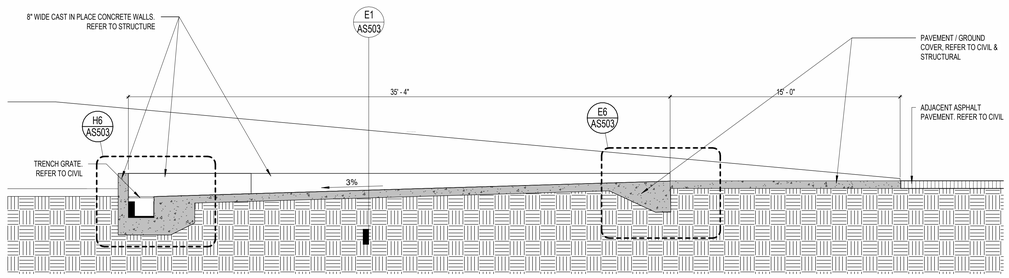
H6 VACCUM TRUCK WASH DOWN PIT FOOTING

3/4" = 1'-0"



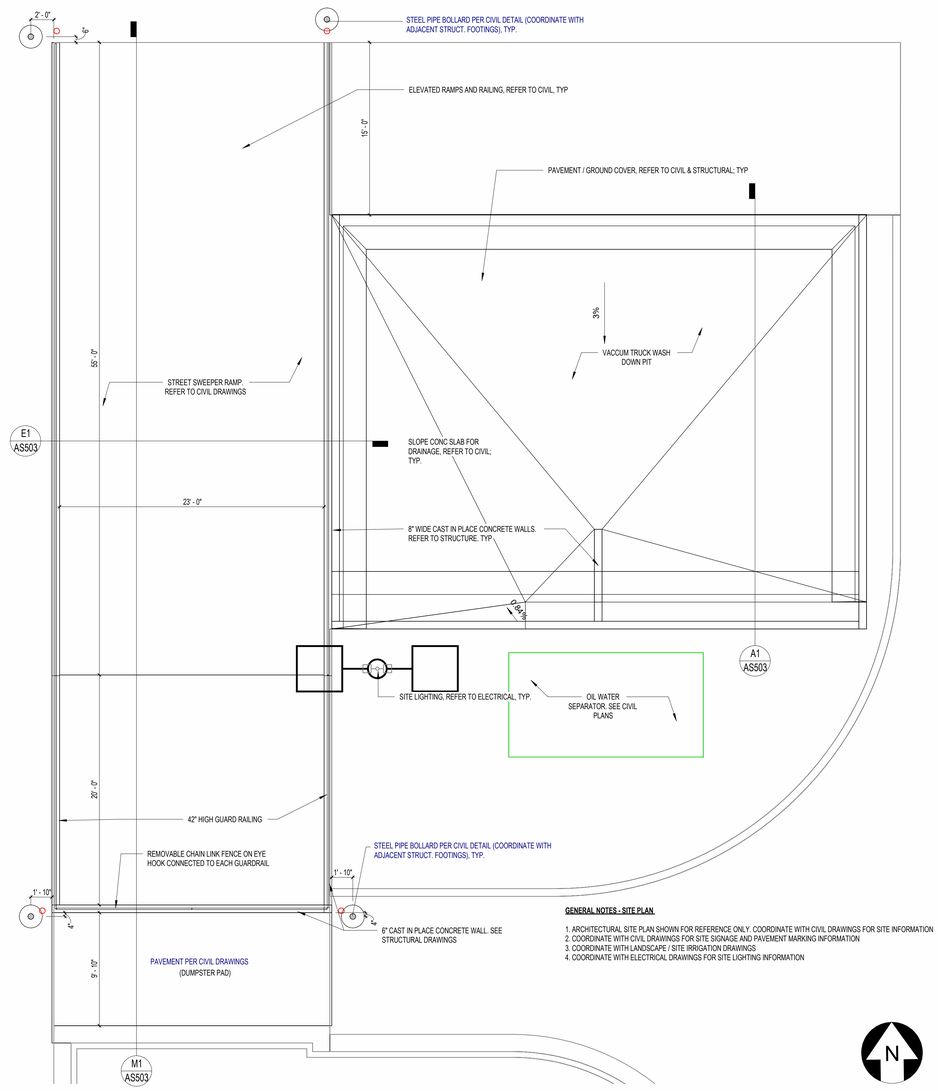
E6 WALL FOOTING

3/4" = 1'-0"



A1 VACCUM TRUCK WASH DOWN PIT SECTION

1/4" = 1'-0"



GENERAL NOTES - SITE PLAN

1. ARCHITECTURAL SITE PLAN SHOWN FOR REFERENCE ONLY. COORDINATE WITH CIVIL DRAWINGS FOR SITE INFORMATION
2. COORDINATE WITH CIVIL DRAWINGS FOR SITE SIGNAGE AND PAVEMENT MARKING INFORMATION
3. COORDINATE WITH LANDSCAPE / SITE IRRIGATION DRAWINGS
4. COORDINATE WITH ELECTRICAL DRAWINGS FOR SITE LIGHTING INFORMATION

A11 STREET SWEEPER RAMP & VACCUM TRUCK WASH DOWN PIT PLAN

3/16" = 1'-0"

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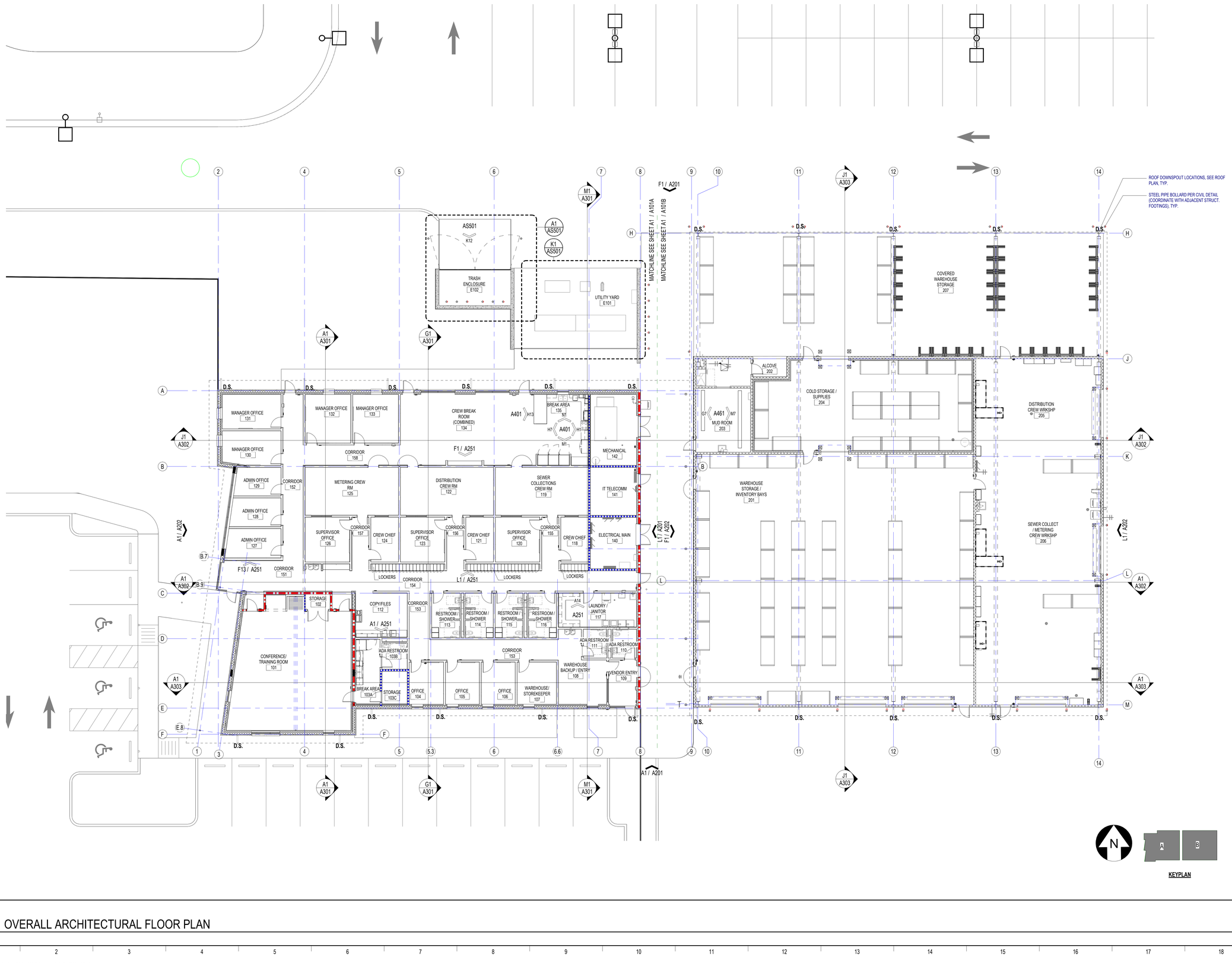
MARK	DESCRIPTION	DATE
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DETAILS - SITE

AS503
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KEYPLAN

A1	OVERALL ARCHITECTURAL FLOOR PLAN
3/32" = 1'-0"	

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REVISIONS

MARK	DESCRIPTION	DATE
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2	OWNER REVISIONS MEETING	06/22/2023

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ISSUE DATE: 09/30/2024
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OVERALL ARCHITECTURAL FLOOR PLAN

A101
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A1 — ARCHITECTURAL FLOOR PLAN - ADMINISTRATION

1/8" = 1'-0"

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REVISIONS

MARK	DESCRIPTION	DATE
1	OWNER REVISIONS MEETING	09/22/2023

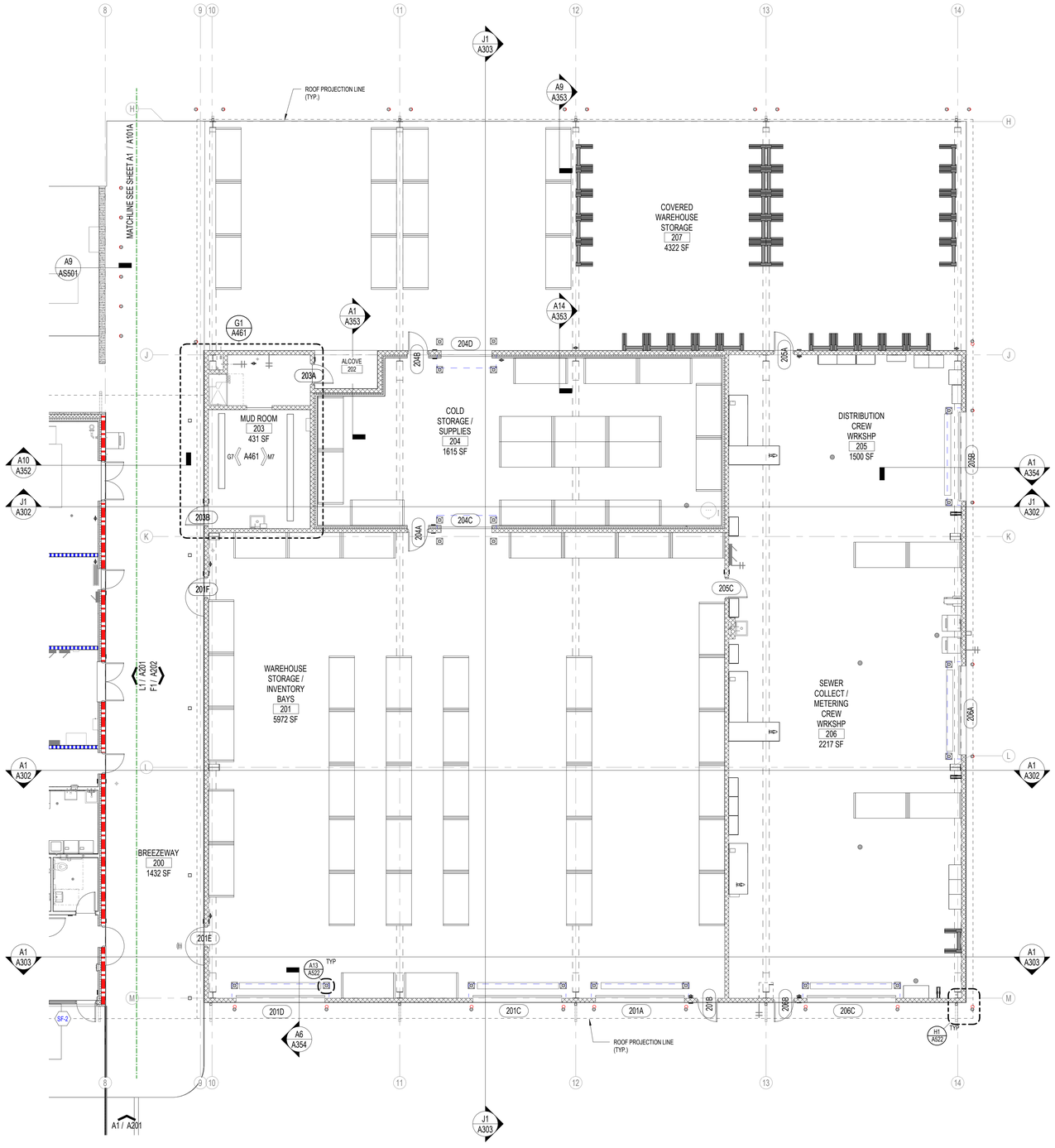
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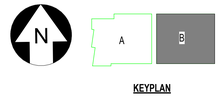
ARCHITECTURAL FLOOR PLAN - ADMINISTRATION

KEYPLAN

A101A

PERMIT/BID DOCUMENTS





KEYPLAN

A1
1/8" = 1'-0"

ARCHITECTURAL FLOOR PLAN - WAREHOUSE

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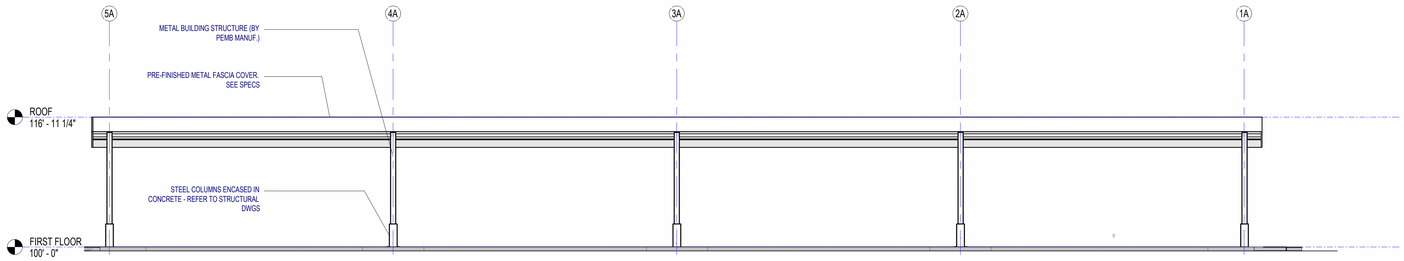
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ARCHITECTURAL FLOOR PLAN - WAREHOUSE

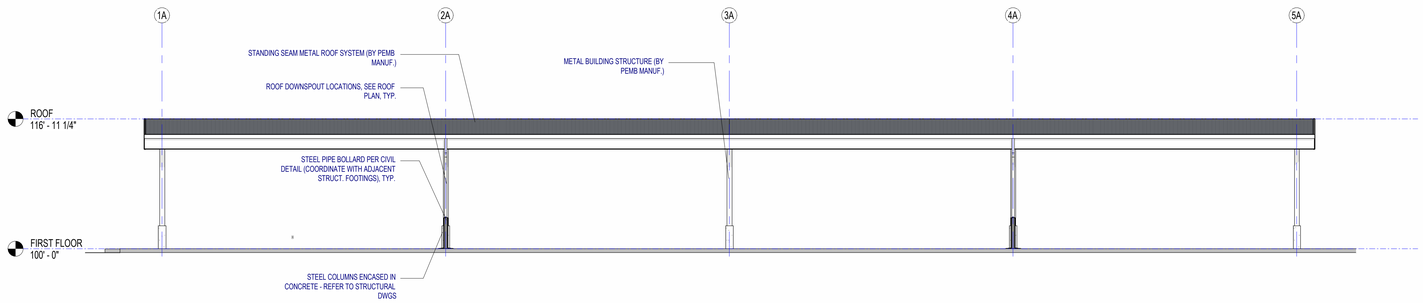
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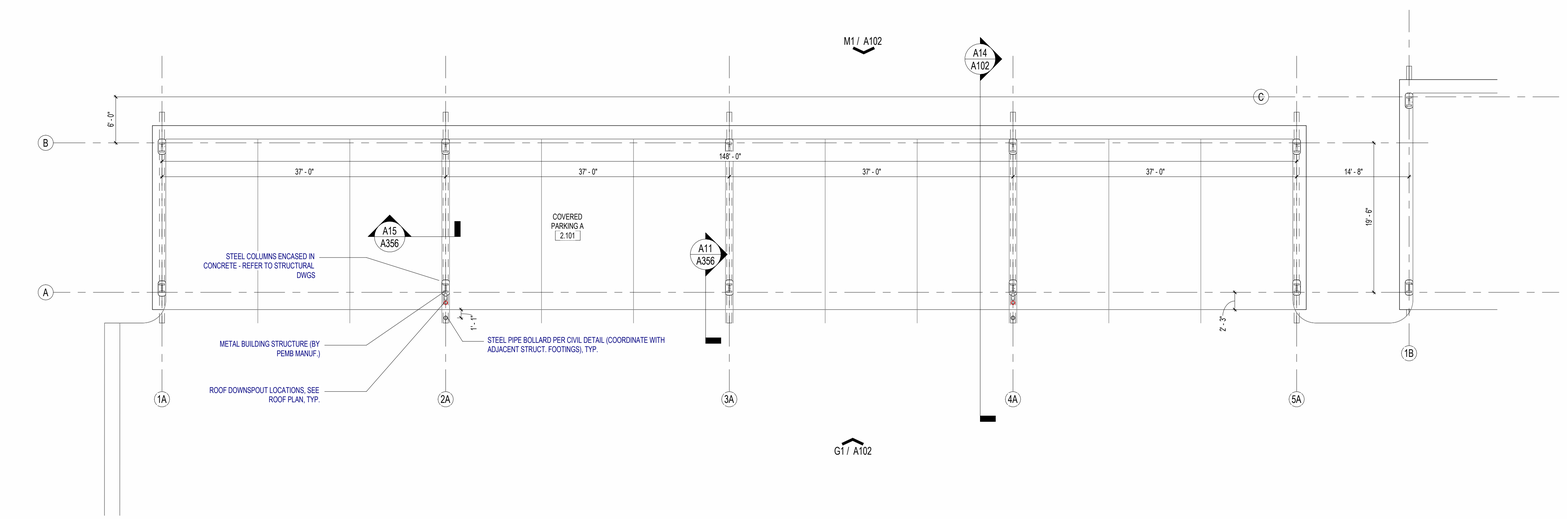
M1 COVERED PARKING "A" ELEVATION

1/8" = 1'-0"



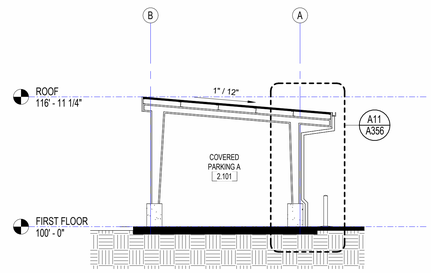
G1 COVERED PARKING "A" ELEVATION

1/8" = 1'-0"



A1 ARCHITECTURAL FLOOR PLAN - COVERED PARKING "A"

1/8" = 1'-0"



A14 COVERED PARKING "A" SECTION

1/8" = 1'-0"

GENERAL NOTES - COVERED PARKING

1. PAINT ALL EXPOSED PRIMARY & SECONDARY PRE-MANUFACTURED METAL BUILDING FRAMING STRUCTURE; TYPICAL
2. SEE SHEET A202 FOR `EXTERIOR COLOR LEGEND & NOTES`.

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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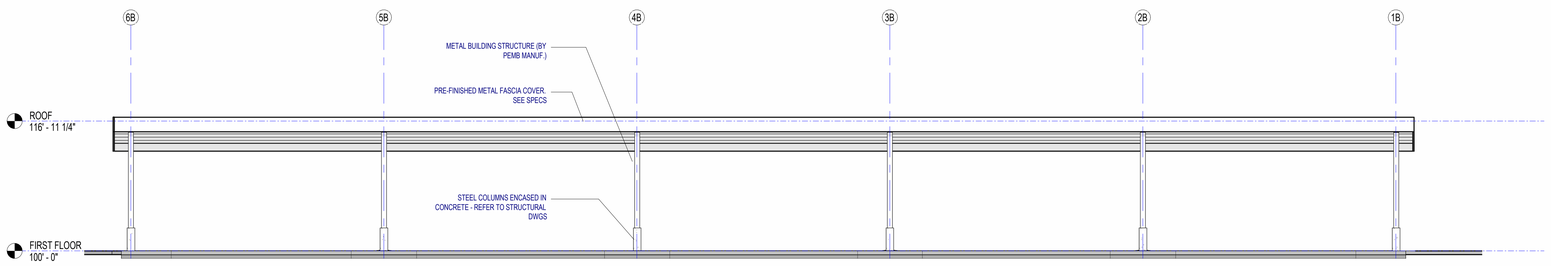
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ARCHITECTURAL FLOOR PLAN & BUILDING SECTIONS - COVERED PARKING "A"

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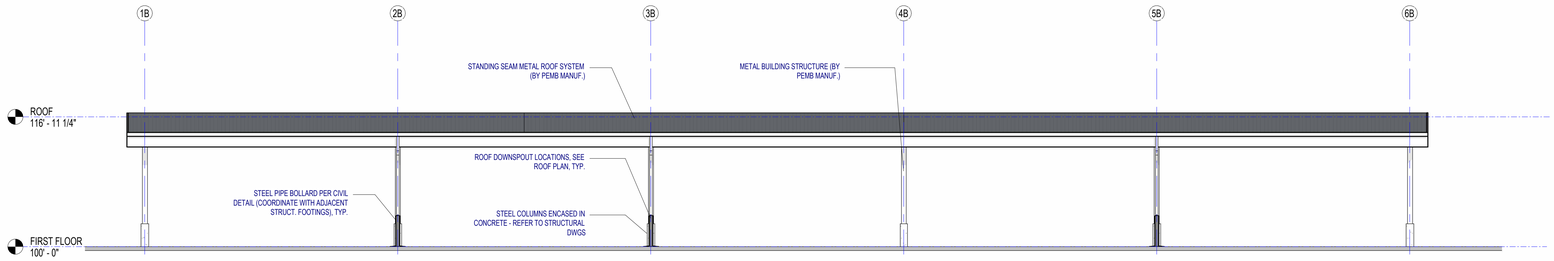


M1 COVERED PARKING "B" ELEVATION

1/8" = 1'-0"

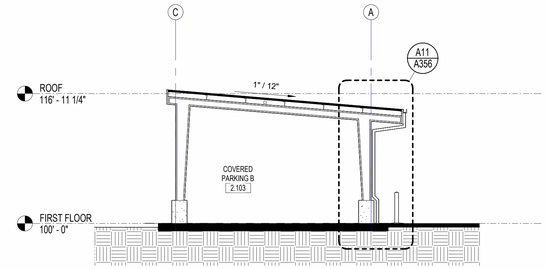
GENERAL NOTES - COVERED PARKING

1. PAINT ALL EXPOSED PRIMARY & SECONDARY PRE-MANUFACTURED METAL BUILDING FRAMING STRUCTURE; TYPICAL
2. SEE SHEET A202 FOR `EXTERIOR COLOR LEGEND & NOTES`.



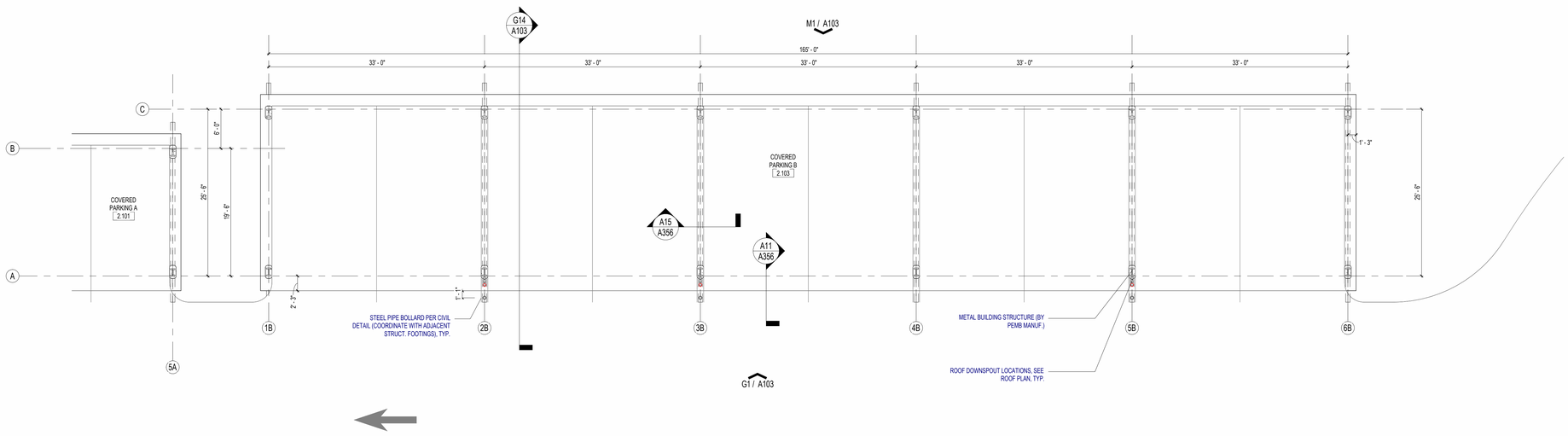
G1 COVERED PARKING "B" ELEVATION

1/8" = 1'-0"



G14 COVERED PARKING "B" SECTION

1/8" = 1'-0"



A1 ARCHITECTURAL FLOOR PLAN - COVERED PARKING "B"

1/8" = 1'-0"

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1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

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ARCHITECTURAL FLOOR PLAN & BUILDING SECTIONS - COVERED PARKING "B"

A103
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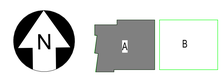
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GENERAL NOTES - DIMENSION PLAN

1. ALL STUD PARTITIONS SHALL BE TYPE A6 U.N.O.
2. ALL INTERIOR WALL FURRING TO ABOVE CLG. SHALL BE TYPE E2 U.N.O.
3. ALL EXTERIOR WALL FURRING TO ABOVE CLG. SHALL BE TYPE W2 U.N.O.
4. ALL CMU WALLS SHALL BE F8 U.N.O
5. REFER TO SHEETS G-031 & G-032 FOR TYPICAL PARTITION TYPES.
6. REFER TO SHEETS G-033 & G-034 FOR TYPICAL PARTITION DETAILS.
7. ALL DIMENSIONS ARE TO FACE OF GYPSUM BOARD, COLUMN GRID, FACE OF CMU OR FACE OF TIL-UP.
8. PROVIDE FULL HEIGHT CEMENTITIOUS PANEL AT WET AREAS ON RESTROOMS, SHOWERS AND CUSTODIALS
9. REFER TO SHEETS G-031 FOR GYPSUM BD SCHEDULE AND INSULATION SCHEDULE
10. REFER TO A100'S FLOOR PLANS FOR WINDOW / CURTAIN WALL / STOREFRONT / LOUVER TYPES AND LOCATIONS, AND DETAILED DIMENSIONS PER SHEETS A501, A502, & A503
11. REFER TO PLUMBING AND ENLARGED TOILET PLANS. ALL FLOORS SHALL SLOPE TO FLOOR DRAIN & TRENCH DRAIN SYSTEMS; CONTRACTOR TO COORDINATE AND PROVIDE POSITIVE SLOPE TO DRAINS, TYP.
12. CONTRACTOR TO COORDINATE WITH RANGE AND HOOD MANUF. TO RECESS ALL ELECTRICAL BOXES/ CONTROLS/ SWITCHES, ETC. INTO THE WALL AS REQUIRED FOR BACK OF STOVE & HOOD FLUSHED WITH BACKSPLASH (COORDINATE ANY CLEARANCES W/ MANUF)

Wall Schedule
Type Mark
A3
A4
A6
A6.1
A6.S
A8
E1
E2
F8
F8.1
G3
G3s
G6
J1
J2
J6
K8
L3.S
WA2
WA3
WA6
XA8



KEYPLAN

A1	DIMENSION PLAN - ADMINISTRATION
1/8" = 1'-0"	

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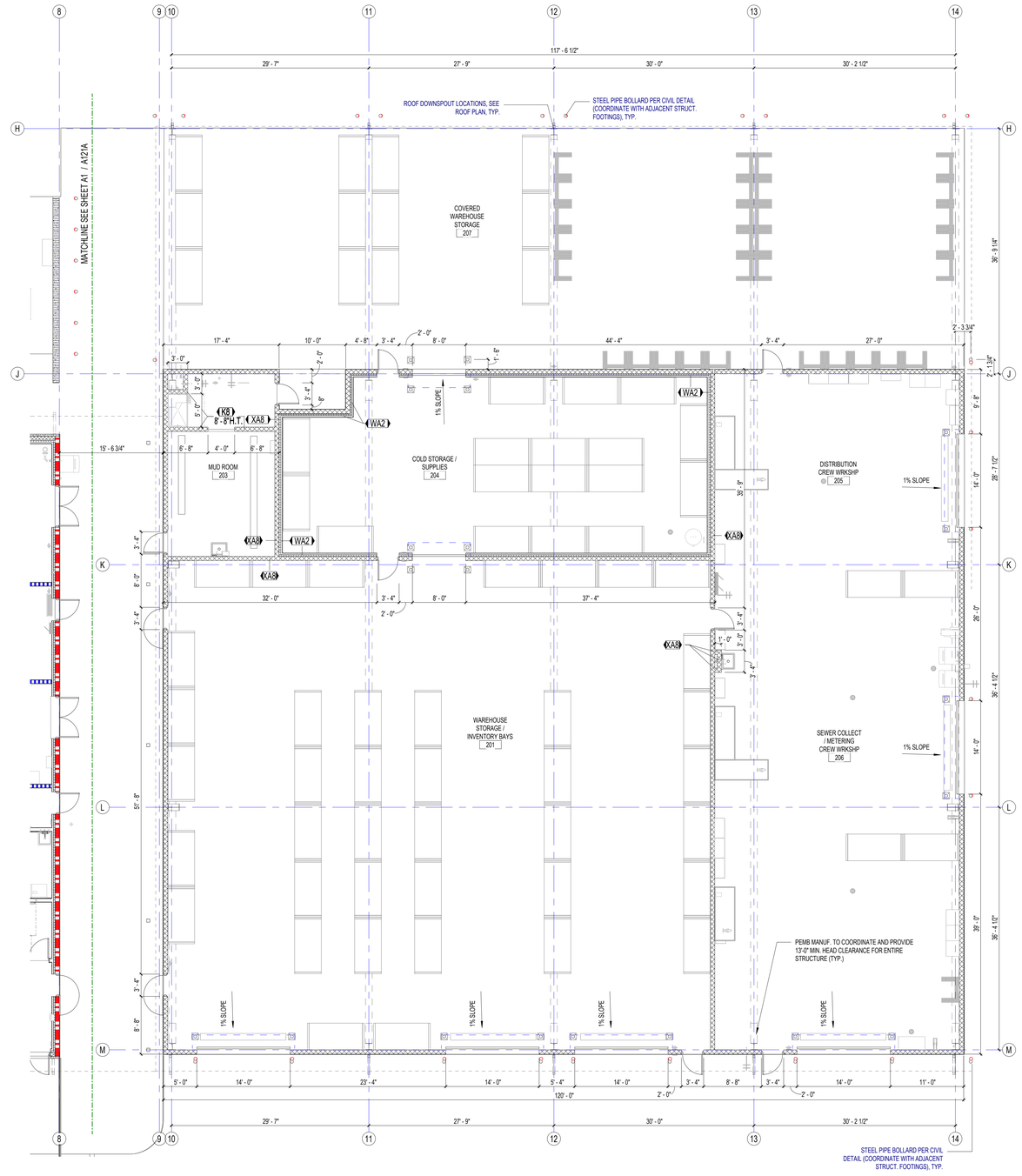
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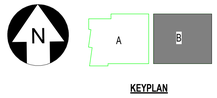
DIMENSION PLAN - ADMINISTRATION

A121A
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GENERAL NOTES - DIMENSION PLAN

1. ALL STUD PARTITIONS SHALL BE TYPE A6 U.N.O.
2. ALL INTERIOR WALL FURRING TO ABOVE CLG. SHALL BE TYPE E2 U.N.O.
3. ALL EXTERIOR WALL FURRING TO ABOVE CLG. SHALL BE TYPE W2 U.N.O.
4. ALL CMU WALLS SHALL BE F8 U.N.O.
5. REFER TO SHEETS G-031 & G-032 FOR TYPICAL PARTITION TYPES.
6. REFER TO SHEETS G-033 & G-034 FOR TYPICAL PARTITION DETAILS.
7. ALL DIMENSIONS ARE TO FACE OF GYPSUM BOARD, COLUMN GRID, FACE OF CMU OR FACE OF TIL-UP.
8. PROVIDE FULL HEIGHT CEMMENTITIOUS PANEL AT WET AREAS ON RESTROOMS, SHOWERS AND CUSTODIALS
9. REFER TO SHEETS G-031 FOR GYPSUM BD SCHEDULE AND INSULATION SCHEDULE
10. REFER TO A100'S FLOOR PLANS FOR WINDOW / CURTAIN WALL / STOREFRONT / LOUVER TYPES AND LOCATIONS, AND DETAILED DIMENSIONS PER SHEETS A501, A902, & A503
11. REFER TO PLUMBING AND ENLARGED TOILET PLANS, ALL FLOORS SHALL SLOPE TO FLOOR DRAIN & TRENCH DRAIN SYSTEMS; CONTRACTOR TO COORDINATE AND PROVIDE POSITIVE SLOPE TO DRAINS, TYP.
12. CONTRACTOR TO COORDINATE WITH RANGE AND HOOD MANUF. TO RECESS ALL ELECTRICAL BOXES/ CONTROLS/ SWITCHES, ETC. INTO THE WALL AS REQUIRED FOR BACK OF STOVE & HOOD FLUSHED WITH BACKSPLASH (COORDINATE ANY CLEARANCES W/ MANUF)



KEYPLAN

A1	DIMENSION PLAN - WAREHOUSE
1/8" = 1'-0"	

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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DIMENSION PLAN - WAREHOUSE

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REFLECTED CEILING LEGEND

A1 VARIES	24" x 24" FINE FISSURED, TEGULAR EDGE, 0.70 NRC
C1 VARIES	5/8" GYPSUM BD ON 3-5/8" METAL STUD FRAMING. PROVIDE MOISTURE RESISTANT BOARD AND EPOXY PAINT AT ALL WET LOCATIONS
C2 VARIES	SPECIALTY CEILING. SEE INTERIOR FINISH SCHEDULE, SHEET A160
F2 VARIES	EXPOSED STRUCTURE WITH DRYFALL PAINT
M1 VARIES	PRE-FINISHED EXTERIOR METAL SOFFIT CEILING SYSTEM. COLOR 1
M2 VARIES	PRE-FINISHED EXTERIOR METAL SOFFIT CEILING SYSTEM. COLOR 2

CEILING GENERAL NOTES

1. ALL DIMENSIONS ARE TO THE CENTERLINE OF DEVICE, TYPICAL.
2. ALL SOFFITS/CASED OPENINGS ARE TO ALIGN WITH THE FINISHED FACE OF ADJACENT WALLS, U.N.O
3. ALL DEVICES ARE TO BE CENTERED IN CEILING TILES WHERE APPLICABLE, UNLESS NOTED OTHERWISE.
4. SEE CONSULTANT DOCUMENTS FOR THE LOCATIONS OF ALL WALL MOUNTED DEVICES. COORDINATE ALIGNMENT OF WALL DEVICES WITH EACH OTHER AND CEILING DEVICES WHERE POSSIBLE.
5. ALIGN DEVICES AS INDICATED WITH CENTERLINES.
6. ALL CEILING HEIGHTS ARE TO THE FINISHED FACE OF THE CEILING PLANE.
7. ARCHITECTURAL RCPS DO NOT INDICATE ALL DEVICES IN THE CEILING/PROJECT. REFER TO MEP DOCUMENTS FOR ADDITIONAL DEVICES.
8. ALL STRUCTURE (INCLUDING BTM OF DECK), CONDUIT, HVAC DUCTWORK, EQUIPMENT SUPPORTS, CABLE TRAY, DEVICES, CEILING SUPPORT SYSTEMS, ETC ABOVE OPEN CLG AREAS TO BE PAINTED FLAT BLACK UNLESS NOT ALLOWED BY CODE OR OWNER'S STANDARDS. PAINT AND MAINTAIN ALL ITEMS MENTIONED ABOVE CORRESPONDING HEIGHTS NOTED IN RCP.
9. SEE METAL BUILDING SYSTEMS SPEC SECTION FOR PEMB (PRE-ENGINEERED METAL BUILDING) COMPONENTS FOR THIS PROJECT AND PROVIDE PRIMARY STRUCTURE "PRIMING" AS WELL AS SECONDARY STRUCTURE GALVANIZING G90 (TYP. AT WAREHOUSE AND COVERED PARKING PEMB)
10. PAINT ALL EXPOSED PRIMARY & SECONDARY PRE-MANUFACTURED METAL BUILDING FRAMING STRUCTURE; TYPICAL

REFLECTED CEILING LEGEND



KEYPLAN

OVERALL REFLECTED CEILING PLAN

3/32" = 1'-0"

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CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

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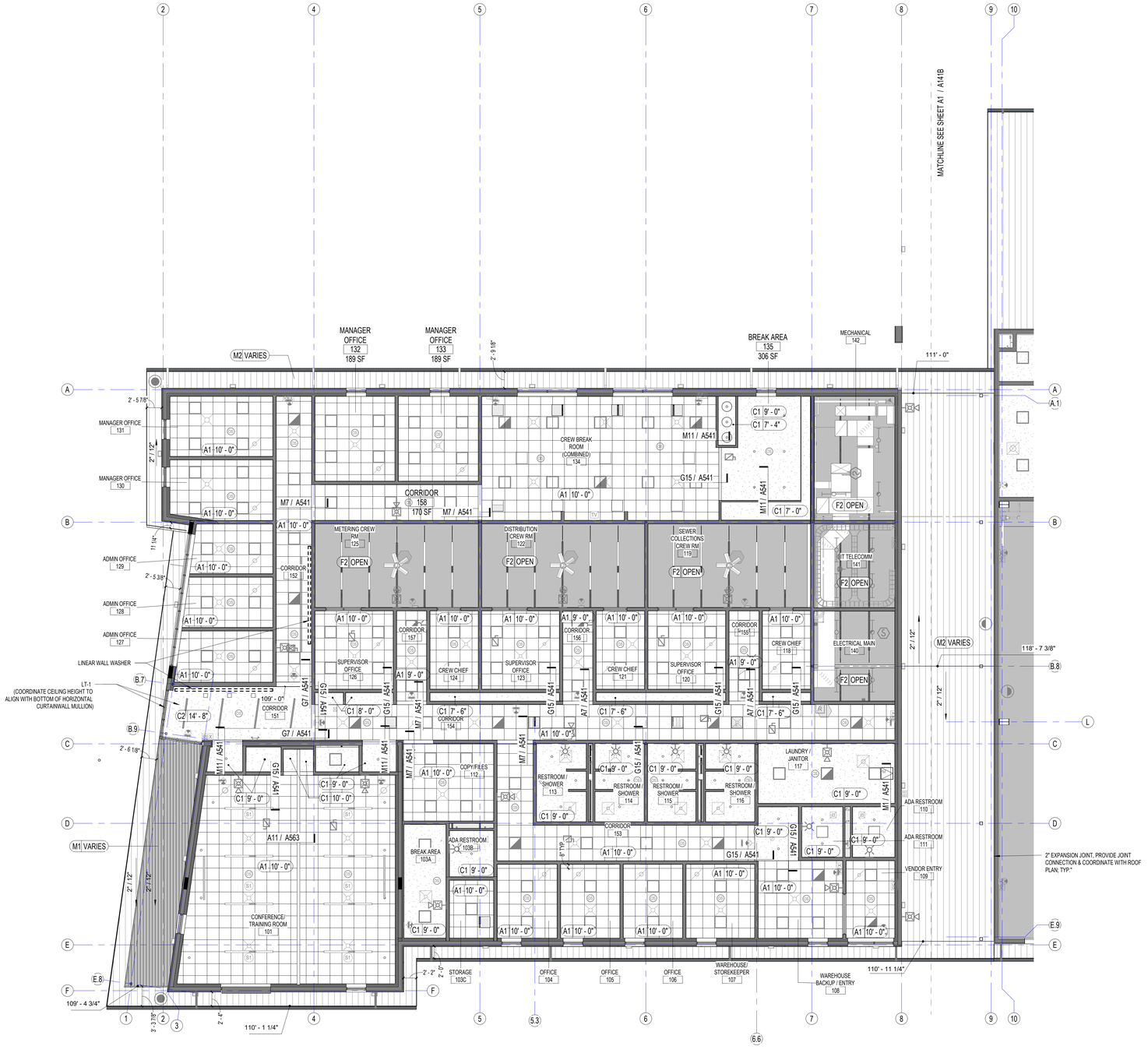
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OVERALL REFLECTED CEILING PLAN

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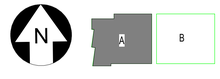


REFLECTED CEILING LEGEND

A1 VARIES	24" x 24" FINE FISSURED, TEGULAR EDGE, 0.70 NRC
C1 VARIES	5/8" GYPSUM BD ON 3-5/8" METAL STUD FRAMING. PROVIDE MOISTURE RESISTANT BOARD AND EPOXY PAINT AT ALL WET LOCATIONS
C2 VARIES	SPECIALTY CEILING. SEE INTERIOR FINISH SCHEDULE, SHEET A160
F2 VARIES	EXPOSED STRUCTURE WITH DRYFALL PAINT
M1 VARIES	PRE-FINISHED EXTERIOR METAL SOFFIT CEILING SYSTEM. (B.O.D. WOOD GRAIN FINISHES SERIES, BY PAC-CLAD/PETERSEN A CARLISLE COMPANY OR SIMILAR APPROVED) COLOR: COPPER, COMPARABLE TO: SHERWIN WILLIAMS, SPICED CIDER SW 7702
M2 VARIES	PRE-FINISHED EXTERIOR METAL SOFFIT CEILING SYSTEM. (B.O.D. PAC-CLAD/PETERSEN A CARLISLE COMPANY OR SIMILAR APPROVED) COLOR: GRAPHITE. COMPARABLE TO: SHERWIN WILLIAMS, WEB GRAY SW 7075

CEILING GENERAL NOTES

1. ALL DIMENSIONS ARE TO THE CENTERLINE OF DEVICE, TYPICAL.
2. ALL SOFFITS/CASED OPENINGS ARE TO ALIGN WITH THE FINISHED FACE OF ADJACENT WALLS, U.N.O
3. ALL DEVICES ARE TO BE CENTERED IN CEILING TILES WHERE APPLICABLE, UNLESS NOTED OTHERWISE
4. SEE CONSULTANT DOCUMENTS FOR THE LOCATIONS OF ALL WALL MOUNTED DEVICES. COORDINATE ALIGNMENT OF WALL DEVICES WITH EACH OTHER AND CEILING DEVICES WHERE POSSIBLE.
5. ALIGN DEVICES AS INDICATED WITH CENTERLINES.
6. ALL CEILING HEIGHTS ARE TO THE FINISHED FACE OF THE CEILING PLANE.
7. ARCHITECTURAL RCPS DO NOT INDICATE ALL DEVICES IN THE CEILING/PROJECT. REFER TO MEP DOCUMENTS FOR ADDITIONAL DEVICES.
8. ALL STRUCTURE (INCLUDING BTM OF DECK), CONDUIT, HVAC DUCTWORK, EQUIPMENT SUPPORTS, CABLE TRAY, DEVICES, CEILING SUPPORT SYSTEMS, ETC ABOVE OPEN CLG AREAS TO BE PAINTED FLAT BLACK UNLESS NOT ALLOWED BY CODE OR OWNER'S STANDARDS. PAINT AND MAINTAIN ALL ITEMS MENTIONED ABOVE CORRESPONDING HEIGHTS NOTED IN RCP.
9. SEE METAL BUILDING SYSTEMS SPEC SECTION FOR PEMB (PRE-ENGINEERED METAL BUILDING) COMPONENTS FOR THIS PROJECT AND PROVIDE PRIMARY STRUCTURE "PRIMING" AS WELL AS SECONDARY STRUCTURE GALVANIZING G90 (TYP. AT WAREHOUSE AND COVERED PARKING PEMB).
10. PAINT ALL EXPOSED PRIMARY & SECONDARY PRE-MANUFACTURED METAL BUILDING FRAMING STRUCTURE; TYPICAL



KEYPLAN

A1 REFLECTED CEILING PLAN AREA A

1/8" = 1'-0"

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CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

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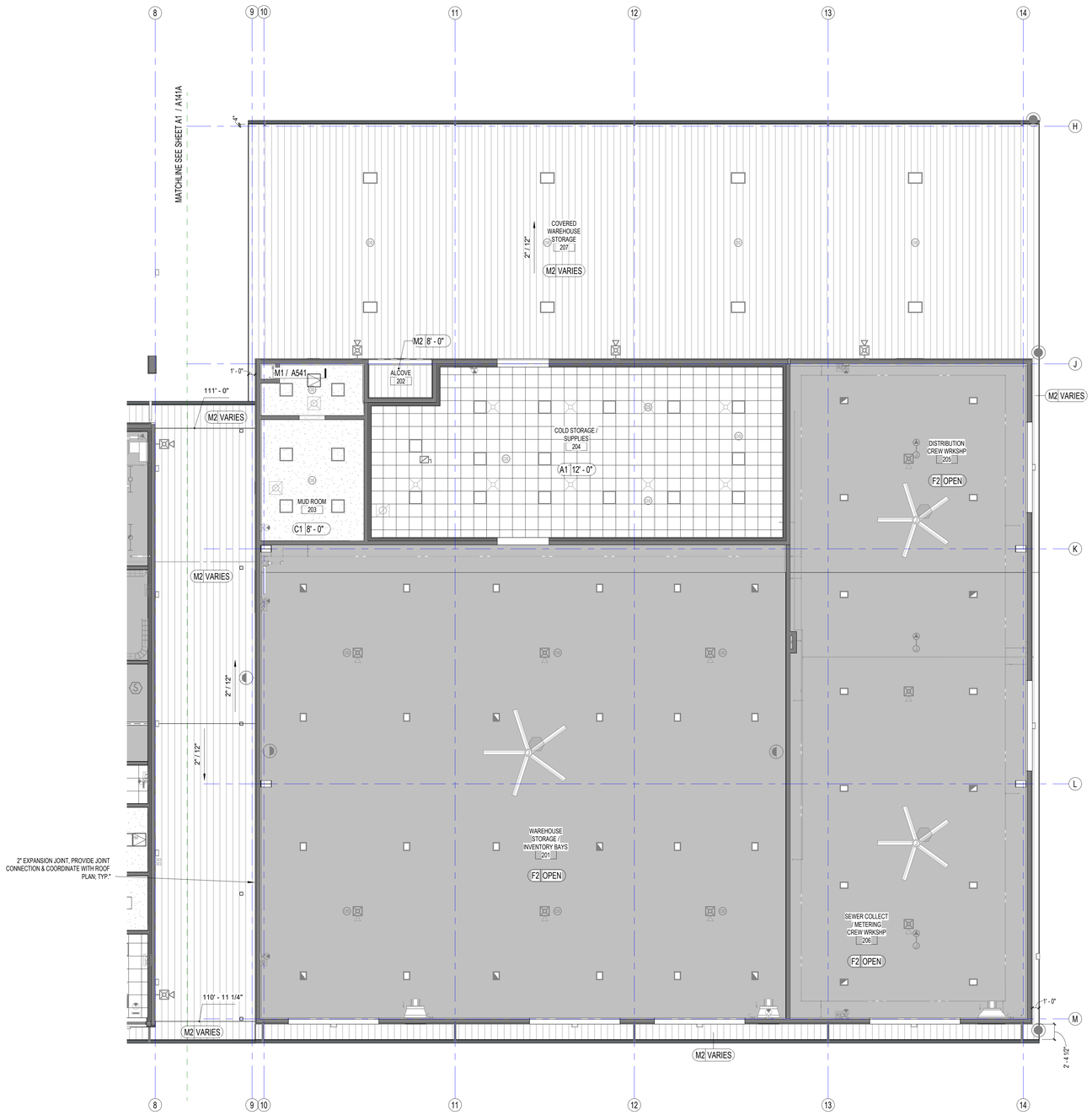
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REFLECTED CEILING PLAN - ADMINISTRATION

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REFLECTED CEILING LEGEND

- A1 VARIES — 24" x 24" FINE FISSURED, TEGULAR EDGE, 0.70 NRC
- C1 VARIES — 5/8" GYPSUM BD ON 3-5/8" METAL STUD FRAMING. PROVIDE MOISTURE RESISTANT BOARD AND EPOXY PAINT AT ALL WET LOCATIONS
- C2 VARIES — SPECIALTY CEILING. SEE INTERIOR FINISH SCHEDULE, SHEET A160
- F2 VARIES — EXPOSED STRUCTURE WITH DRYFALL PAINT
- M1 VARIES — PRE-FINISHED EXTERIOR METAL SOFFIT CEILING SYSTEM. (B.O.D. WOOD GRAIN FINISHES SERIES, BY PAC-CLAD/PETERSEN A CARLISLE COMPANY OR SIMILAR APPROVED) COLOR: COPPER, COMPARABLE TO: SHERWIN WILLIAMS, SPICED CIDER SW 7702
- M2 VARIES — PRE-FINISHED EXTERIOR METAL SOFFIT CEILING SYSTEM. (B.O.D. PAC-CLAD/PETERSEN A CARLISLE COMPANY OR SIMILAR APPROVED) COLOR: GRAPHITE. COMPARABLE TO: SHERWIN WILLIAMS, WEB GRAY SW 7075

CEILING GENERAL NOTES

1. ALL DIMENSIONS ARE TO THE CENTERLINE OF DEVICE, TYPICAL.
2. ALL SOFFITS/CASED OPENINGS ARE TO ALIGN WITH THE FINISHED FACE OF ADJACENT WALLS, U.N.O
3. ALL DEVICES ARE TO BE CENTERED IN CEILING TILES WHERE APPLICABLE, UNLESS NOTED OTHERWISE
4. SEE CONSULTANT DOCUMENTS FOR THE LOCATIONS OF ALL WALL MOUNTED DEVICES. COORDINATE ALIGNMENT OF WALL DEVICES WITH EACH OTHER AND CEILING DEVICES WHERE POSSIBLE.
5. ALIGN DEVICES AS INDICATED WITH CENTERLINES.
6. ALL CEILING HEIGHTS ARE TO THE FINISHED FACE OF THE CEILING PLANE.
7. ARCHITECTURAL RCPS DO NOT INDICATE ALL DEVICES IN THE CEILING/PROJECT. REFER TO MEP DOCUMENTS FOR ADDITIONAL DEVICES.
8. ALL STRUCTURE (INCLUDING BTM OF DECK), CONDUIT, HVAC DUCTWORK, EQUIPMENT SUPPORTS, CABLE TRAY, DEVICES, CEILING SUPPORT SYSTEMS, ETC ABOVE OPEN CLG AREAS TO BE PAINTED FLAT BLACK UNLESS NOT ALLOWED BY CODE OR OWNER'S STANDARDS. PAINT AND MAINTAIN ALL ITEMS MENTIONED ABOVE CORRESPONDING HEIGHTS NOTED IN RCP.
9. SEE METAL BUILDING SYSTEMS SPEC SECTION FOR PEMB (PRE-ENGINEERED METAL BUILDING) COMPONENTS FOR THIS PROJECT AND PROVIDE PRIMARY STRUCTURE "PRIMING" AS WELL AS SECONDARY STRUCTURE GALVANIZING G90 (TYP. AT WAREHOUSE AND COVERED PARKING PEMB)
10. PAINT ALL EXPOSED PRIMARY & SECONDARY PRE-MANUFACTURED METAL BUILDING FRAMING STRUCTURE; TYPICAL



KEYPLAN

A1 REFLECTED CEILING PLAN AREA B

1/8" = 1'-0"

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

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DRAWN BY: IMR/MD

REFLECTED CEILING PLAN - WAREHOUSE

A141B
PERMIT/BID DOCUMENTS

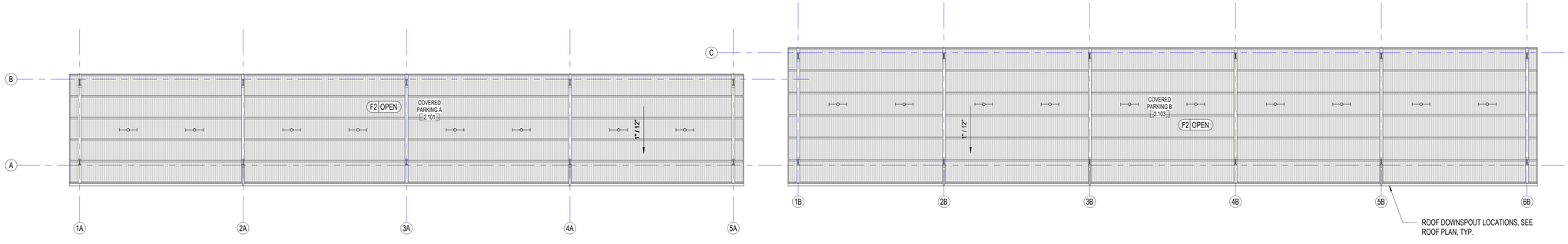
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REFLECTED CEILING LEGEND

F2 VARIES — EXPOSED STRUCTURE WITH DRYFALL PAINT

CEILING GENERAL NOTES

1. ALL DIMENSIONS ARE TO THE CENTERLINE OF DEVICE, TYPICAL.
2. ALL SOFFITS/CASED OPENINGS ARE TO ALIGN WITH THE FINISHED FACE OF ADJACENT WALLS, U.N.O.
3. ALL DEVICES ARE TO BE CENTERED IN CEILING TILES WHERE APPLICABLE, UNLESS NOTED OTHERWISE
4. SEE CONSULTANT DOCUMENTS FOR THE LOCATIONS OF ALL WALL MOUNTED DEVICES. COORDINATE ALIGNMENT OF WALL DEVICES WITH EACH OTHER AND CEILING DEVICES WHERE POSSIBLE.
5. ALIGN DEVICES AS INDICATED WITH CENTERLINES.
6. ALL CEILING HEIGHTS ARE TO THE FINISHED FACE OF THE CEILING PLANE.
7. ARCHITECTURAL RCPS DO NOT INDICATE ALL DEVICES IN THE CEILING/PROJECT. REFER TO MEP DOCUMENTS FOR ADDITIONAL DEVICES.
8. ALL STRUCTURE (INCLUDING BTM OF DECK), CONDUIT, HVAC DUCTWORK, EQUIPMENT SUPPORTS, CABLE TRAY, DEVICES, CEILING SUPPORT SYSTEMS, ETC ABOVE OPEN CLG AREAS TO BE PAINTED FLAT BLACK UNLESS NOT ALLOWED BY CODE OR OWNER'S STANDARDS. PAINT AND MAINTAIN ALL ITEMS MENTIONED ABOVE CORRESPONDING HEIGHTS NOTED IN RCP.
9. SEE METAL BUILDING SYSTEMS SPEC SECTION FOR PEMB (PRE-ENGINEERED METAL BUILDING) COMPONENTS FOR THIS PROJECT AND PROVIDE PRIMARY STRUCTURE "PRIMING" AS WELL AS SECONDARY STRUCTURE GALVANIZING G90 (TYP. AT WAREHOUSE AND COVERED PARKING PEMB)
10. PAINT ALL EXPOSED PRIMARY & SECONDARY PRE-MANUFACTURED METAL BUILDING FRAMING STRUCTURE; TYPICAL



A1 — REFLECTED CEILING PLAN - COVERED PARKING

3/32" = 1'-0"

9/30/2024 2:13:51 PM
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CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

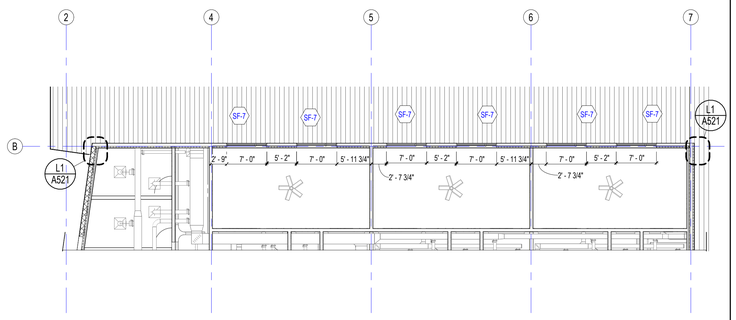
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REFLECTED CEILING PLANS - COVERED PARKING

A142
PERMIT/BID DOCUMENTS



M1

3/32" = 1'-0"

CLERESTORY PLAN

ROOF PLAN GENERAL NOTES

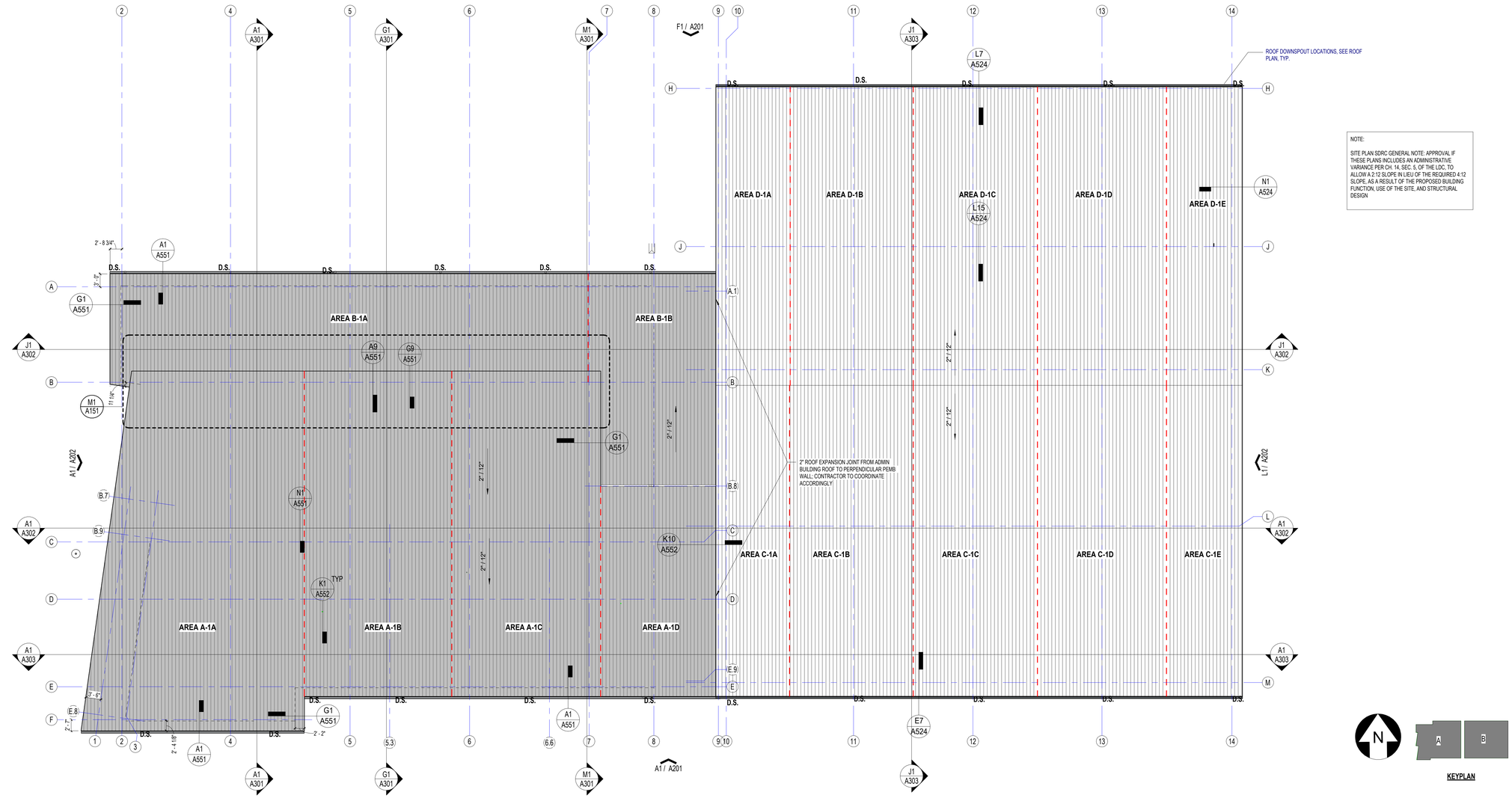
1. PROVIDE MANUF. STANDARD DETAILS FOR ROOF PENETRATIONS
2. PROVIDE CONCRETE SPLASH BLOCKS WHERE DOWNSPOUTS DISCHARGE ONTO ROOF BELOW.
3. COORDINATE WALL MTD. ITEMS WITH EXTERIOR ELEVATIONS.
4. COORDINATE ALL ROOF DRAINAGE WITH CIVIL.
5. REFER TO A-55# SERIES DRAWINGS FOR ROOF DETAILS. REFER TO WALL SECTIONS & DETAILS FOR ADDITIONAL ROOF DETAILING.
6. CONDUCTOR HEAD/DOWNSPOUT LOCATIONS TO BE COORDINATED WITH EXTERIOR ELEVATIONS.
7. DRAINAGE CALCULATIONS: MAX ROOF DRAIN AREA PER DOWNSPOUT IS 1927 SF. WITH 4.5 MAX. HOURLY RAINFALL (INCHES) FBC PLUMBING 1106.1 MIN DOWSPOUT AREA IS 7.06 SQ.IN. PROPOSED DOWNSPOUTS ARE 4"X4" WITH 16 SQ.IN. AREA
8. ROOF INSULATION AT THE ADMINISTRATION TO BE ABOVE DECK & R30 MIN.
9. ROOF INSULATION AT THE WAREHOUSE TO BE BELOW DECK & R30 MIN. PROVIDE PEMB INSULATED METAL LINER PANEL FACED BLANKET INSULATION AT THE BOTTOM OF THE ROOF PURLINS AND PEMB FIBERGLASS INSULATION BETWEEN ROOF PURLINS

ROOF LEGEND

SYMBOL	DESCRIPTION
	STANDING SEAM METAL ROOF SYSTEM OVER SELF-ADHERING WATERPROOFING MEMBRANE ON 5/8" GLASS MATT GYP BD NAILABLE PLYWOOD SHEATHING OVER RIGID INSULATION OVER; ROOF DECK. SEE STRUCTURAL DRAWINGS AND SPECS.ON SLOPED METAL DECK
	STANDING SEAM METAL ROOF SYSTEM ON ON STEEL PURLINS (BY PEMB MANUF.)
D.S.	ALUM. DOWNSPOUT- 4" SQUARE, U.N.O. - SEE SPECS. AND SEE TYPICAL DETAILS SHEET A-552

STORM DRAINAGE ROOF CALCULATIONS

ROOF	AREA	HALF WALL AREA	TOTAL AREA (AREA + ROOF CALC HALF WALL ARE)	FACTOR	RAIN FACTOR	GPM	FROM TABLE 1106.3 VERTICAL LEADER SIZING (INCHES)	PROVIDED LEADER	PROVIDED ROOF SLOPE	TABLE 1106.6 HORIZONTAL GUTTER SIZING	ROOF CALC PROVIDED GUTTER - SLOPE	COMMENTS
AREA E-1A	1873 SF	0 SF	1873 SF	0.0104	4.5	87.6	3" -or- 2 X 4" -or- 2 1/2 X 3"	4X4"	1" / 12"	(4 X 2 ½") - (1/4 SLOPE)	(6 X 6") - (1/8 SLOPE)	
AREA E-1B	1873 SF	0 SF	1873 SF	0.0104	4.5	87.6	3" -or- 2 X 4" -or- 2 1/2 X 3"	4X4"	1" / 12"	(4 X 2 ½") - (1/4 SLOPE)	(6 X 6") - (1/8 SLOPE)	
AREA F-1A	1581 SF	0 SF	1581 SF	0.0104	4.5	74.0	3" -or- 2 X 4" -or- 2 1/2 X 3"	4X4"	1" / 12"	(2 1/4 X 3") - (1/2 SLOPE)	(6 X 6") - (1/8 SLOPE)	
AREA F-1B	1515 SF	0 SF	1515 SF	0.0104	4.5	70.9	3" -or- 2 X 4" -or- 2 1/2 X 3"	4X4"	1" / 12"	(5") - (1/8 SLOPE)	(6 X 6") - (1/8 SLOPE)	
AREA F-1C	2086 SF	0 SF	2086 SF	0.0104	4.5	97.6	4" -or- 3 X 4 ½" -or- 3 1/2 X 4"	4X4"	1" / 12"	(4 X 2 ½") - (1/4 SLOPE)	(6 X 6") - (1/8 SLOPE)	
	8928 SF					417.8						



NOTE:

SITE PLAN SDRC GENERAL NOTE: APPROVAL IF THESE PLANS INCLUDES AN ADMINISTRATIVE VARIANCE PER CH. 14, SEC. 5, OF THE LDC, TO ALLOW A 2:12 SLOPE IN LIEU OF THE REQUIRED 4:12 SLOPE, AS A RESULT OF THE PROPOSED BUILDING FUNCTION, USE OF THE SITE, AND STRUCTURAL DESIGN

KEYPLAN

A1

3/32" = 1'-0"

ROOF PLAN

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1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

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PROJECT LOCATION:
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1	SDRC BOB SITE COMMENTS	01/05/2023

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ROOF PLAN

A151

PERMIT/BID DOCUMENTS

ROOF PLAN GENERAL NOTES

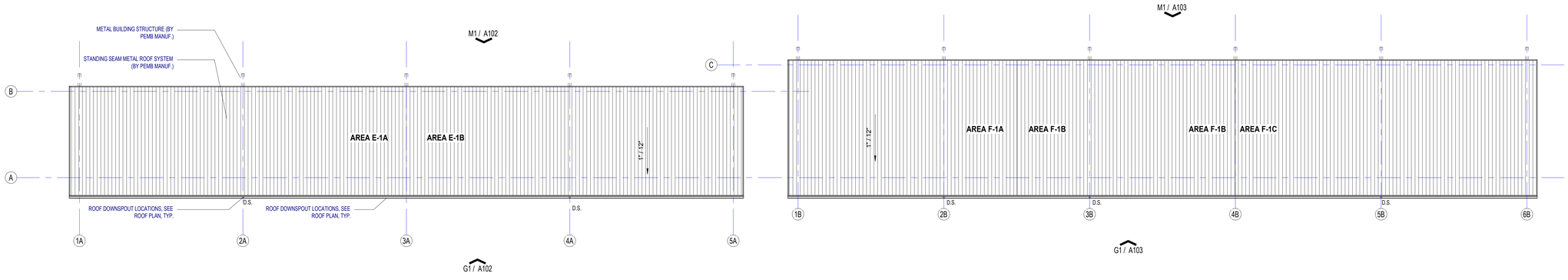
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STORM DRAINAGE ROOF CALCULATIONS

ROOF	AREA	HALF WALL AREA	TOTAL AREA (AREA + ROOF CALC HALF WALL ARE)	FACTOR	RAIN FACTOR	GPM	FROM TABLE 1106.3 VERTICAL LEADER SIZING (INCHES)	PROVIDED LEADER	PROVIDED ROOF SLOPE	TABLE 1106.6 HORIZONTAL GUTTER SIZING	ROOF CALC PROVIDED GUTTER - SLOPE	COMMENTS
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AREA E-1B	1873 SF	0 SF	1873 SF	0.0104	4.5	87.6	3" -or- 2 X 4" -or- 2 1/2 X 3"	4X4"	1" / 12"	(4 X 2 ½") - (1/4 SLOPE)	(6 X 6") - (1/8 SLOPE)	
AREA F-1A	1581 SF	0 SF	1581 SF	0.0104	4.5	74.0	3" -or- 2 X 4" -or- 2 1/2 X 3"	4X4"	1" / 12"	(2 1/4 X 3") - (1/2 SLOPE)	(6 X 6") - (1/8 SLOPE)	
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	8928 SF					417.8						



A1 — ROOF PLAN - COVERED PARKING

3/32" = 1'-0"

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CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

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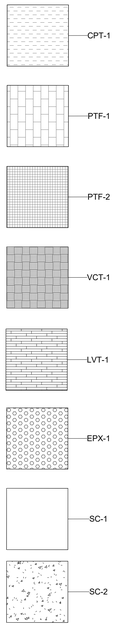
REVISIONS		
MARK	DESCRIPTION	DATE

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ISSUE DATE: 09/30/2024
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ROOF PLAN - COVERED PARKING

A152
PERMIT/BID DOCUMENTS

FINISH PLAN LEGEND



FINISH GENERAL NOTES

1. REFER TO ARCHITECTURAL AREA PLANS FOR INTERIOR ELEVATION TAGS.
2. REFER TO FINISH LEGEND & CODE SCHEDULES FOR FINISH TAG DESIGNATIONS.
3. REFER TO G-001 FOR WALL FINISH TAG DESCRIPTION.
4. ROOMS LISTED WITH 'PTL' ARE TO BE PTL-1 U.N.O. IN SCHEDULE.
5. ROOMS LISTED WITH 'RB' ARE TO BE RB-1 U.N.O. IN SCHEDULE.
6. ANY LOCATION WHERE TWO FLOORING FINISHES COME IN A DOORWAY, EXTEND THE FLOORING TO MEET AT CENTERLINE OF DOOR.
7. FOR TRANSITIONS OF DIFFERENT THICKNESS, USE FLOOR LEVELING TRANSITION MATERIAL AND FEATHER OUT OVER 2'-0" TO PROVIDE AN EVEN TRANSITION.
   PRIOR TO FLOORING INSTALLATION, TEST CONCRETE SLAB FOR MOISTURE CONTENT BASED ON MANUFACTURERS RECOMMENDATION.
8. MINIMAL TILE CUTS TO BE MADE IN THE MOST DISCRETE LOCATION ON WALLS. NO CUT TILES.
9. PAINT ELECTRICAL PANELS TO MATCH ADJACENT WALL.
10. ALL RUBBER WALL BASE TO BE INSTALLED IN LENGTHS AS LONG AS FEASIBLE WITHOUT GAPS AT SEAMS. TOP OF BASE TO ALIGN WITH ADJACENT PIECE.
11. CONTRACTOR TO SECURE SIZE AND THICKNESS OF MATERIAL FROM MANUFACTURER.
12. VERIFY CONDITIONS PRIOR TO INSTALLATION.
13. ALL HOLLOW METAL DOORS AND WINDOW FRAMES ARE TO MATCH ADJACENT WALL COLOR, U.N.O.
14. PTW VERTICAL WALL TILE WITH EXPOSED EDGES AND OUTSIDE CORNERS ARE TO BE FINISHED WITH A SCHLUTER QUADEC TRIM, COLOR BRUSHED CHROME.
15. ALL RESTROOM WALLS TO BE TILE U.N.O. REFER TO ELEVATIONS FOR TILE PATTERN. TILE BEHIND ALL MIRRORS U.N.O. ALL PAINTED AREAS TO BE EPOXY PAINT PTE-1 U.N.O.
16. PROVIDE STAINLESS STEEL CORNER GUARDS 'CG' TO 48" HIGH ALL OUTSIDE CORNERS AS INDICATED IN PLAN (BACK OF HOUSE AREAS).
17. REFER TO FINISH PLANS,DOOR SCHEDULE AND SHEET A561 FOR TRANSITION LOCATIONS AND DETAILS
18. REFER TO WINDOW DETAILS FOR WINDOW SILL MATERIAL & LOCATIONS, TYP.

ID-CARPET SCHEDULE

FINISH CODE	MANUFACTURER	MFG. LINE	STYLE NAME	STYLE NO.	COLOR	SIZE	TYPE	INSTALLATION	REP CONTACT	REMARKS
CPT-1	SHAW CONTRACT		TRANSFORM TILE	5T308	05595 UNTAMED	9"X36"	CARPET PLANK	ASHLAR	VIRNA MITCHELL 407-405-0422	REFER TO FINISH PLAN FOR LOCATIONS

ID-PORCELAIN TILE AND BASE SCHEDULE

FINISH CODE	MANUFACTURER	MFG. LINE	COLOR	TYPE	SIZE	FINISH	GROUT MANUF	GROUT COLOR	REP CONTACT	REMARKS
PTB-1	SCHLUTER	DILEX-AHKI ACGB	BRUSH CHROME	COVE BASE AND TRIM						COVE BASE, INSIDE/OUTSIDE CORNERS AND ANY TRIMS -TYPICAL RESTROOM
PTF-1	DALTILE	ENLITE	CLARITY EL62	PORCELAIN FLOOR	15"X30"	MATTE	CUSTOM BUILD PRODUCTS	335 WINTER GRAY	LAURA POLLARD 407-861-4474	RESTROOM FLOORS-LAUNDRY ROOM CUT A 6" BASE HIGH USE PTB-1 COVE BASE AND A SCHLUTER QUADEC TOP TRIM.
PTF-2	DALTILE	KEYSTONES	UPTOWN TAUPE SPC D202	MOSAIC	2"X2"	MATTE	CUSTOM BUILD PRODUCTS	335 WINTER GRAY	LAURA POLLARD 407-861-4474	RESTROOMS SHOWERS MOSAIC FLOOR
PTW-1	TILE BAR	LINEA PLANE LINK	WHITE	GLAZED CERAMIC	12X24	GLOSSY	CUSTOM BUILD PRODUCTS	335 WINTER GRAY	DIANE ARNN 689-216-2468	FIELD WALL TILE RESTROOM WALLS-SHOWERS-REFER TO ELEVATIONS
PTW-2	TILE BAR	MAYA CHEVRON	SAGE	POLISHED GLASS MOISAIC TILE	7"X4" EACH		CUSTOM BUILD PRODUCTS	TBD	DIANE ARNN 689-216-2468	INSTALL CHEVRON DESIGN HORIZONTALLY. SOME ACCENT WALLS-REFER TO ELEVATIONS

ID-SEALED / STAINED CONCRETE SCHEDULE

FINISH CODE	MANUFACTURER	MFG. LINE	STYLE NO.	COLOR	FLAME SPREAD RATING	REMARKS
SC-1	SEE SPEC	INTEGRAL COLOR POLISHED CONCRETE REFER TO ARCHITECTURAL SPECS		DRIFTWOOD-PROVIDE SAMPLES FOR APPROVAL		REFER TO FINISH PLANS FOR LOCATIONS
SC-2	SEE SPEC	SEAL CONCRETE REFER TO ARCHITECTURAL SPECS				REFER TO FINISH PLANS FOR LOCATIONS

ID-LUXURY VINYL TILE SCHEDULE

FINISH CODE	MANUFACTURER	STYLE NAME	STYLE NO.	COLOR	SIZE	THICKNESS	REP CONTACT	REMARKS
LVT-1	PATCRAFT	SPLITWOOD	1466V	ALMOND GOLD -V2	60"X9"		MARISSA COLLI 407-314-9293	RESRROOMS -REFER TO FINISH PLAN FOR LOCATIONS

ID-RUBBER BASE CODE SCHEDULE

FINISH CODE	MANUFACTURER	STYLE NO.	TYPE	COLOR	SIZE	THICKNESS	REMARKS
RB-1	TARKETT	TRADITIONAL 4"	RUBBER	48 GREY	4"		REFER TO FINISH PLAN FOR LOCATIONS

ID-EPOXY FLOORING SCHEDULE

FINISH CODE	MANUFACTURER	MFG. LINE	STYLE NO.	COLOR	REP CONTACT	REMARKS
EPX-1	SIKAFLOOR	POUR EPOXY	DECCODUR-QUARTZ FX	AQUARIUM QB-1017 40-S	JUAN LEON 256-483-0968	WAREHOUSE-REFER TO FINISH PLANS FOR LOCATIONS. PROVIDE INTEGRAL BASE 4"H ON NON WET WALLS

ID-PAINT SCHEDULE

FINISH CODE	MANUFACTURER	COLOR	FINISH/SHEEN	TYPE	REP CONTACT	REMARKS
PTE-1	SHERWIN WILLIAMS	SW7103 WHITETAIL	GLOSSY	SEE SPECIFICATIONS	JOY LACHELLE 407-694-7994	WET AREAS WALLS U.N.O
PTE-2	SIKAGARD HYGIENE HD WALL SYSTEM	511	EPOXY	SEE SPECIFICATIONS	JUAN LEON 256-483-0968	WET AREAS WALLS MUDROOM ENTRANCE- FLOOR TO CEILING
PTL-1	SHERWIN WILLIAMS	SW7103 WHITETAIL	EGGSHELL	LOW VOC -SCUFF-TUFF SEE SPECIFICATIONS	JOY LACHELLE 407-694-7994	TYPICAL WALLS U.N.O
PTL-2	SHERWIN WILLIAMS	SW7017 DORIAN GRAY	EGGSHELL	LOW VOC -SCUFF-TUFF SEE SPECIFICATIONS	JOY LACHELLE 407-694-7994	ACCENT WALLS
PTL-3	SHERWIN WILLIAMS	SW9133 JASPER STONE	EGGSHELL	LOW VOC -SCUFF-TUFF SEE SPECIFICATIONS	JOY LACHELLE 407-694-7994	ACCENT WALLS
PTL-4	SHERWIN WILLIAMS	SW7103 WHITETAIL	GLOSSY	LOW VOC -SCUFF-TUFF SEE SPECIFICATIONS	JOY LACHELLE 407-694-7994	DOOR TRIMS

ID-WOOD SCHEDULE

FINISH CODE	MANUFACTURER	MFG. LINE	SPECIES	COLOR	SIZE	REMARKS
WD-1	BY GC	FLAT TRIM BASE	PAINT GRADE	PTL-4	6" H	BASE MOULDING REFER TO DRAWINGS FOR LOCATION
WD-2	BY GC	INTERIOR DOORS	STAINED GRADE	STAINED TO MATCH PL-1		REFER TO DRAWINGS FOR LOCATION
WD-3	BY GC	WOOD STAIN	STAIN GRADE - MAPLE	STAIN TO MATCH PL-1	5.25" WIDE PLANKS	PROVIDE STAIN SAMPLE TO DESIGNER/ARCHITECT FOR APPROVAL-REFER TO DRAWINGS FOR LOCATION.

ID-QUARTZ & STONE SURFACES SCHEDULE

FINISH CODE	MANUFACTURER	TYPE	COLOR	SIZE	REP CONTACT	REMARKS
QTZ-1	CAMBRIA	QUARTZ	IVYBRIDGE	3CM SLAB	DEBRA GIACONIA 941-962-1715	COUNTERTOPS WITH EASED EDGE (& BACKSPLASH WHERE SHOWN) - REFER TO DRAWINGS FOR LOCATIONS.

ID-PLASTIC LAMINATE SCHEDULE

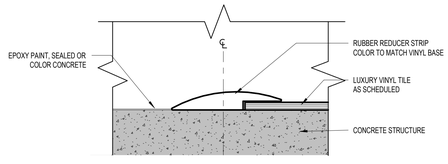
FINISH CODE	MANUFACTURER	STYLE NO.	COLOR	FINISH/SHEEN	REP CONTACT	REMARKS
PL-1	WILSONART	PLASTIC LAMINATE	WALNUT HEIGHTS 7965	12 SOFTGRAIN FINISH	MEGHAN RAWLINS 407-832-5388	CRS DESK MILLWORK AND MAIN CABINET MILLWORK LAMINATE. REFER TO DRAWINGS FOR LOCATIONS

IDS-MISC SCHEDULE

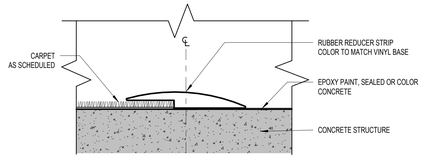
FINISH CODE	MANUFACTURER	TYPE	STYLE NAME	FINISH/SHEEN	SIZE	REP CONTACT	REMARKS
C2	USG CEILINGS	ENSEMBLE ACOUSTICAL DRYWALL CEILING		WHITE	REFER TO ARCH SPECS		REFER TO FINISH PLAN AND TRANSITION DETAILS
CG	INPRO CORPORATION	STAINLESS STEE CORNER GUARDS		SS	1-1/2" WING X 4'-0"H		STANDARD SCREW-ON ALL OUTSIDE CORNERS U.N.O BACK OF HOUSE ONLY-REFER TO FINISH PLAN FOR LOCATIONS.
DP-1	INTERLAM	DECORATIVE PANEL	NEBO	(O) FLAT IRON	48"X96" PANELS	DICH ROOS 954-429-3883	MAIN ENTRY/FOYER ACCENT WALL-REFER TO ELVATION FOR LOCATION
DP-2	MDC	1/2" THICK ACRYLIC LOGO	CUSTOM ART GRAPHIC	REF TO QUOTE 49350	6'X6' (1/2" THICK ACRYLIC)	ANN RANK 407-491-1752	REFER TO QUOTE 49350 -ACRYLIC LOGO SIGNAGE ON STANDOFFS-LOGO DESIGN/GRAPHIC TBD (ALL DESIGN FEES AND IMAGES FEES BY GENERAL CONTRACTOR) REFER TO ELEVATION FOR LOCATION
FRP-1	MDC WALLCOVERING	DIMENSION WALLS	SMALL HAMMERED	SILVER	REFER TO ELEVATIONS	ANN RANK 407-491-1752	B.O.H RESTROOMS WAINSCOT. USE SAME FINISH TOP TRIM AND SEAM TRIMS.

ID-DECORATIVE LIGHT SCHEDULE

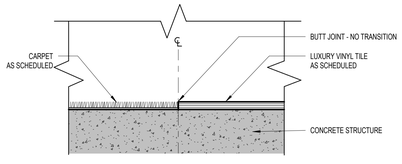
FINISH CODE	MANUFACTURER	TYPE	STYLE NAME	STYLE NO.	FINISH/SHEEN	SIZE	REP CONTACT	REMARKS
LT-1	BEULUX	LINEAR RECESSES LIGHT FIXTURE	RECESSED FLANGELESS EXTRUSION	JC01-SLS-O-L730-IP20-CTXX-EC-LC/CORNERS/X-CONECTORS	3500 K	2' WIDE	PAULA RAMIRES 689-220-8244	ENTRY/FOYER-REFER TO CEILING PLAN



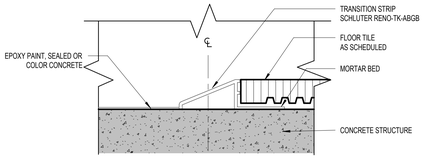
1 — TRANS. DETAIL - EXPOXY/CONCRETE TO LVT
12" = 1'-0"



2 — TRANS. DETAIL - CPT TO SEXPOXY/CONCRETE
12" = 1'-0"



3 — TRANS. DETAIL - CPT TO LVT
12" = 1'-0"



4 — TRANS. DETAIL - EXPOXY/CONCRETE TO PTF
12" = 1'-0"

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
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INTERIOR FINISH SCHEDULE, LEGENDS AND DETAILS

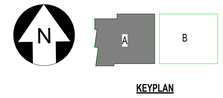
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A1 FINISH PLAN - ADMINISTRATION

1/8" = 1'-0"



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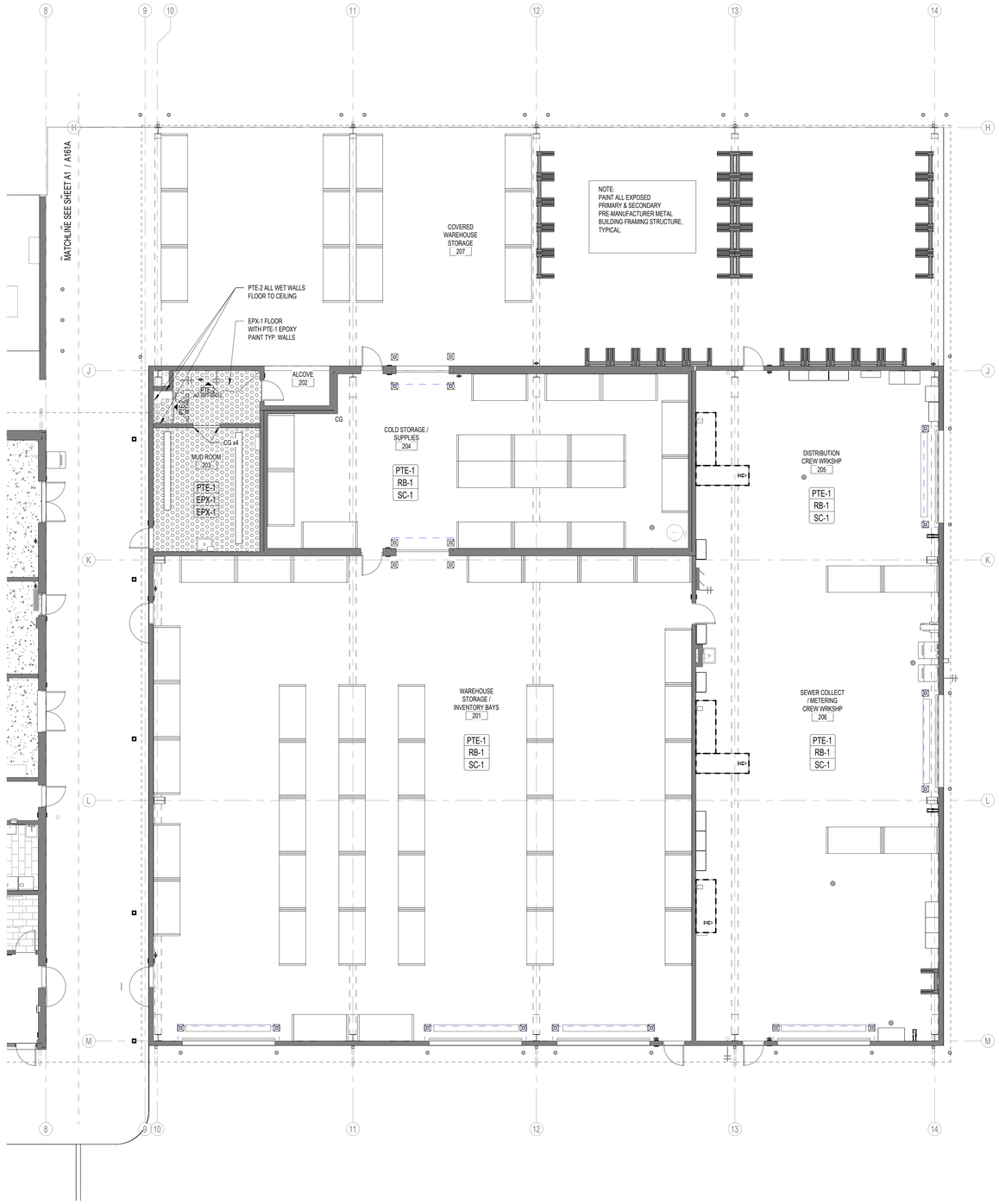
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FINISH PLAN - ADMINISTRATION

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A1 FINISH PLAN - WAREHOUSE

1/8" = 1'-0"



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FINISH PLAN - WAREHOUSE

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FURNITURE SCHEDULE - ADMINISTRATION (OWNER FURNISH AND INSTALL)

MARK	DESCRIPTION
F1	GUEST CHAIR
F2	WORK CHAIR
F3	L-SHAPED DESK 5' X 5', SIDE OVERHEAD, 18" BBF
F5	WASHINGTON KNOLL SIDE CHAIR
F6	TABLE-DINING ROUND 4'-0" DIAMETER
F7	GUEST OFFICE CHAIR
F8	TRAINING TABLE 18"
F9	L-SHAPED DESK 6' X 6', BBF
F10	L-SHAPED DESK 6'-6" X 7', SIDE OVERHEAD, 18" BBF
F11	L-SHAPED DESK 5' X 6', SIDE OVERHEAD, 18" BBF
F12	VERTICAL FILE CABINET
F13	FLAT FILE CABINET
F14	TABLE-OFFICE 3' X 4'
F19	WASHINGTON KNOLL SIDE CHAIR
F20	ADA LOCKER BENCH - 48" W x 18" H x 9.5" D - SALSBURY - 77780 SERIES - DARK FINISH

EQUIPMENT SCHEDULE - ADMINISTRATION

MARK	DESCRIPTION	MANUFACTURER	MODEL/ ITEM#	CONTRACTOR FURNISH	CONTRACTOR INSTALL	OWNER FURNISH	OWNER INSTALL
E1	RESIDENTIAL TOP LOAD CLOTHES WASHER	SPEED QUEEN	TC5003WN	YES	YES		
E2	RESIDENTIAL ELECTRIC CLOTHES DRYER	SPEED QUEEN	DC5003WE	YES	YES		
E3.1	98" MONITOR/TV & TV BRACKET (SEE WALL BLOCKING GENERAL NOTES)	(SEE TECHNOLOGY DWG'S)	(SEE TECHNOLOGY DWG'S)	YES	YES		
E3.2	65" MONITOR/TV & TV BRACKET (SEE WALL BLOCKING GENERAL NOTES)	(SEE TECHNOLOGY DWG'S)	(SEE TECHNOLOGY DWG'S)	YES	YES		
E4	BOTTOM-FREEZER REFRIGERATOR	GENERAL ELECTRIC	GNE25JSKSS	YES	YES		
E5.1	30" SLIDE-IN ELECTRIC RANGE	GENERAL ELECTRIC	JS845SLSS	YES	YES		
E5.2	RESIDENTIAL RANGE (FIRE READY HOOD) SYSTEM	(SEE MECHANICAL DRAWINGS)	SHOWN FOR REFERENCE (SEE MEP DWG'S)	YES	YES		
E6	COUNTERTOP MICROWAVE OVEN	GENERAL ELECTRIC	PES7227SLSS	YES	YES		
E7	COPIER/ PRINTER				YES	YES	
E8	COUNTERTOP PRINTER				YES	YES	
E9	SINGLE TIER PHENOLIC LOCKER, 18" W X 24" X 71-3/4" H., WITH HSS DOUBLE SIDE HOOKS, WITH BASE PLATE OPTION	SPECTRUM	HYGIENE+ (ANTIMICROBIAL)	YES	YES		
E10	GLASS DRY ERASE WHITEBOARD, NON-GLARE MAGNETIC, 4' X 4', INVISI-MOUNT	CLARIDGE	MGMI-44-NG	YES	YES		
E11	ICE MACHINE W/ ASSOCIATED WATER FILTER	MANITOWOC INDIGO	ID-0452A w/ B-570 BIN. PROVIDE WITH WATER FILTER PER MANUF.	YES	YES		

GENERAL NOTES:

CASEWORK & FURNITURE LEGEND

CASEWORK* * DIMENSIONS & NOMENCLATURE SEE MILLWORK SHEETS

FURNITURE / WORKSTATIONS

1. TV MONITORS BRACKETS ARE TO BE PROVIDED & INSTALLED BY CONTRACTOR
2. CONTRACTOR TO OBTAIN BRACKET SPEC FROM OWNER
3. CONTRACTOR PROVIDE ADEQUATE BLOCKING & BACKING SUBSTRATE WITHIN THE WALLS TO SUPPORT MONITORS. SEE DETAILS SHEET A901
4. CONTRACTOR TO COORDINATE ALL MODEL NUMBERS SHOWN WITH MANUFACTURER'S LATEST INFORMATION
5. CONTRACTOR TO COORDINATE AND PROVIDE ALL FIRE EXTINGUISHER WITH BRACKETS OR WITH SEMI-RECESSED FIRE EXTINGUISHER CABINETS, TYP. OF ALL AREAS AS SHOWN ON LIFE SAFETY PLAN G100'S SHEET SERIES (NO EXCEPTIONS).
6. CONTRACTOR TO PROVIDE ROLLER WINDOW SHADES AT ALL EXTERIOR GLAZING IN ADMIN BUILDING CONFERENCE TRAINING ROOM 101, AND PERIMETER WALL OFFICES 105 THROUGH 107, AND 127 THROUGH 131. SEE SPECS FOR BASIS OF DESIGN
7. AT LEAST 5% OF THE LOCKERS PROVIDED, BUT NO LESS THAN ONE LOCKER, NEEDS TO MEET THE ADA REQUIREMENTS.



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EQUIPMENT & FURNITURE PLAN - ADMINISTRATION

A1
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EQUIPMENT & FURNITURE PLAN - ADMINISTRATION

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EQUIPMENT SCHEDULE - WAREHOUSE

MARK	DESCRIPTION	MANUFACTURER	MODEL/ ITEM#	Type Comments	CONTRACTOR FURNISH	CONTRACTOR INSTALL	OWNER FURNISH	OWNER INSTALL
E11	ICE MACHINE W/ ASSOCIATED WATER FILTER	MANITOWOC INDIGO	ID-0452A w/ B-570 BIN. PROVIDE WITH WATER FILTER PER MANUF.		YES	YES		
E12	PALLET RACK SHELVING	LYON WORKSPACE PRODUCTS	SWD096042096 (STARTERS)	WITH AWD096042096 ADD ON WITH ACCESSORIES 96" W x 48" D x 96" H., WITH (4) TIER HIGH SHELFS (INCLUDES BOTTOM)	YES	YES		
E13	WORKBENCH, HEAVY DUTY	DURHAM MANUF. CO.	HWBF-TH-3696-95	96" W. x 30"D. WITH HARDWOOD OVER STEEL TOP, 2,000 LBS CAPACITY, ADJUSTABLE BENCH HEIGHT. PROVIDE WITH DRAWER OPTION	YES	YES		
E14	HOSE REEL (AIR COMPRESSOR)	(SEE MECHANICAL/PLUMBING DRAWINGS)	SHOWN FOR REFERENCE (SEE MECHANICAL/PLUMBING DRAWINGS)	PROVIDE WITH 50' LONG HOSE (MIN.)	YES	YES		
E15	WATER METER BENCH TEST STATION			EXISTING TO BE RELOCATED		YES	YES	
E16	FLAMMABLE LIQUID SAFETY STORAGE CABINET	EAGLE MANUFACTURING COMPANY	4510	SELF-CLOSING, 45 GALLON MAX. CAPACITY, 43" W x 18" D x 65" H.	YES	YES		
E17	STORAGE CABINET (LOCKABLE)	EQUIPTO	1710	36" W x 18" D x 78" H.	YES	YES		
E18	STORAGE SHELVING	EQUIPTO	763-7S	36" W x 18" D x 84" H.	YES	YES		
E19	DRILL PRESS	JET TOOLS, A WMH COMPANY	JDP-20MF	20" VARIABLE SPEED	YES	YES		
E20	BIN AND DRAWER SHELVING	EQUIPTO	905S	36" W x 12" D x 84" H. WITH (36) COMPARTMENTS	YES	YES		
E21	5" VISE	REED MANUFACTURING	SH100	HEAVY DUTY, 6" JAW WIDTH, COMBINATION, SWIVEL BASE	YES	YES		
E22	HOSE REEL (WATER)	(SEE MECHANICAL/PLUMBING DRAWINGS)	SHOWN FOR REFERENCE (SEE MECHANICAL/PLUMBING DWG'S)	PROVIDE WITH 50' LONG HOSE (MIN.)	YES	YES		
E23	PIPE ARM RACK	JARKE	SC-10J	46" W x 32" D x 122" H., SINGLE FACE, HEAVY DUTY. REQUIRES MINIMUM OF TWO UPRIGHTS. PROVIDE BACK TO BACK UNITS FOR DOUBLE SIDED CONDITION.	YES	YES		
E33	REFRIGERATOR	GENERAL ELECTRIC	GNE25JSKSS		YES	YES		
E36	DISHWASHER	GENERAL ELECTRIC	PROFILE SERIES - ADA HEIGHT WITH FEATURES SIMILAR TO PDT845SSJSS	DISHWASHER	YES	YES		
E37	MICROWAVE	GENERAL ELECTRIC	JES2051SNSS	MICROWAVE	YES	YES		
E38	COFFEE MACHINE	BUNN	AXIOM-15-3, WITH 3 LOWER WARMERS PRODUCT # 38700.0002	COFFE MAKER	YES	YES		

GENERAL NOTES:

CASEWORK & FURNITURE LEGEND

CASEWORK* — * DIMENSIONS & NOMENCLATURE SEE MILLWORK SHEETS

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CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

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EQUIPMENT & FURNITURE PLAN - WAREHOUSE

A1 — EQUIPMENT & FURNITURE PLAN - WAREHOUSE
1/8" = 1'-0"

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TACTILE EXIT SIGN

SIZE: 6" W X 9" H

MOUNTING HEIGHT: 60" TO CENTER

FONT SIZE: 3/4"

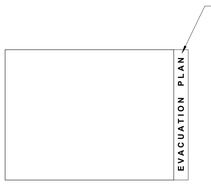
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COLOR:
BACKGROUND: GRAPHICS "B" (NO ACCENT)
LETTERS: UF BLUE

PROVIDE AT EACH PRIMARY EXIT DOOR TO EXTERIOR OR EXIT STAIR

S-07 EXIT SIGN



INSERTABLE TEXT SLOT:
PROVIDE MP PLASTIC INSERT
TO READ: "EVACUATION PLAN"

EVACUATION MAP SIGN

SIZE: 11" W X 8 1/2" H

MOUNTING HEIGHT: 60" TO CENTER

FONT SIZE: 1/4"

FONT: HELVETICA MEDIUM, UPPER CASE

COLOR:
BACKGROUND: CLEAR ACRYLIC
LETTERS: RED

CLEAR ACRYLIC, BENT FOR 8 1/2" X 11" INSERT

S04 - EVACUATION MAP SIGN



MAXIMUM CAPACITY SIGN

SIZE: 12" W X 3" H

MOUNTING HEIGHT: 60" TO CENTER

FONT SIZE: 3/4"

RADIUS CORNER: 1/2"

FONT: HELVETICA MEDIUM,
UPPER CASE

COLOR:
BACKGROUND: TBD
LETTERS: WHITE

BRAILLE: DOMED GRADE 2

S05 - MAX CAPACITY SIGN



NO COMBUSTIBLE
STORAGE SIGN

SIZE: 8" W X 8" H

MOUNTING HEIGHT: 60" TO CENTER

FONT SIZE: 3/4"

RADIUS CORNER: 1/2"

FONT: HELVETICA MEDIUM, UPPER CASE

COLOR:
BACKGROUND: TBD
LETTERS: WHITE

BRAILLE: DOMED GRADE 2

S06 - NO COMBUSTIBLE
STORAGE ALLOWED SIGN



ROOM NAME & NUMBER SIGN
W/ REMOVEABLE NAME
PLATE

SIZE: 8" W X 8" H

MOUNTING HEIGHT: 60" TO CENTER

FONT SIZE: 5/8" W/ 1/16" RULE ROOM NAME
& 1 1/2" NUMERALS

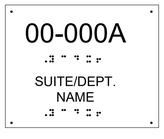
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FONT: HELVETICA MEDIUM, UPPER CASE

COLOR:
BACKGROUND: T.B.D.
LETTERS: COLOR T.B.D.

BRAILLE: DOMED GRADE 2

S01 - ROOM NUMBER WITH NAME INSERTS



NAME & NUMBER

SIZE: 12" W X 8" H

MOUNTING HEIGHT: 60" TO CENTER

FONT SIZE: 5/8" W/ 1/16" RULE ROOM NAME
& 1 1/2" NUMERALS

RADIUS CORNER: 1/2"

FONT: HELVETICA MEDIUM, UPPER CASE

COLOR:
BACKGROUND: T.B.D.
LETTERS: COLOR T.B.D.

BRAILLE: DOMED GRADE 2

S-02 ROOM NAME AND NUMBER SIGN



TEXT IS TO READ AS DESIGNATED
PER ROOM AS SHOWN ON THE
SIGNAGE FLOOR PLANS

RESTROOM SIGN

SIZE: 8" W X 8" H

MOUNTING HEIGHT: 60" TO CENTER

FONT SIZE: 3/4"

SYMBOL SIZE: 3" HIGH

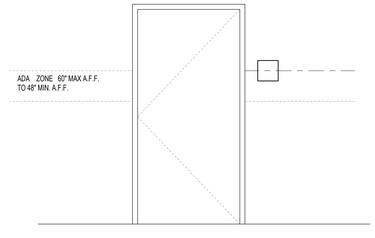
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FONT: HELVETICA MEDIUM, UPPER CASE

COLOR:
BACKGROUND: TBD
LETTERS: WHITE

BRAILLE: DOMED GRADE 2

S03 - RESTROOM SIGN



NOTES:

1. INSTALL 60" ABOVE FIN. FL. TO THE CENTERLINE OF THE SIGN ON THE NEAREST ADJACENT WALL TO THE LATCH SIDE OF DOOR APPROACHABLE WITHIN 3" OF SIGNAGE WITHOUT ENCOUNTERING PROTRUDING OBJECTS OR WITHOUT STANDING WITHIN THE SWING OF THE DOOR.
2. MEASUREMENTS TO BE MADE FROM INSIDE OF DOOR MOLDING.
3. AT OPENINGS WITH NO WALL SPACE AT LATCH SIDE OF DOOR, PLACE SIGN ON NEAREST ADJACENT WALL.
4. WHERE A TACTILE SIGN IS PROVIDED AT DOUBLE DOORS WITH ONE ACTIVE LEAF, THE SIGN SHALL BE LOCATED ON THE INACTIVE LEAF.
5. WHERE A TACTILE SIGN IS PROVIDED AT DOUBLE DOORS WITH TWO ACTIVE LEAFS, THE SIGN SHALL BE LOCATED ON THE RIGHT OF THE RIGHT HAND DOOR.
6. WHERE SIGN OCCURS ON GLASS, PROVIDE MATCHING ACRYLIC BACKER PLATE.
7. SIGNS SHALL BE INSTALLED ON THE LATCH SIDE OF THE DOOR (ADAAG SECTION 4.30.6)
8. WHERE THERE IS NO WALL SPACE TO THE LATCH SIDE OF DOOR, INCLUDING DOUBLE DOORS, SIGNS SHALL BE PLACED ON THE NEAREST ADJACENT WALL (ADAAG SECTION 4.30.6)
9. THE MOUNTING LOCATION OF SIGNAGE SHALL BE SO THAT A PERSON MAY APPROACH WITHIN 3" OF SIGNAGE WITHOUT ENCOUNTERING PROTRUDING OBJECTS OR STANDING WITHIN THE SWING OF DOOR. (ADAAG SECTION 4.30.6)

SIGN INSTALLATION DETAILS

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SIGNAGE TYPES & NOTES

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SIGNAGE SCHEDULE

MARK	DESCRIPTION
S01	ROOM NUMBER WITH NAME INSERTS
S02	ROOM NAME AND NUMBER SIGN
S03	RESTROOM SIGN
S04	EVACUATION MAP SIGN
S05	MAX CAPACITY SIGN
S06	NO COMBUSTIBLE STORAGE ALLOWED SIGN STORAGE ALLOWED SIGN
S07	EXIT SIGN



KEYPLAN

A1 SIGNAGE PLAN - ADMINISTRATION

1/8" = 1'-0"

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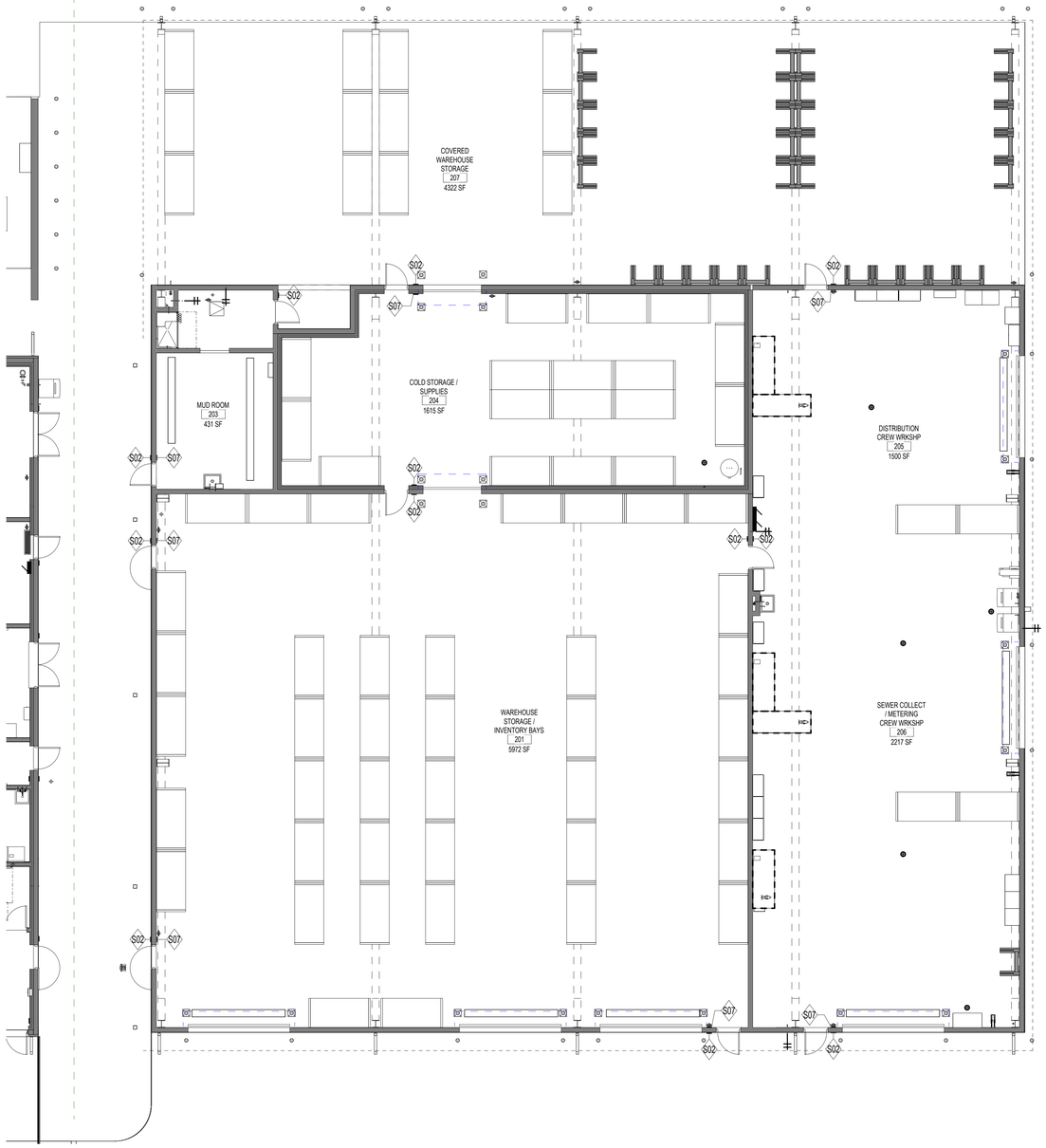
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1	OWNER REVISIONS MEETING	06/22/2023

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SIGNAGE PLAN - ADMINISTRATION

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S05	MAX CAPACITY SIGN
S06	NO COMBUSTIBLE STORAGE ALLOWED SIGN STORAGE ALLOWED SIGN
S07	EXIT SIGN



KEYPLAN

A1 SIGNAGE PLAN - WAREHOUSE

1/8" = 1'-0"

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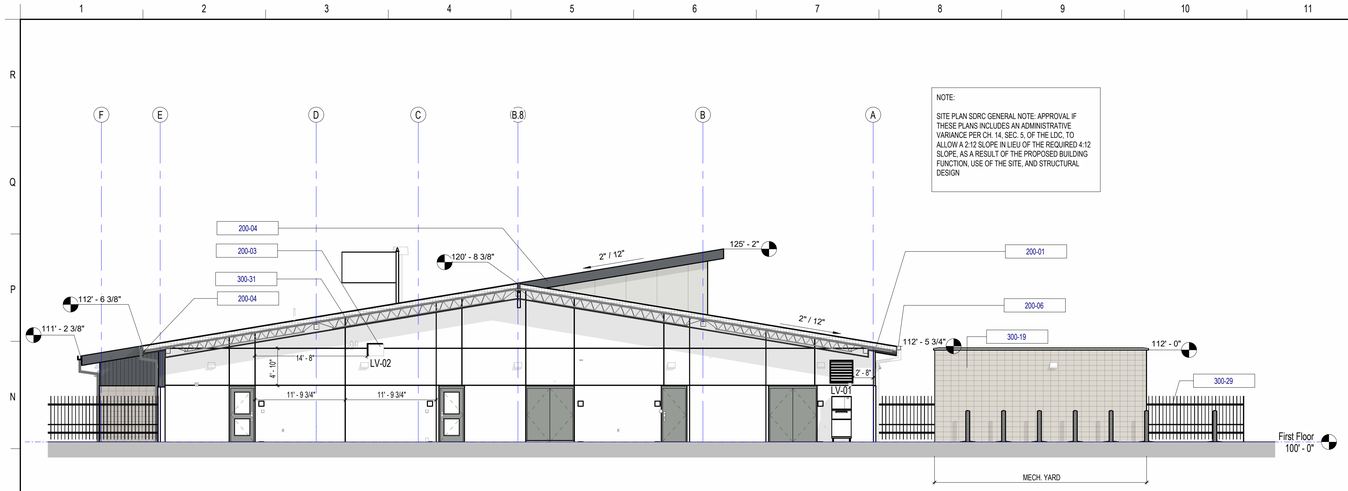
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SIGNAGE PLAN - WAREHOUSE

A191B
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EXTERIOR COLOR LEGEND & NOTES

VERTICAL RIB PROFILE METAL WALL PANEL SYSTEM
(B.O.D. HWP PRECISION SERIES, BY PAC-CLAD/PETERSEN A CARLISLE COMPANY OR SIMILAR APPROVED).
COLOR: GRAPHITE.
COMPARABLE TO: SHERWIN WILLIAMS, WEB GRAY SW 7075

METAL ROOF, FASCIA, SOFFIT (M2 SOFFIT COLOR), ROOF TRIMS & FLASHING, GUTTERS & DOWNSPOUTS
(B.O.D. PAC-CLAD/PETERSEN A CARLISLE COMPANY OR SIMILAR APPROVED)
COLOR: GRAPHITE.
COMPARABLE TO: SHERWIN WILLIAMS, WEB GRAY SW 7075

FLUSH PROFILE METAL PANEL SYSTEM
(B.O.D. PAC-CLAD/PETERSEN A CARLISLE COMPANY OR SIMILAR APPROVED)
COLOR: STONE WHITE, COMPARABLE TO: RESERVED WHITE SW 7056

SPLIT FACE BLOCK VENEER
(B.O.D. INTEGRAL COLOR, BY A-1 BLOCK CORPORATION OR SIMILAR APPROVED).
COLOR: S-112, COMPARABLE TO: SHERWIN WILLIAMS, DRIFT OF MIST SW 9166

M1 SOFFIT COLOR (SEE RCP FOR LOCATION)
(B.O.D. WOOD GRAIN FINISHES SERIES, BY PAC-CLAD/PETERSEN A CARLISLE COMPANY OR SIMILAR APPROVED)
COLOR: COPPER, COMPARABLE TO: SHERWIN WILLIAMS, SPICED CIDER SW 7702

CEMENT PLASTER
COLOR: SHERWIN WILLIAMS, DRIFT OF MIST SW 9166

ALUMINUM FRAMED ENTRANCES & STOREFRONT/CURTAINWALL SYSTEMS
(B.O.D. ANODIZED PLUS OR SIMILAR APPROVED)
COLOR: YS1N-CLEAR, COMPARABLE TO: SHERWIN WILLIAMS, PASSIVE SW 7064

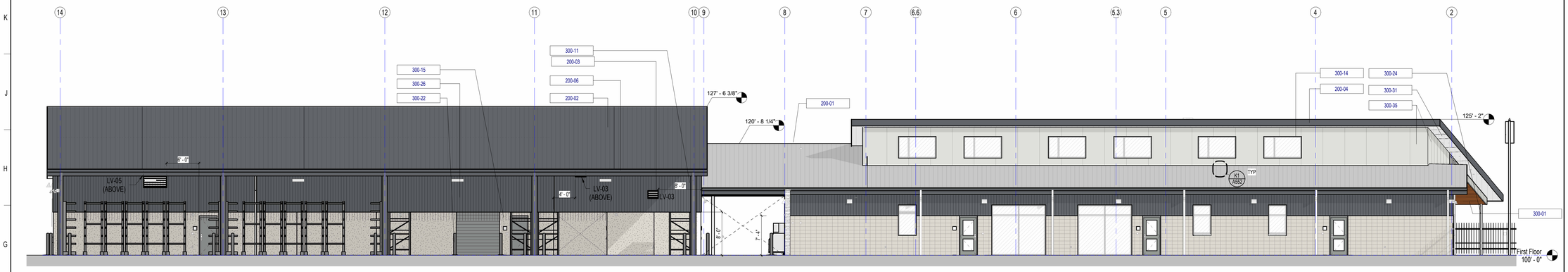
GENERAL NOTE:
SEE SHEET A202 FOR 'EXTERIOR COLOR LEGEND & NOTES'.

KEYNOTE LEGEND

KEYNOTE	DESCRIPTION
200-01	STANDING SEAM METAL ROOF SYSTEM OVER SELF-ADHERING WATERPROOFING MEMBRANE OVER 5/8" GLASS MATT GYP BOARD NAILABLE SHEATHING OVER RIGID INSULATION OVER METAL DECK. SEE ROOF PLAN FOR MIN. R-VALUE
200-02	STANDING SEAM METAL ROOF SYSTEM (BY PEMB MANUF.)
200-03	PRE-FINISHED METAL LOUVER, SEE SCHEDULE
200-04	PRE-FINISHED METAL FASCIA COVER. SEE SPECS
200-06	ROOF DOWNSPOUT LOCATIONS, SEE ROOF PLAN, TYP.
300-01	NON-VENTED METAL SOFFIT SYSTEM OVER 7/8" HAT CHANNEL FURRING AT 12" O.C. CONT. SOFFIT TO MATCH ALL SIDES.
300-02	7/8" DEPTH PREFINISHED VERTICAL RIB MTL PANEL SYSTEM ON MTL. FURRING ON CMU WALL. SEE SPECS. REFER TO ELEVATIONS FOR PANEL COLOR AND LOCATION
300-05	SPLIT FACE CMU VENEER ON CMU LOAD BEARING WALL. REFER TO ELEVATIONS
300-11	METAL BUILDING STRUCTURE (BY PEMB MANUF.)
300-14	PRE-FINISHED ALUMINUM STOREFRONT CLERESTORY WINDOW
300-15	PAINTED CEMENT PLASTER OVER PAPER BACKED METAL LATH OVER CMU WALL
300-17	PRE-FINISHED EXTERIOR ALUM STOREFRONT SYSTEM SEE SPECS
300-19	SPLIT FACE CMU WALL
300-22	SCHEDULE 80 6" DIA STL PIPE - WELD TO BASE PLATE WITH 4 CONCRETE ANCHORS, TYP.
300-23	STEEL PIPE BOLLARD PER CIVIL DETAIL (COORDINATE WITH ADJACENT STRUCT. FOOTINGS), TYP.
300-24	COLUMN. REFER TO STRUCTURAL DWGS
300-26	PEMB PRE-FINISHED METAL WALL PANEL ON INSULATED METAL LINER PANEL FACED BLANKET INSULATION ON TOP OF CMU WALL
300-29	SITE FENCE, REFER TO CIVIL, TYP.
300-31	METAL SOFFIT PANEL SYSTEM
300-35	1" DEPTH PREFINISHED FLUSH PROFILE MTL PANEL SYSTEM ON MTL. FURRING ON CMU WALL. SEE SPECS. REFER TO ELEVATIONS FOR PANEL COLOR AND LOCATION

L1 EAST ELEVATION - ADMINISTRATION

1/8" = 1'-0"



F1 NORTH ELEVATION – ADMINISTRATION AND WAREHOUSE

1/8" = 1'-0"



A1 SOUTH ELEVATION – ADMINISTRATION AND WAREHOUSE

1/8" = 1'-0"

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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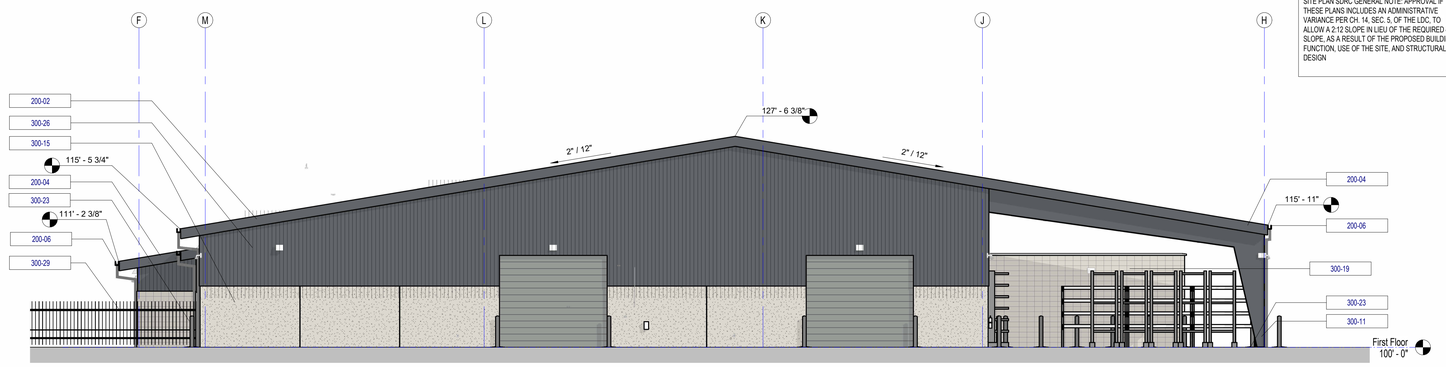
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1	SDRC 9/28 SITE COMMENTS	01/05/2023

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EXTERIOR ELEVATIONS

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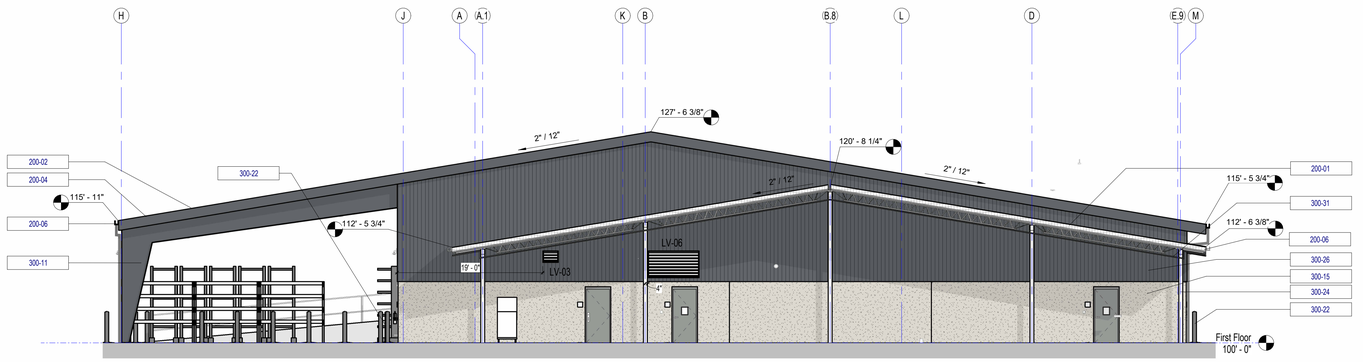


NOTE:

SITE PLAN SDRC GENERAL NOTE: APPROVAL IF THESE PLANS INCLUDES AN ADMINISTRATIVE VARIANCE PER CH. 14, SEC. 5, OF THE LDC, TO ALLOW A 2:12 SLOPE IN LIEU OF THE REQUIRED 4:12 SLOPE, AS A RESULT OF THE PROPOSED BUILDING FUNCTION, USE OF THE SITE, AND STRUCTURAL DESIGN

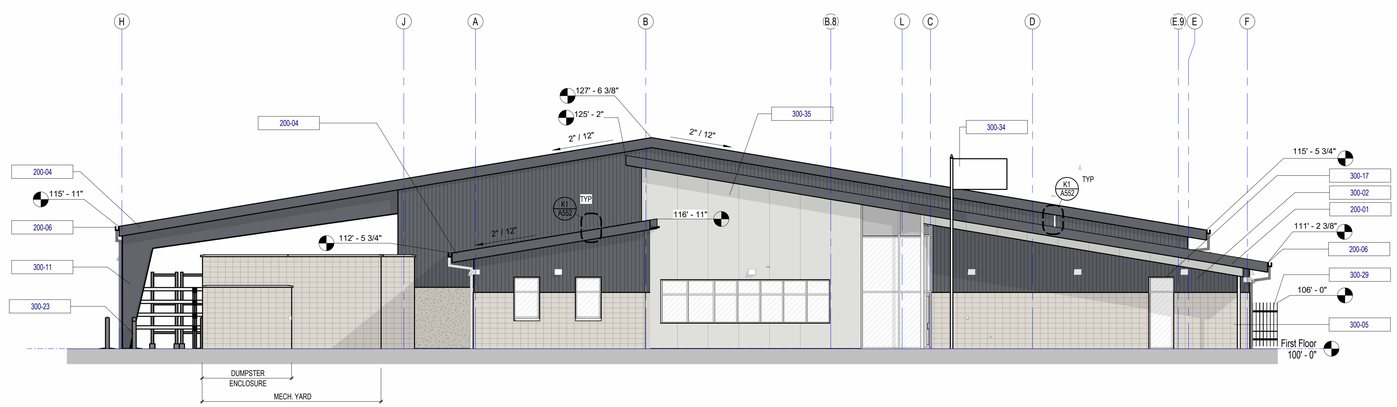
L1 EAST ELEVATION WAREHOUSE

1/8" = 1'-0"



F1 WEST ELEVATION WAREHOUSE

1/8" = 1'-0"



A1 WEST ELEVATION ADMINISTRATION

1/8" = 1'-0"

EXTERIOR COLOR LEGEND & NOTES

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(B.O.D. HWP PRECISION SERIES, BY PAC-CLAD/PETERSEN A CARLISLE COMPANY OR SIMILAR APPROVED).
COLOR: GRAPHITE.
COMPARABLE TO: SHERWIN WILLIAMS, WEB GRAY SW 7075

METAL ROOF, FASCIA, SOFFIT (M2 SOFFIT COLOR), ROOF TRIMS & FLASHING, GUTTERS & DOWNSPOUTS
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COLOR: GRAPHITE.
COMPARABLE TO: SHERWIN WILLIAMS, WEB GRAY SW 7075

FLUSH PROFILE METAL PANEL SYSTEM
(B.O.D. PAC-CLAD/PETERSEN A CARLISLE COMPANY OR SIMILAR APPROVED)
COLOR: STONE WHITE, COMPARABLE TO: RESERVED WHITE SW 7056

SPLIT FACE BLOCK VENEER
(B.O.D. INTEGRAL COLOR, BY A-1 BLOCK CORPORATION OR SIMILAR APPROVED).
COLOR: S-112, COMPARABLE TO: SHERWIN WILLIAMS, DRIFT OF MIST SW 9166

M1 SOFFIT COLOR (SEE RCP FOR LOCATION)
(B.O.D. WOOD GRAIN FINISHES SERIES, BY PAC-CLAD/PETERSEN A CARLISLE COMPANY OR SIMILAR APPROVED)
COLOR: COPPER, COMPARABLE TO: SHERWIN WILLIAMS, SPICED CIDER SW 7702

CEMENT PLASTER
COLOR: SHERWIN WILLIAMS, DRIFT OF MIST SW 9166

ALUMINUM FRAMED ENTRANCES & STOREFRONT/CURTAINWALL SYSTEMS
(B.O.D. ANODIZED PLUS OR SIMILAR APPROVED)
COLOR: YS1N-CLEAR, COMPARABLE TO: SHERWIN WILLIAMS, PASSIVE SW 7064

GENERAL NOTES - ELEVATIONS

1. WALL-MOUNTED EQUIPMENT SUCH AS ELECTRIC METERS, IRRIGATION METERS, PHONE/CABLE BOXES, EXTERNAL VENTS AND LOUVERS, ETC., SHALL BE PAINTED TO MATCH THE WALL ON WHICH IT IS MOUNTED; TYPICAL
2. EXTERIOR PRE-FINISHED OVERHEAD COILING DOORS & FRAMES TO BE FROM MANUFACTURER 'S STANDARD COLOR : GRAY; COMPARABLE TO SHERWIN WILLIAMS - EARL GREY SW 7660 (CONTRACTOR TO PROVIDE SAMPLES FOR REVIEW)
3. EXTERIOR METAL DOORS & FRAMES SCHEDULED TO BE PAINTED SHALL MATCH EXTERIOR PRE-FINISHED OVERHEAD COILING DOORS & FRAMES COLOR; TYPICAL
4. EXTERIOR / EXPOSED PRIMARY & SECONDARY PRE-MANUFACTURED METAL BUILDING FRAMING STRUCTURE SHALL BE PAINTED TO MATCH METAL ROOF & FASCIA; TYPICAL
5. EXTERIOR ARCHITECTURAL PRECAST SHAPES TO BE SELECTED BY THE ARCHITECT AT A LATER DATE (COLOR SUPPLEMENTAL TO OTHER EXTERIOR MATERIALS, CONTRACTOR TO PROVIDE SAMPLES

KEYNOTE LEGEND	
KEYNOTE	DESCRIPTION
200-01	STANDING SEAM METAL ROOF SYSTEM OVER SELF-ADHERING WATERPROOFING MEMBRANE OVER 5/8" GLASS MATT GYP BOARD NAILABLE SHEATHING OVER RIGID INSULATION OVER METAL DECK. SEE ROOF PLAN FOR MIN. R-VALUE
200-02	STANDING SEAM METAL ROOF SYSTEM (BY PEMB MANUF.)
200-04	PRE-FINISHED METAL FASCIA COVER. SEE SPECS
200-06	ROOF DOWNSPOUT LOCATIONS, SEE ROOF PLAN, TYP.
300-02	7/8" DEPTH PREFINISHED VERTICAL RIB MTL PANEL SYSTEM ON MTL. FURRING ON CMU WALL. SEE SPECS. REFER TO ELEVATIONS FOR PANEL COLOR AND LOCATION
300-05	SPLIT FACE CMU VENEER ON CMU LOAD BEARING WALL. REFER TO ELEVATIONS
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300-15	PAINTED CEMENT PLASTER OVER PAPER BACKED METAL LATH OVER CMU WALL
300-17	PRE-FINISHED EXTERIOR ALUM STOREFRONT SYSTEM SEE SPECS
300-19	SPLIT FACE CMU WALL
300-22	SCHEDULE 80 6" DIA STL PIPE - WELD TO BASE PLATE WITH 4 CONCRETE ANCHORS, TYP.
300-23	STEEL PIPE BOLLARD PER CIVIL DETAIL (COORDINATE WITH ADJACENT STRUCT. FOOTINGS), TYP.
300-24	COLUMN. REFER TO STRUCTURAL DWGS
300-26	PEMB PRE-FINISHED METAL WALL PANEL ON INSULATED METAL LINER PANEL FACED BLANKET INSULATION ON TOP OF CMU WALL
300-29	SITE FENCE, REFER TO CIVIL, TYP.
300-31	METAL SOFFIT PANEL SYSTEM
300-34	FLAG POLE. SEE DETAIL K9/AS501
300-35	1" DEPTH PREFINISHED FLUSH PROFILE MTL PANEL SYSTEM ON MTL. FURRING ON CMU WALL. SEE SPECS. REFER TO ELEVATIONS FOR PANEL COLOR AND LOCATION

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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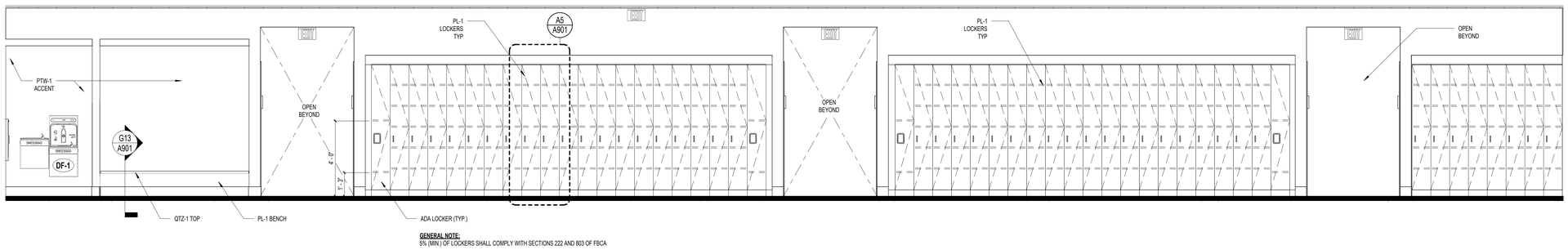
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EXTERIOR ELEVATIONS

A202
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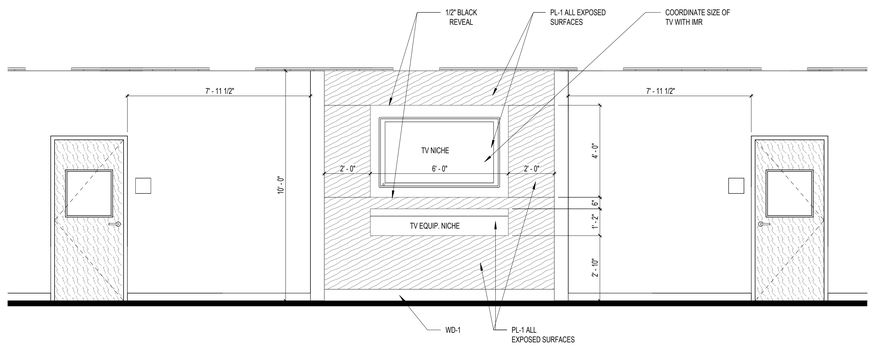
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GENERAL NOTE:
5% (MIN.) OF LOCKERS SHALL COMPLY WITH SECTIONS 222 AND 803 OF FBCA

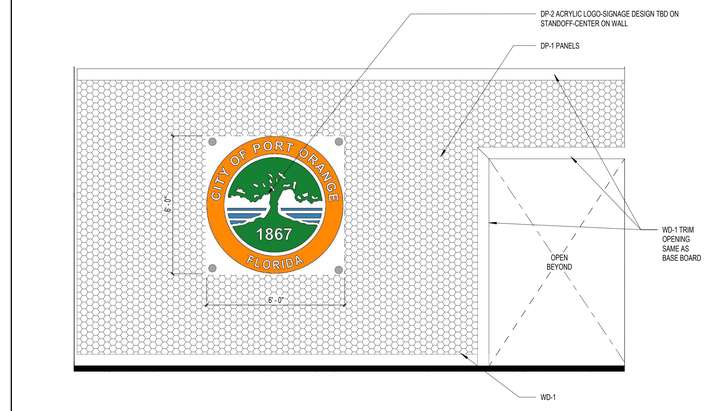
L1 CORRIDOR-LOCKERS

3/8" = 1'-0"



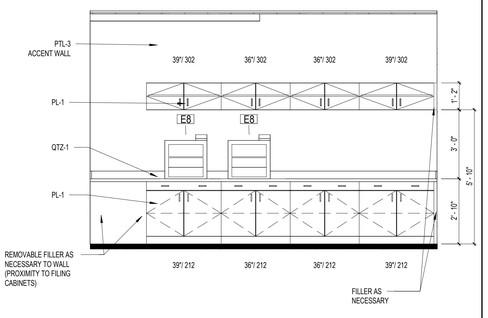
F1 CREW BREAKROOM-SOUTH

3/8" = 1'-0"



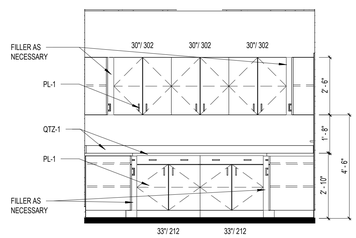
F13 MAIN FOYER/ENTRY

3/8" = 1'-0"



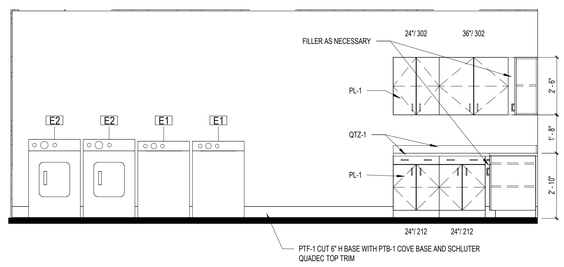
A1 COPY ROOM-SOUTH

3/8" = 1'-0"



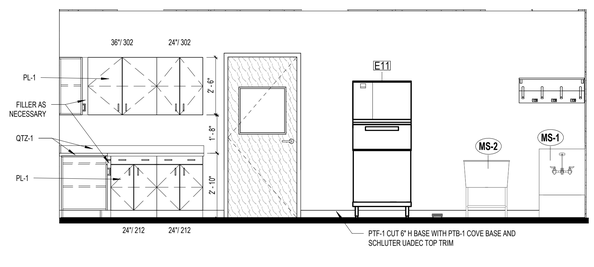
A5 LAUNDRY-JANITOR-N

3/8" = 1'-0"



A9 LAUNDRY-JANITOR-S

3/8" = 1'-0"



A14 LAUNDRY ELEVATION-N

3/8" = 1'-0"

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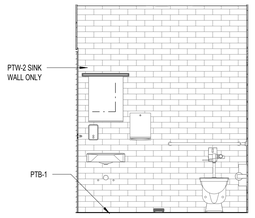
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INTERIOR ELEVATIONS

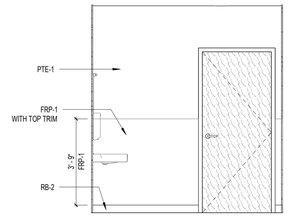
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J7 UNISEX RESTROOM 101 NORTH ELEVATION

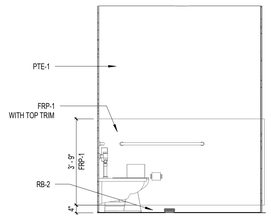
3/8" = 1'-0"



NOTE: ALL WALLS TO HAVE FRP PANLES , U.O.N

J11 UNISEX RESTROOM/ SHOWER NORTH ELEVATION - TYPICAL

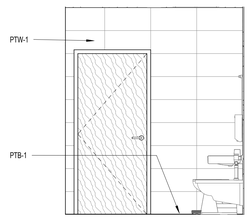
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NOTE: ALL WALLS TO HAVE FRP PANLES , U.O.N

J15 UNISEX RESTROOM 110 & 111 NORTH ELEVATION - TYPICAL

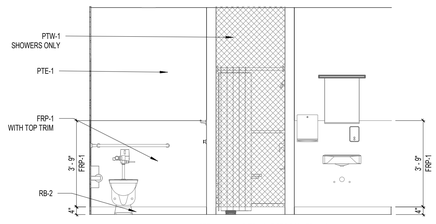
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NOTE: ALL WALLS TO BE TILE , U.O.N

E7 UNISEX RESTROOM 101 WEST ELEVATION

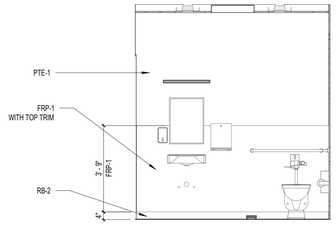
3/8" = 1'-0"



NOTE: ALL WALLS TO HAVE FRP PANLES , U.O.N

E11 UNISEX RESTROOM/ SHOWER WEST ELEVATION - TYPICAL

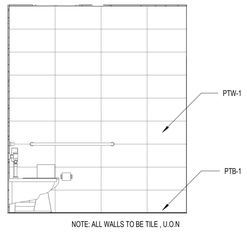
3/8" = 1'-0"



NOTE: ALL WALLS TO HAVE FRP PANLES , U.O.N

E15 UNISEX RESTROOM 110 & 111 WEST ELEVATION - TYPICAL

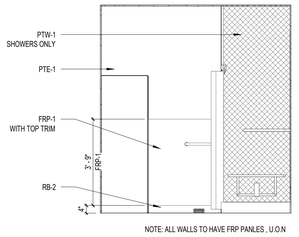
3/8" = 1'-0"



NOTE: ALL WALLS TO BE TILE , U.O.N

A7 UNISEX RESTROOM 101 EAST ELEVATION

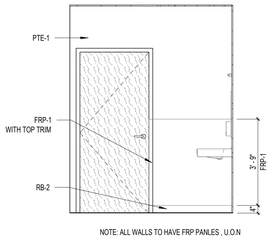
3/8" = 1'-0"



NOTE: ALL WALLS TO HAVE FRP PANLES , U.O.N

A11 UNISEX RESTROOM/ SHOWER SOUTH ELEVATION - TYPICAL

3/8" = 1'-0"



NOTE: ALL WALLS TO HAVE FRP PANLES , U.O.N

A15 UNISEX RESTROOM 110 & 111 SOUTH ELEVATION - TYPICAL

3/8" = 1'-0"

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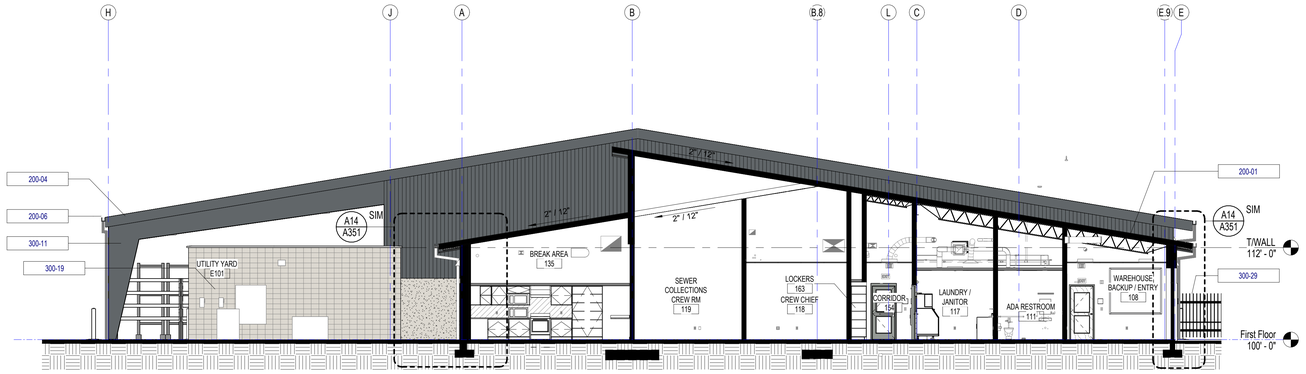
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1	OWNER REVISIONS MEETING	09/22/2023

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TOILET ROOM ELEVATIONS

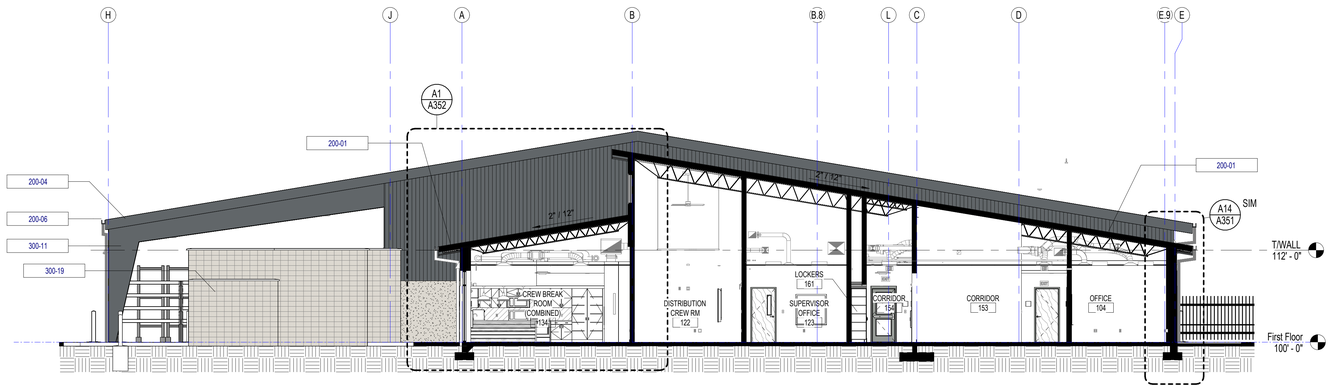
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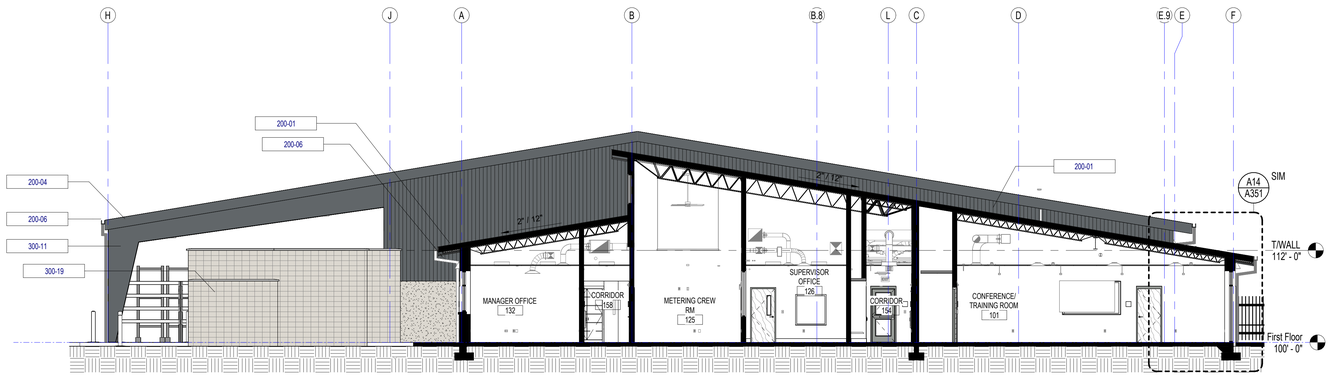
M1 BUILDING SECTION

1/8" = 1'-0"



G1 BUILDING SECTION

1/8" = 1'-0"



A1 BUILDING SECTION

1/8" = 1'-0"

KEYNOTE LEGEND	
KEYNOTE	DESCRIPTION
200-01	STANDING SEAM METAL ROOF SYSTEM OVER SELF-ADHERING WATERPROOFING MEMBRANE OVER 5/8" GLASS MATT GYP BOARD NAILABLE SHEATHING OVER RIGID INSULATION OVER METAL DECK. SEE ROOF PLAN FOR MIN. R-VALUE
200-04	PRE-FINISHED METAL FASCIA COVER. SEE SPECS
200-06	ROOF DOWNSPOUT LOCATIONS, SEE ROOF PLAN, TYP.
300-11	METAL BUILDING STRUCTURE (BY PEMB MANUF.)
300-19	SPLIT FACE CMU WALL
300-29	SITE FENCE, REFER TO CIVIL, TYP.

SECTION GENERAL NOTES

1. EXTERIOR CMU WALLS R-VALUE AT THE ADMINISTRATION & THE COLD STORAGE / SUPPLIES (AT WAREHOUSE) TO BE R:13.6 MIN.
2. METAL WALL PANELS AT THE PEMB TO BE R:13.6 MIN.
3. REFER TO ROOF PLAN FOR R-VALUE REQUIREMENTS

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
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REVISIONS		
MARK	DESCRIPTION	DATE
1	OWNER REVISIONS MEETING	09/22/2023

COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
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BUILDING SECTIONS

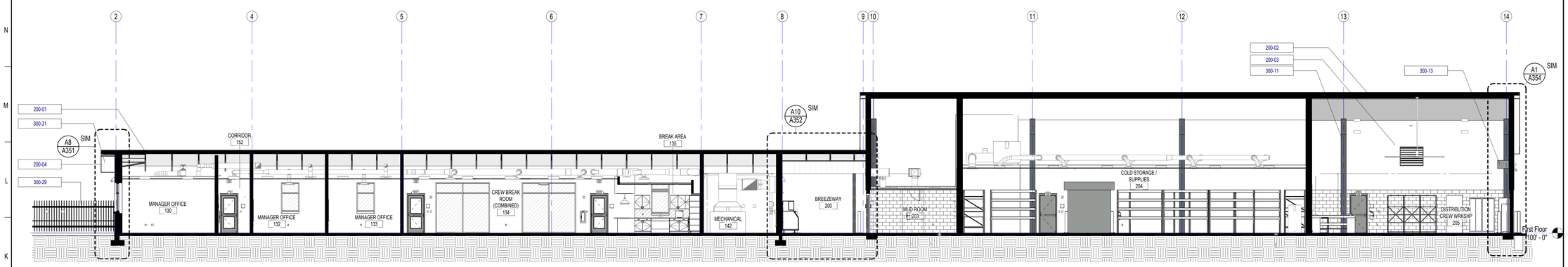
A301
PERMIT/BID DOCUMENTS

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SECTION GENERAL NOTES

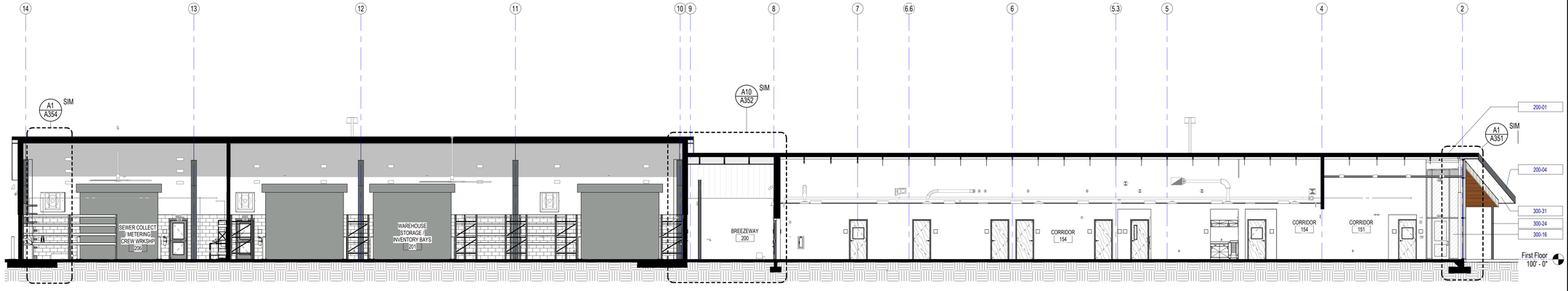
1. EXTERIOR CMU WALLS R-VALUE AT THE ADMINISTRATION & THE COLD STORAGE / SUPPLIES (AT WAREHOUSE) TO BE R.13.6 MIN.
2. METAL WALL PANELS AT THE PEMB TO BE R.13.6 MIN.
3. REFER TO ROOF PLAN FOR R-VALUE REQUIREMENTS

KEYNOTE LEGEND	
KEYNOTE	DESCRIPTION
200-01	STANDING SEAM METAL ROOF SYSTEM OVER SELF-ADHERING WATERPROOFING MEMBRANE OVER 5/8" GLASS MATT GYP BOARD NAILABLE SHEATHING OVER RIGID INSULATION OVER METAL DECK. SEE ROOF PLAN FOR MIN. R-VALUE
200-02	STANDING SEAM METAL ROOF SYSTEM (BY PEMB MANUF.)
200-03	PRE-FINISHED METAL LOUVER, SEE SCHEDULE
200-04	PRE-FINISHED METAL FASCIA COVER. SEE SPECS
300-11	METAL BUILDING STRUCTURE (BY PEMB MANUF.)
300-13	OVERHEAD COILING DOORS
300-16	PRE-FINISHED ALUMINUM CURTAIN WALL SYSTEM
300-24	COLUMN. REFER TO STRUCTURAL DWGS
300-29	SITE FENCE, REFER TO CIVIL, TYP.
300-31	METAL SOFFIT PANEL SYSTEM



J1 BUILDING SECTION

1/8" = 1'-0"



A1 BUILDING SECTION

1/8" = 1'-0"

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CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
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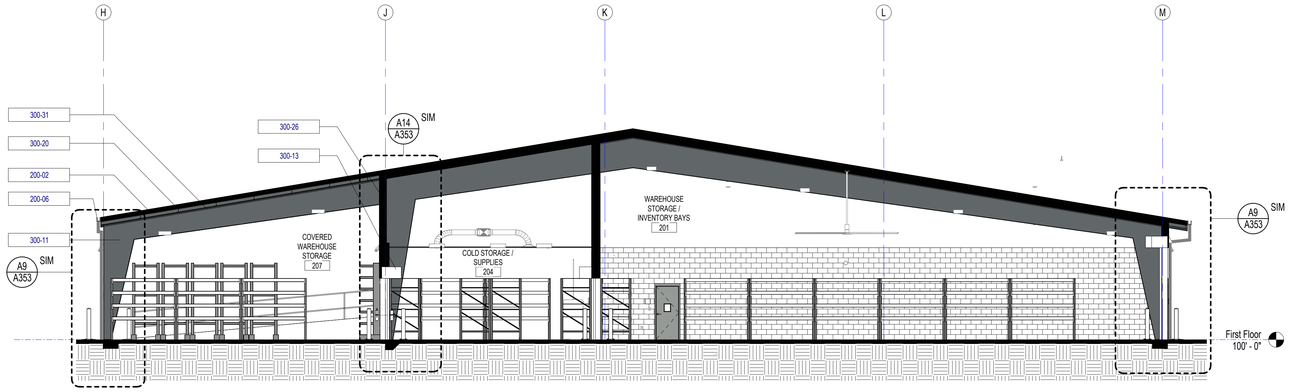
MARK	DESCRIPTION	DATE
1	OWNER REVISIONS MEETING	09/22/2023

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BUILDING SECTIONS

A302
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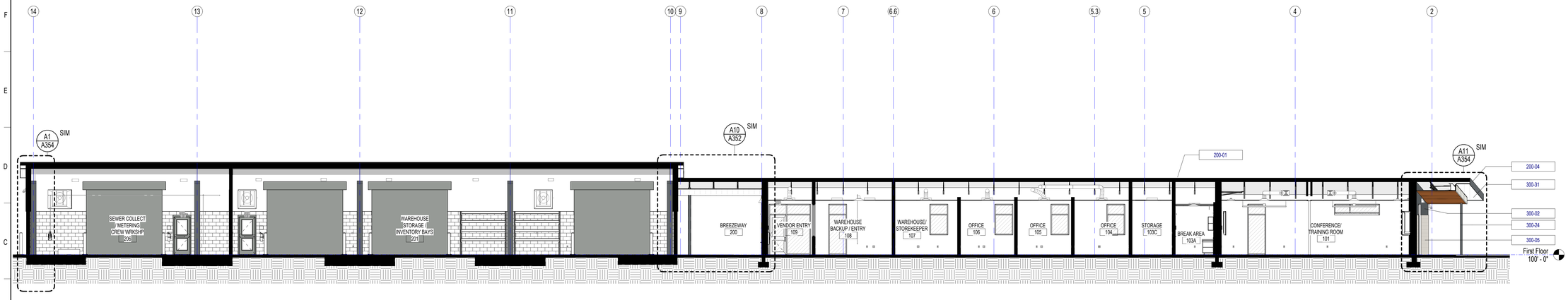
J1 BUILDING SECTION

1/8" = 1'-0"

KEYNOTE LEGEND	
KEYNOTE	DESCRIPTION
200-01	STANDING SEAM METAL ROOF SYSTEM OVER SELF-ADHERING WATERPROOFING MEMBRANE OVER 5/8" GLASS MATT GYP BOARD NAILABLE SHEATHING OVER RIGID INSULATION OVER METAL DECK. SEE ROOF PLAN FOR MIN. R-VALUE
200-02	STANDING SEAM METAL ROOF SYSTEM (BY PEMB MANUF.)
200-04	PRE-FINISHED METAL FASCIA COVER. SEE SPECS
200-06	ROOF DOWNSPOUT LOCATIONS, SEE ROOF PLAN, TYP.
300-02	7/8" DEPTH PREFINISHED VERTICAL RIB MTL PANEL SYSTEM ON MTL. FURRING ON CMU WALL. SEE SPECS. REFER TO ELEVATIONS FOR PANEL COLOR AND LOCATION
300-05	SPLIT FACE CMU VENEER ON CMU LOAD BEARING WALL. REFER TO ELEVATIONS
300-11	METAL BUILDING STRUCTURE (BY PEMB MANUF.)
300-13	OVERHEAD COILING DOORS
300-20	ZEE PURLIN (BY PEMB MANUF.)
300-24	COLUMN. REFER TO STRUCTURAL DWGS
300-26	PEMB PRE-FINISHED METAL WALL PANEL ON INSULATED METAL LINER PANEL FACED BLANKET INSULATION ON TOP OF CMU WALL
300-31	METAL SOFFIT PANEL SYSTEM

SECTION GENERAL NOTES

1. EXTERIOR CMU WALLS R-VALUE AT THE ADMINISTRATION & THE COLD STORAGE / SUPPLIES (AT WAREHOUSE) TO BE R.13.6 MIN.
2. METAL WALL PANELS AT THE PEMB TO BE R.13.6 MIN.
3. REFER TO ROOF PLAN FOR R-VALUE REQUIREMENTS



A1 BUILDING SECTION

1/8" = 1'-0"

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

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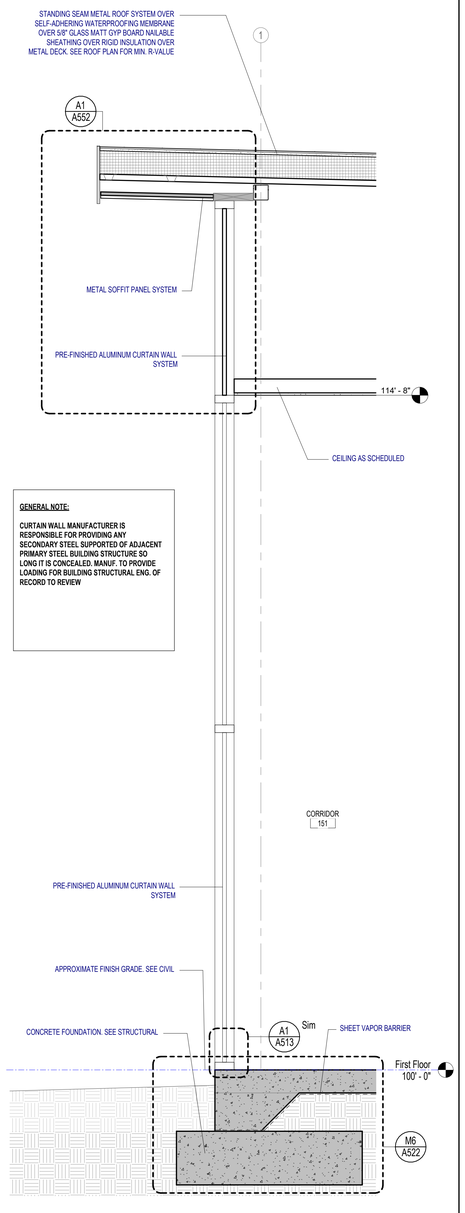
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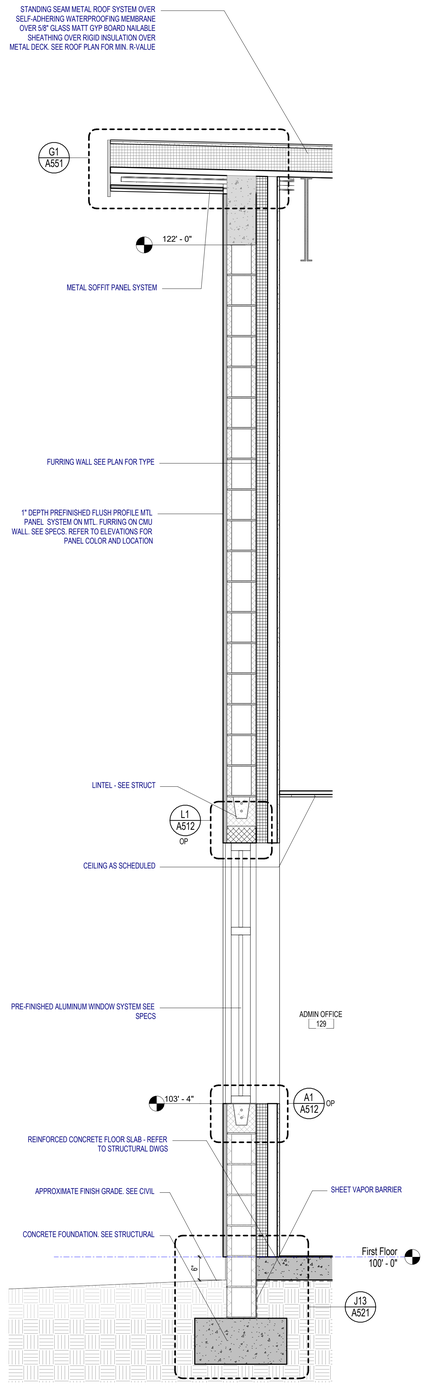
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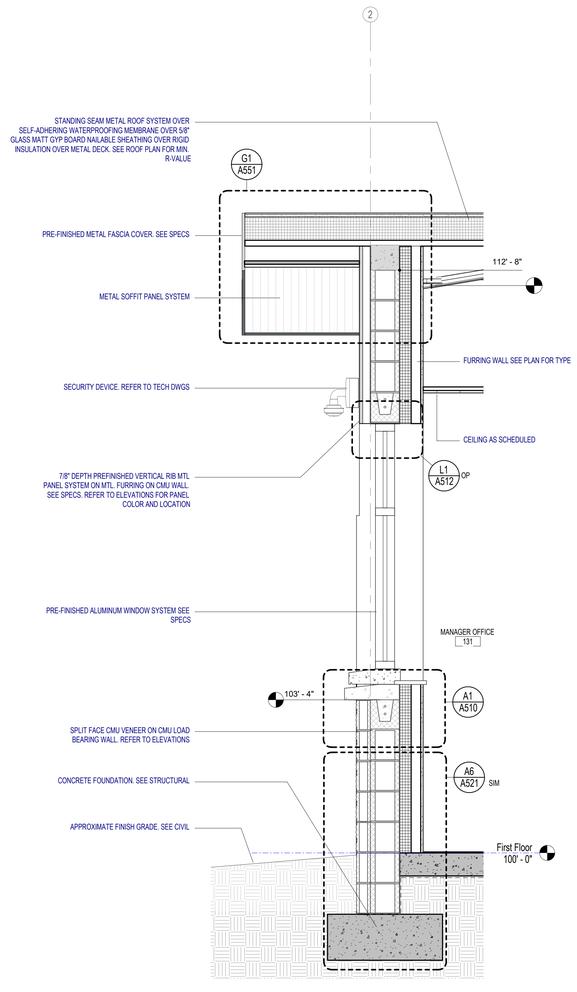
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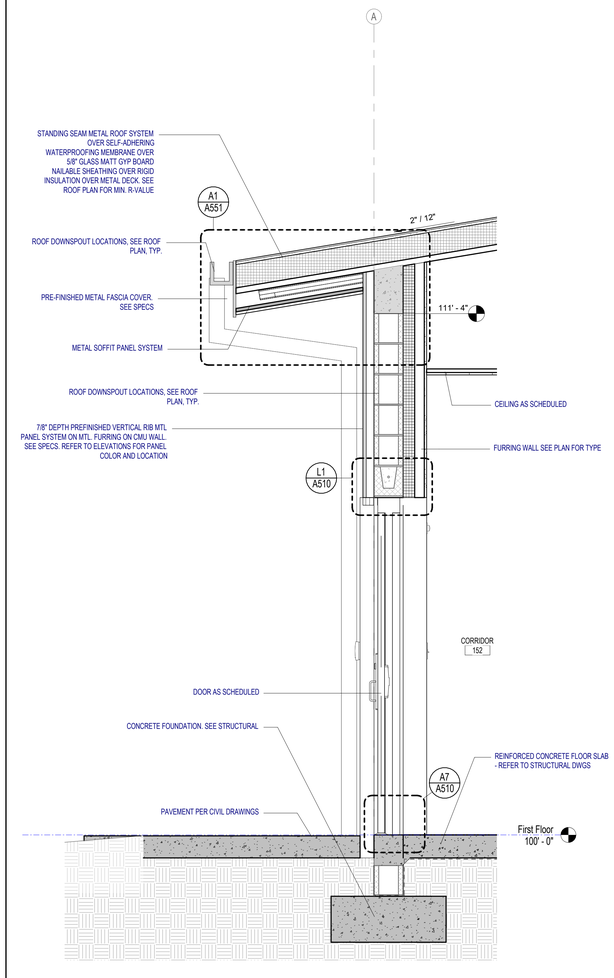
A303
PERMIT/BID DOCUMENTS

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A1	WALL SECTION		A5	WALL SECTION		A8	WALL SECTION		A14	WALL SECTION	
3/4" = 1'-0"			3/4" = 1'-0"			3/4" = 1'-0"			3/4" = 1'-0"		

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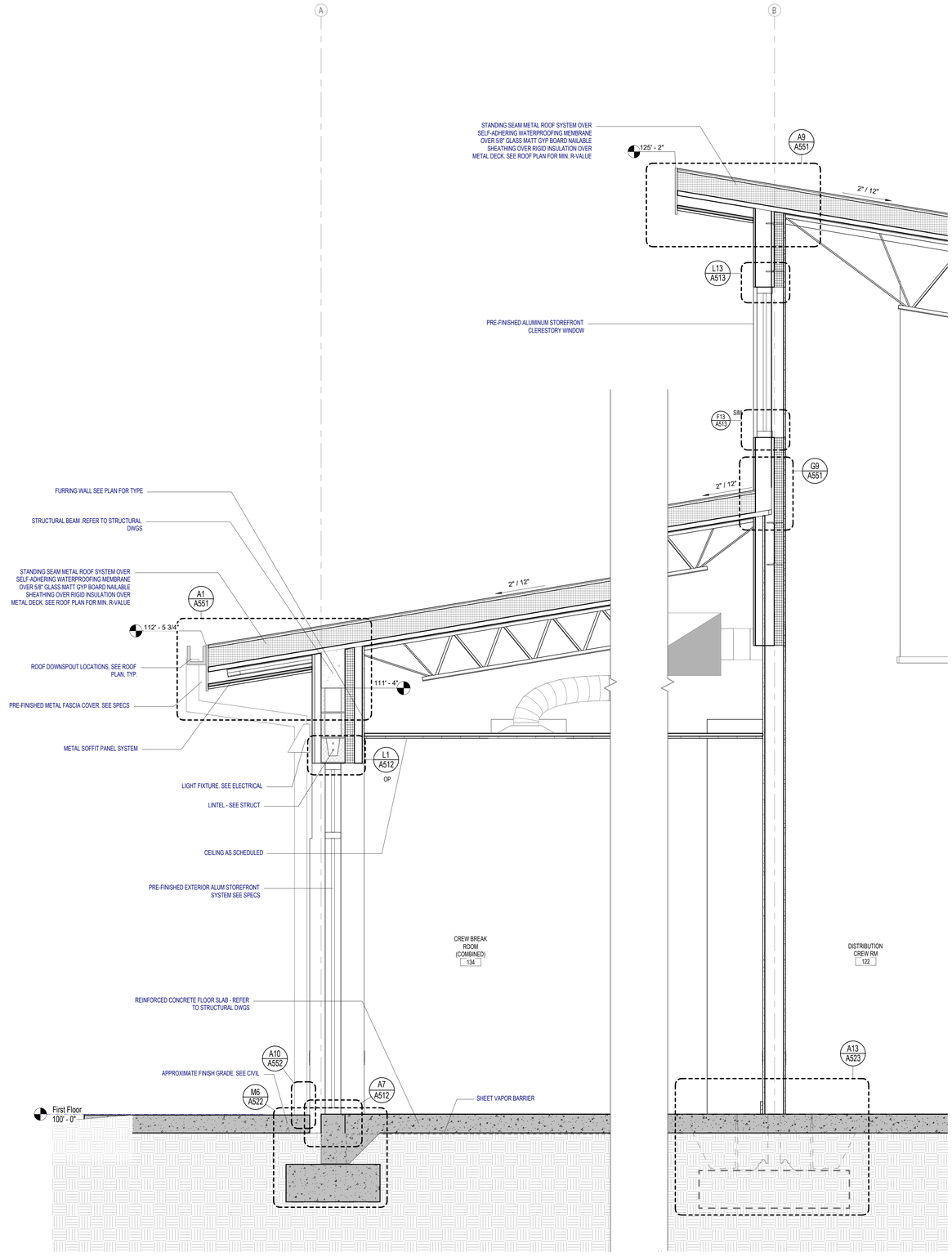
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MARK	DESCRIPTION	DATE

COMM. NO.: 2021815
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WALL SECTIONS

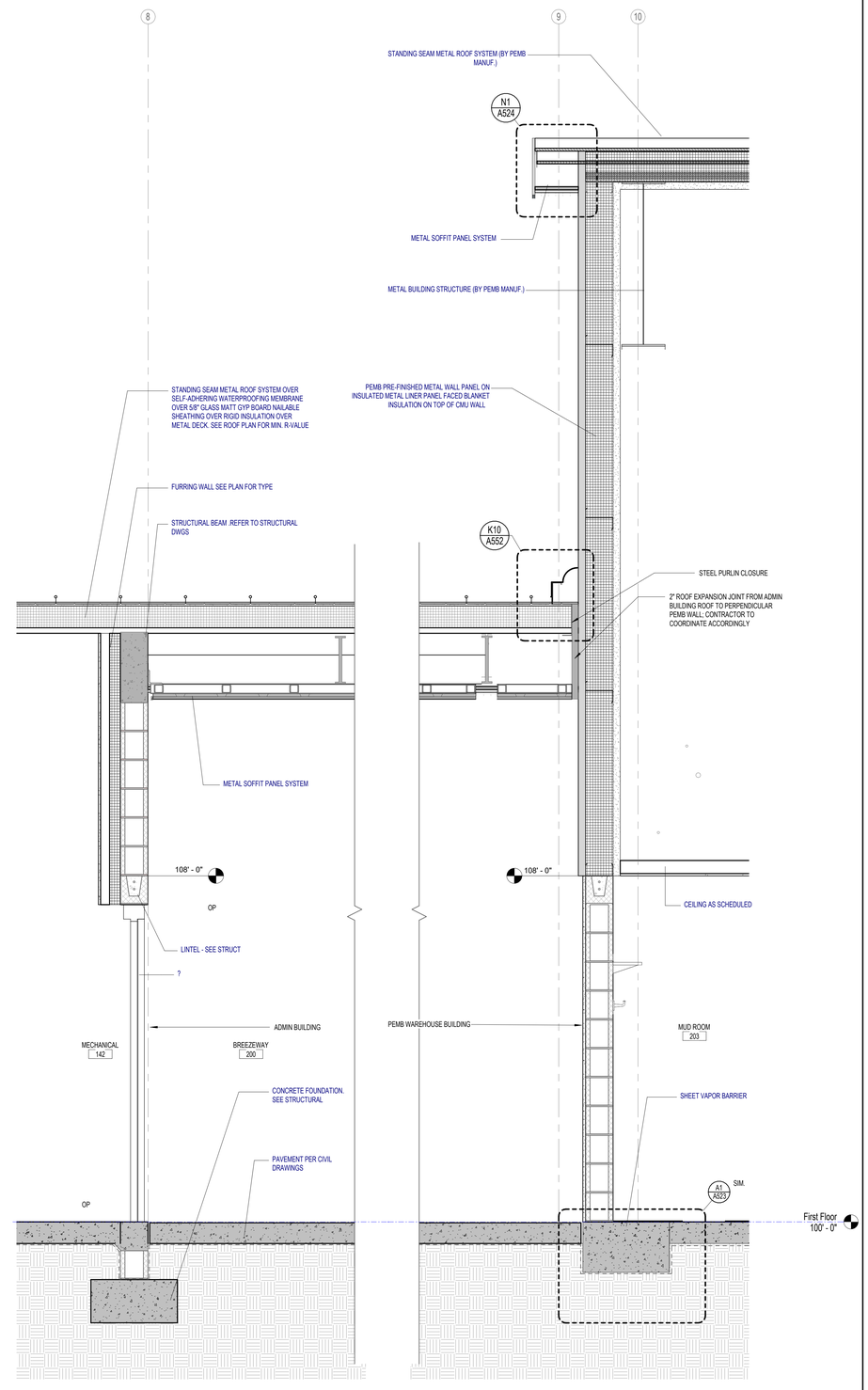
A351
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A1 WALL SECTION

3/4" = 1'-0"



A10 WALL SECTION

3/4" = 1'-0"

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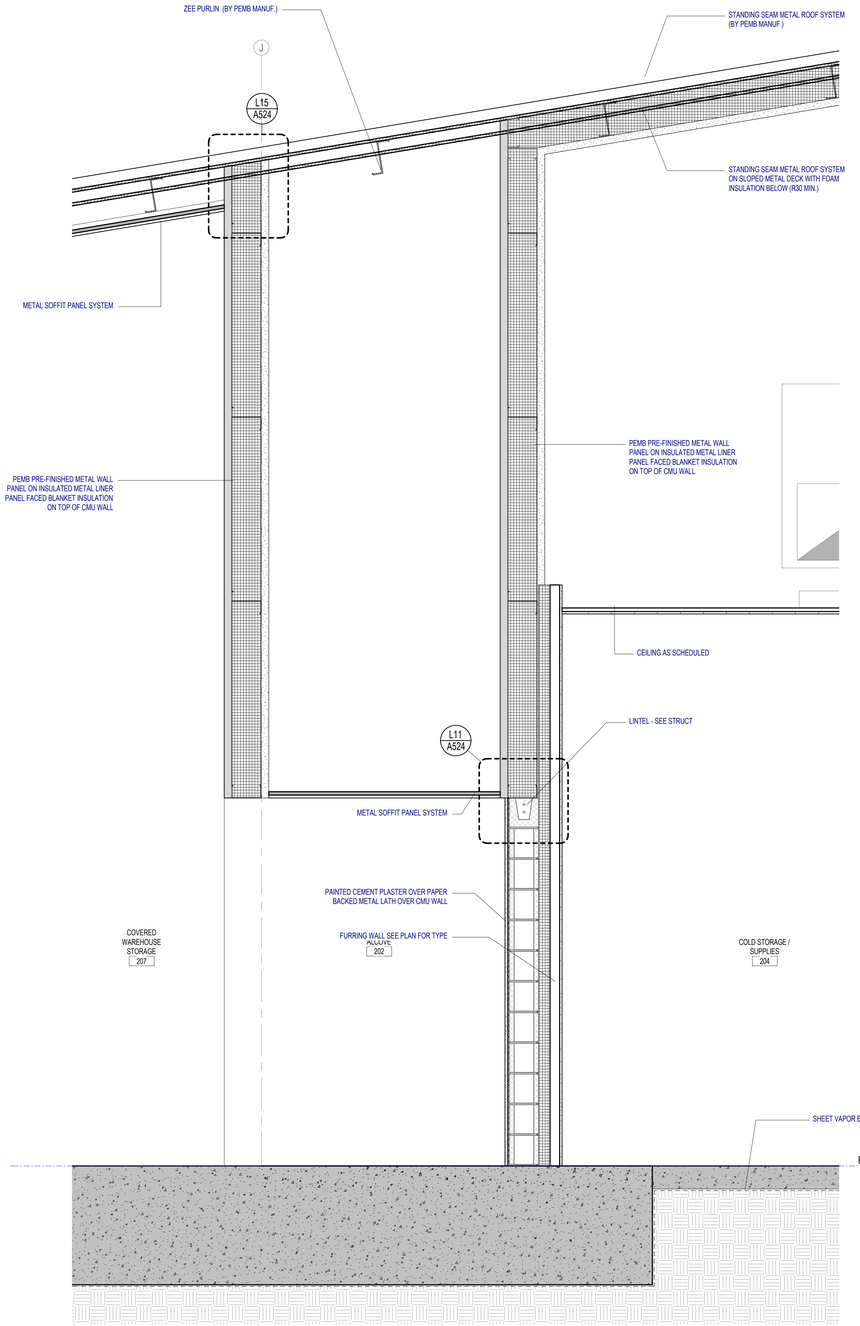
REVISIONS		
MARK	DESCRIPTION	DATE

COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
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WALL SECTIONS

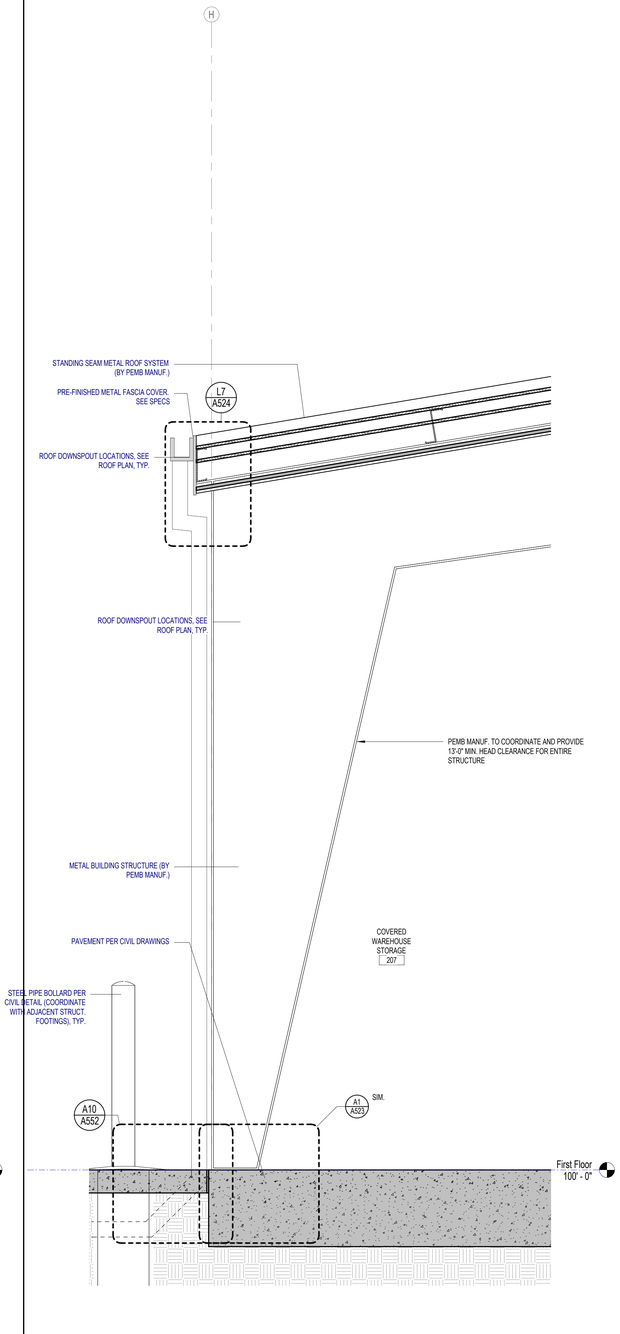
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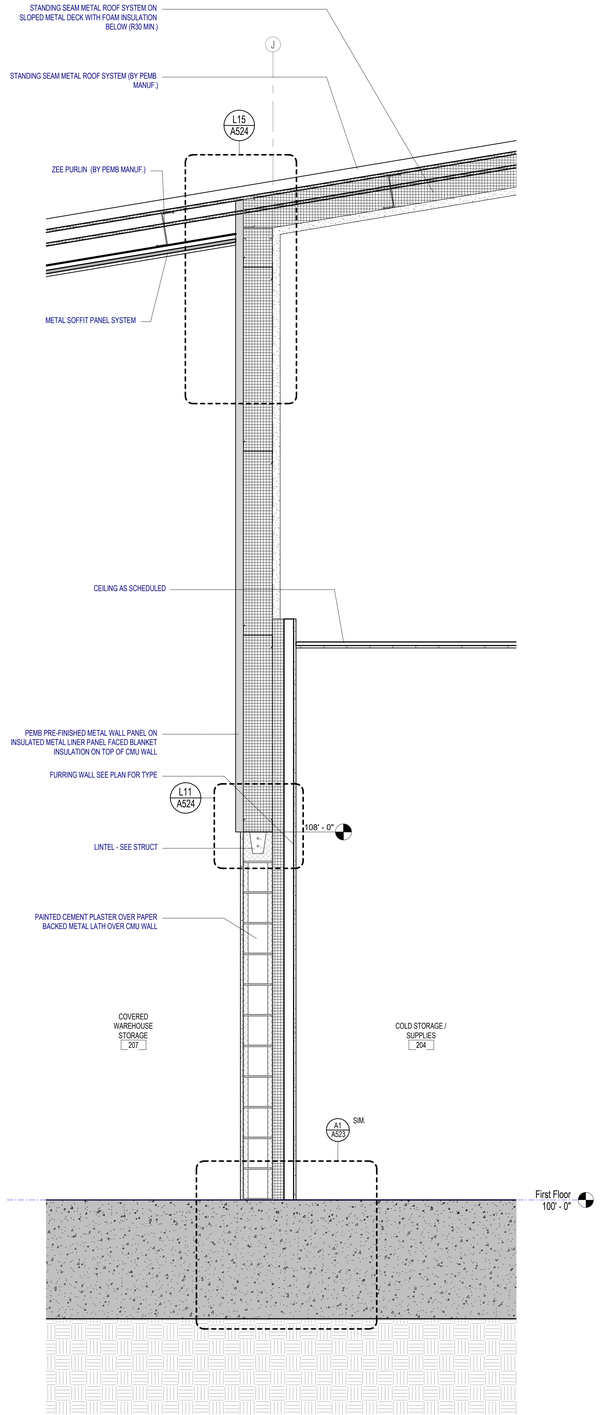
A1 WALL SECTION

3/4" = 1'-0"



A9 WALL SECTION

3/4" = 1'-0"



A14 WALL SECTION

3/4" = 1'-0"

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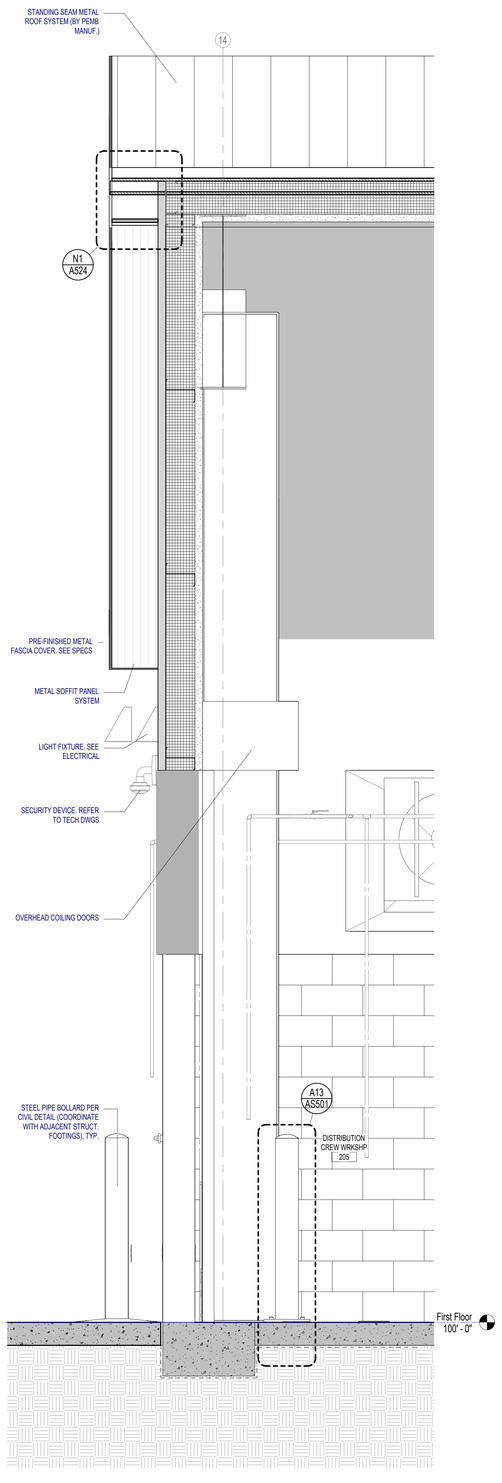
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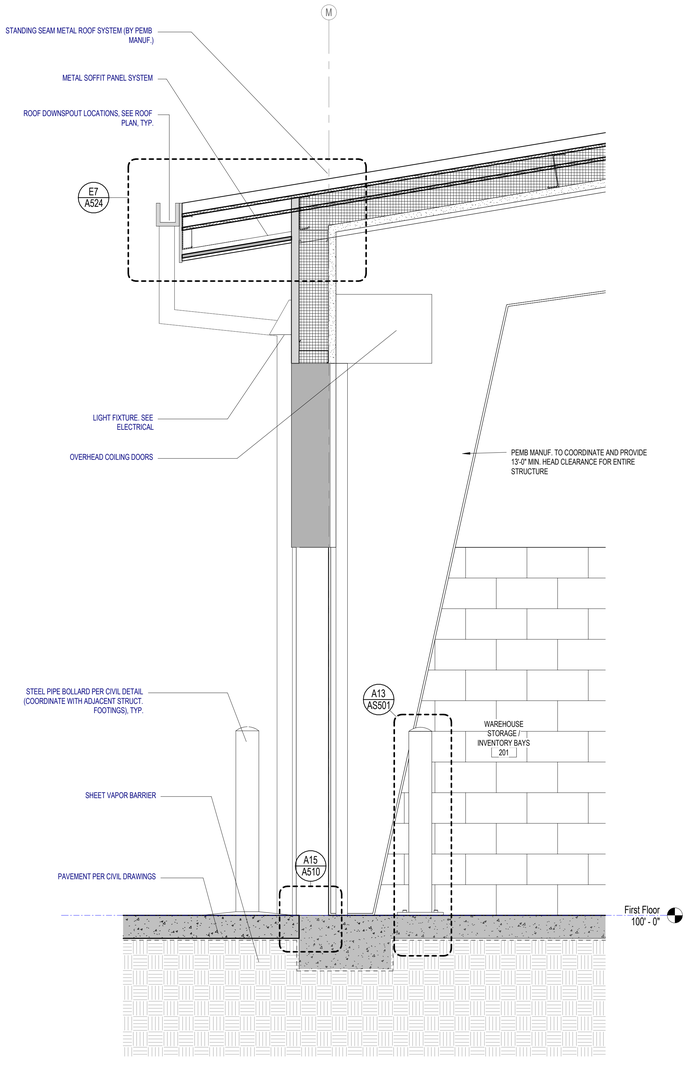
WALL SECTIONS

A353
PERMIT/BID DOCUMENTS



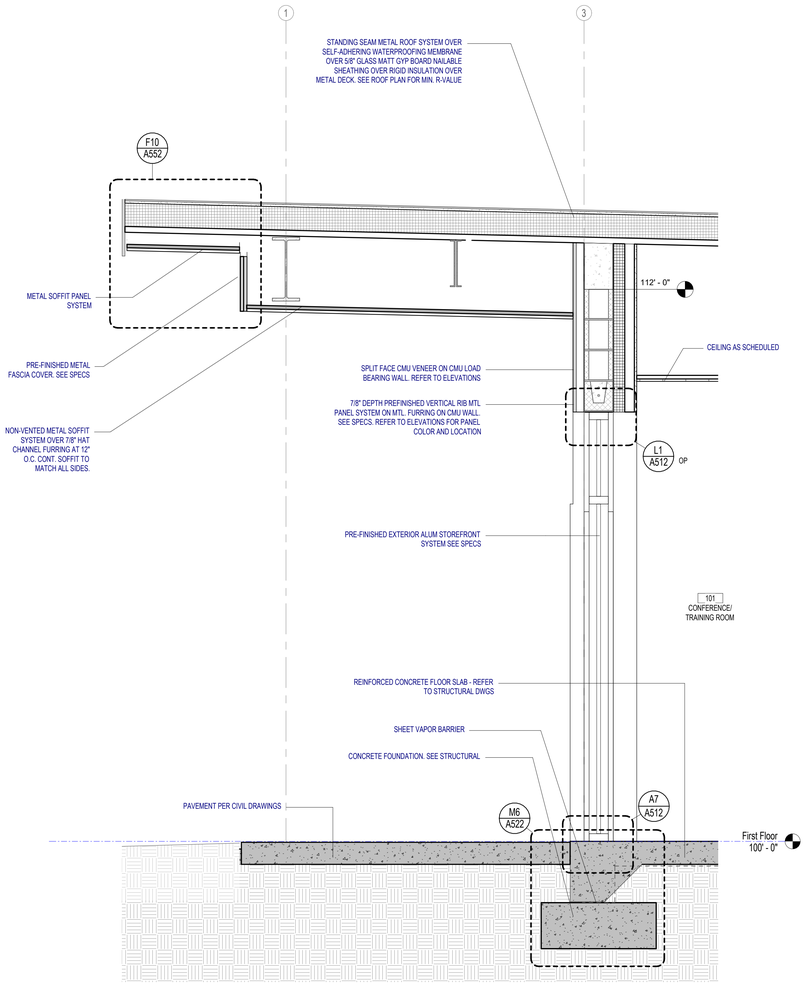
A1 WALL SECTION

3/4" = 1'-0"



A6 WALL SECTION

3/4" = 1'-0"



A11 WALL SECTION

3/4" = 1'-0"

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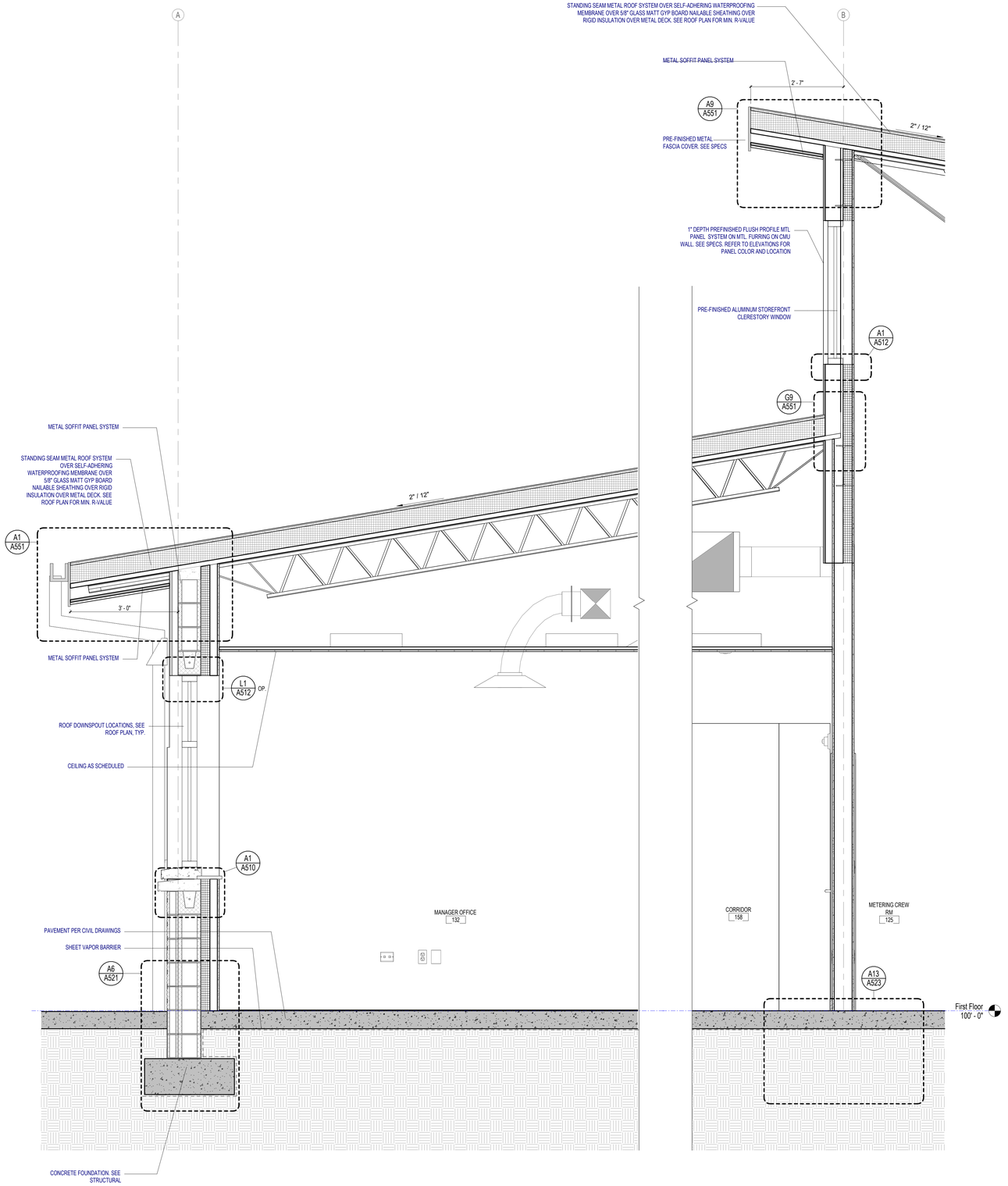
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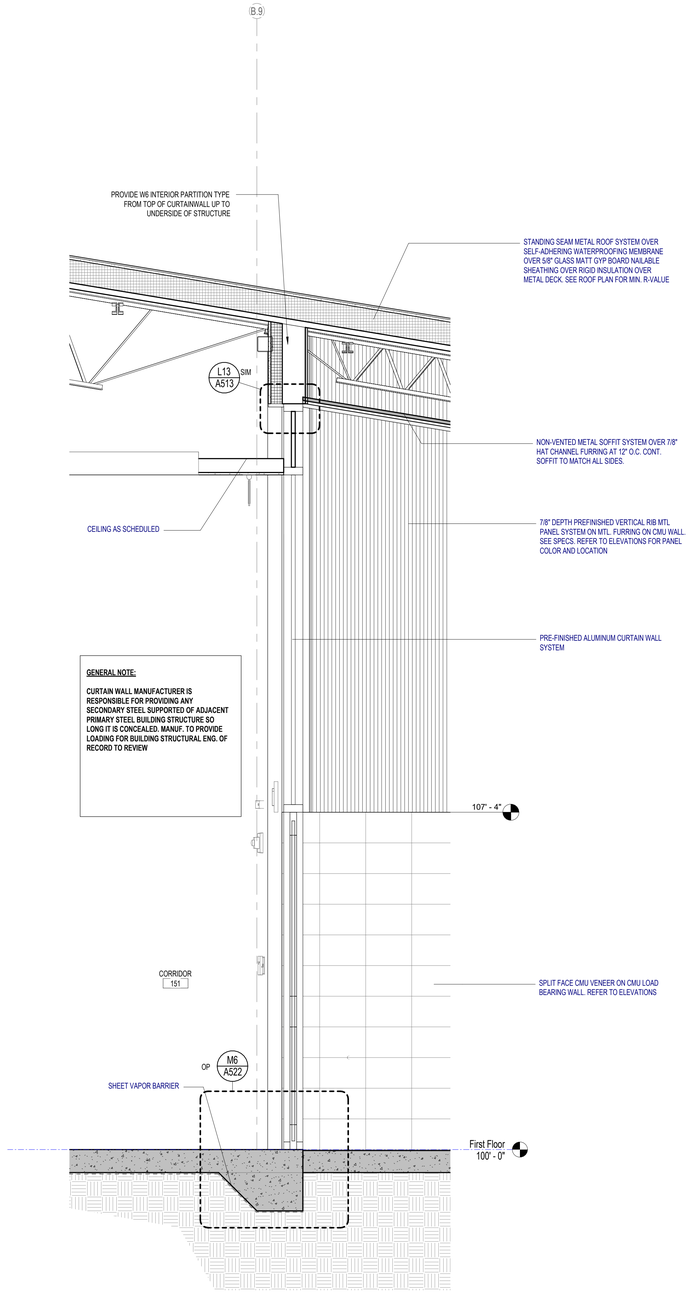
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WALL SECTIONS

A354
PERMIT/BID DOCUMENTS

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A1 — WALL SECTION
3/4" = 1'-0"

A12 — WALL SECTION
3/4" = 1'-0"

CITY OF PORT ORANGE
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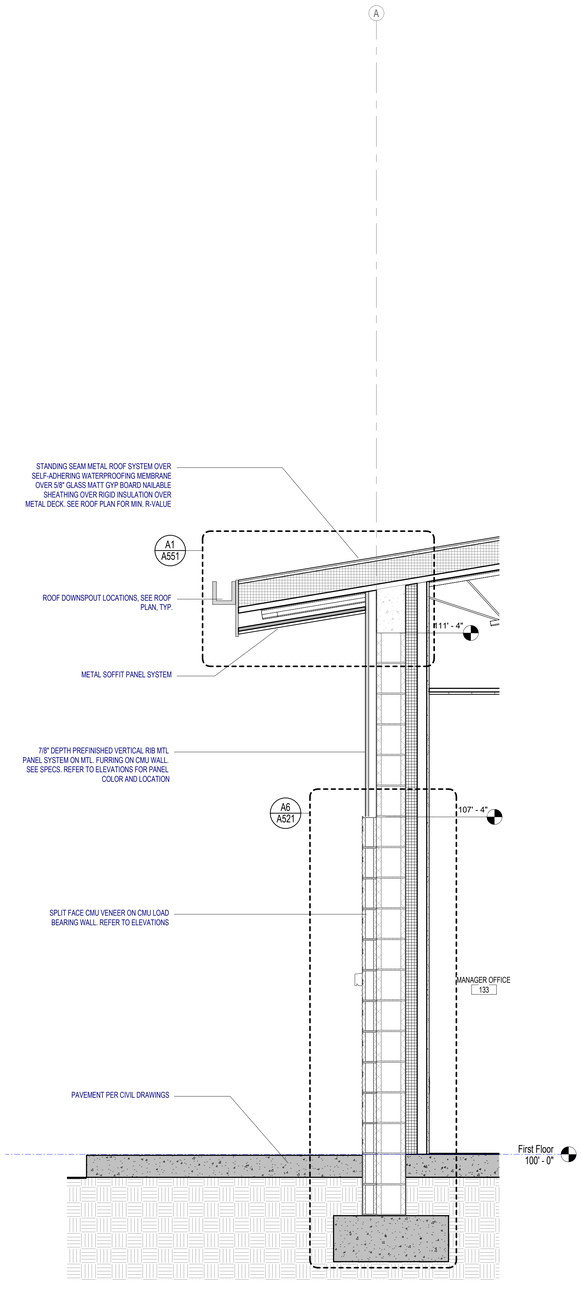
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2	OWNER REVISIONS MEETING	06/22/2023

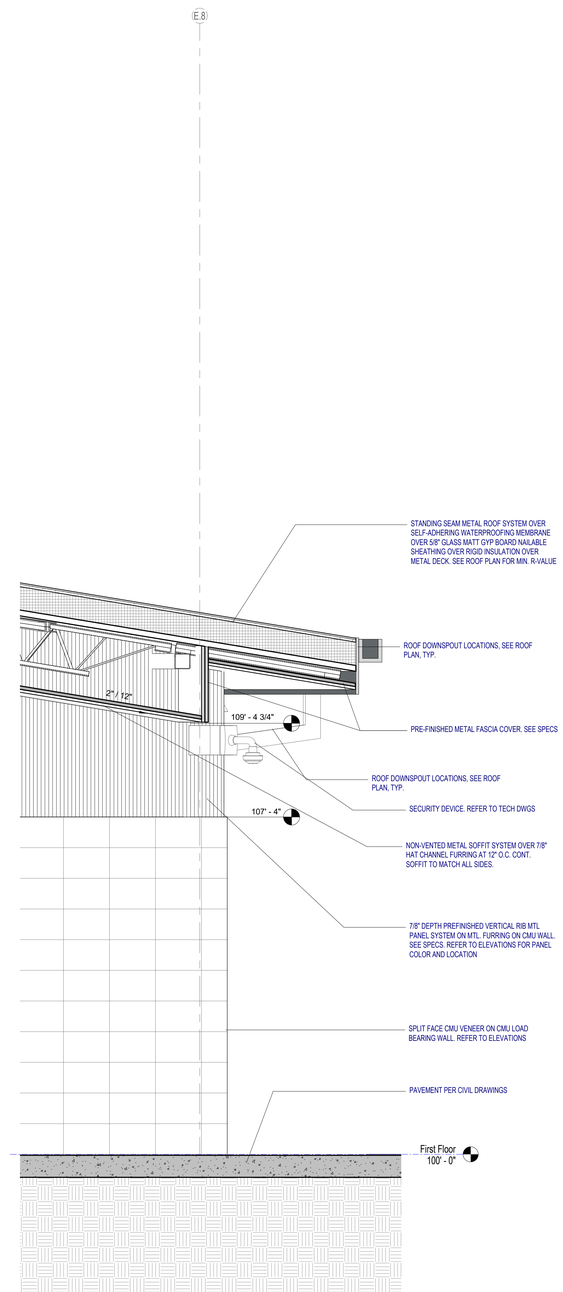
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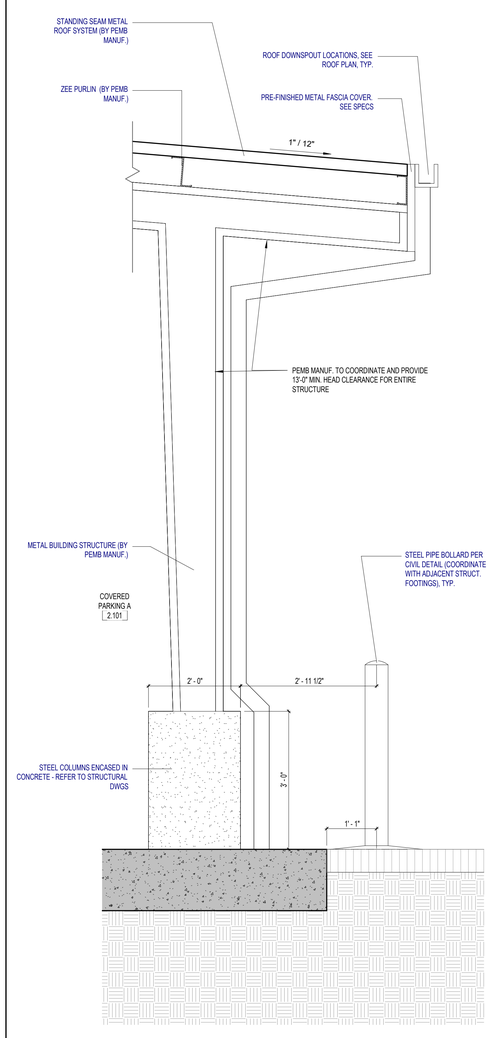
WALL SECTIONS

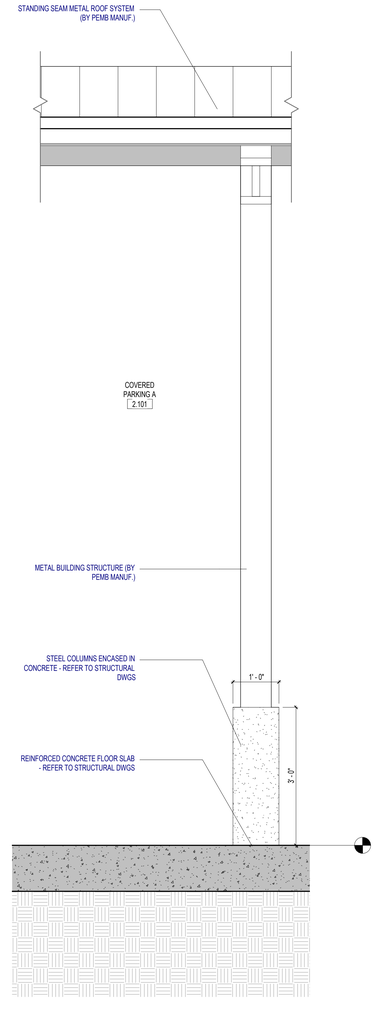
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PERMIT/BID DOCUMENTS

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A1	WALL SECTION	3/4" = 1'-0"
A6	WALL SECTION	3/4" = 1'-0"
A11	COVERED PARKING SECTION	3/4" = 1'-0"
A15	COVERED PARKING SECTION	3/4" = 1'-0"

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

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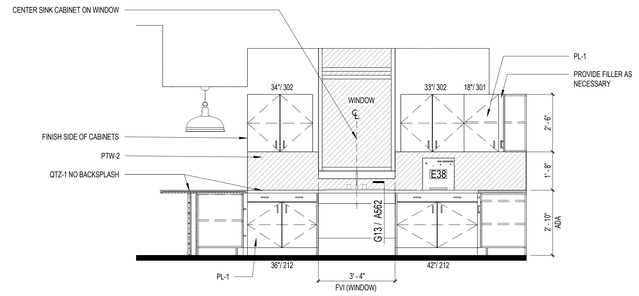
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MARK	DESCRIPTION	DATE

COMM. NO.: 2021815
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WALL SECTIONS

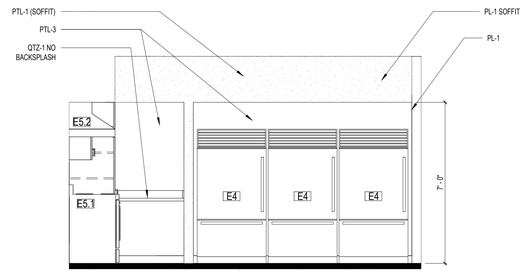
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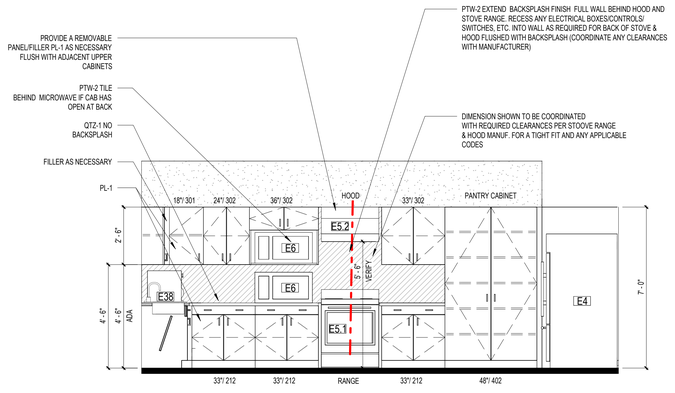
N1 ENLARGED BREAK ROOM ELEVATION

3/8" = 1'-0"



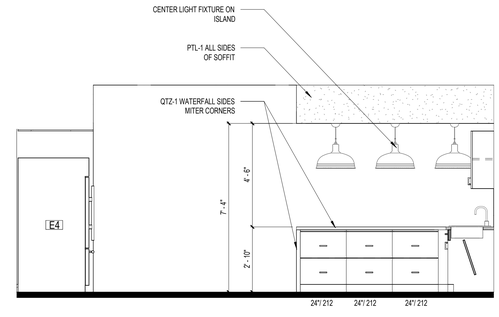
M1 ENLARGED BREAK ROOM ELEVATION

3/8" = 1'-0"



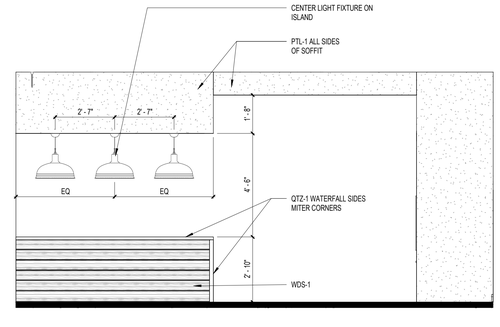
H1 ENLARGED BREAK ROOM ELEVATION

3/8" = 1'-0"



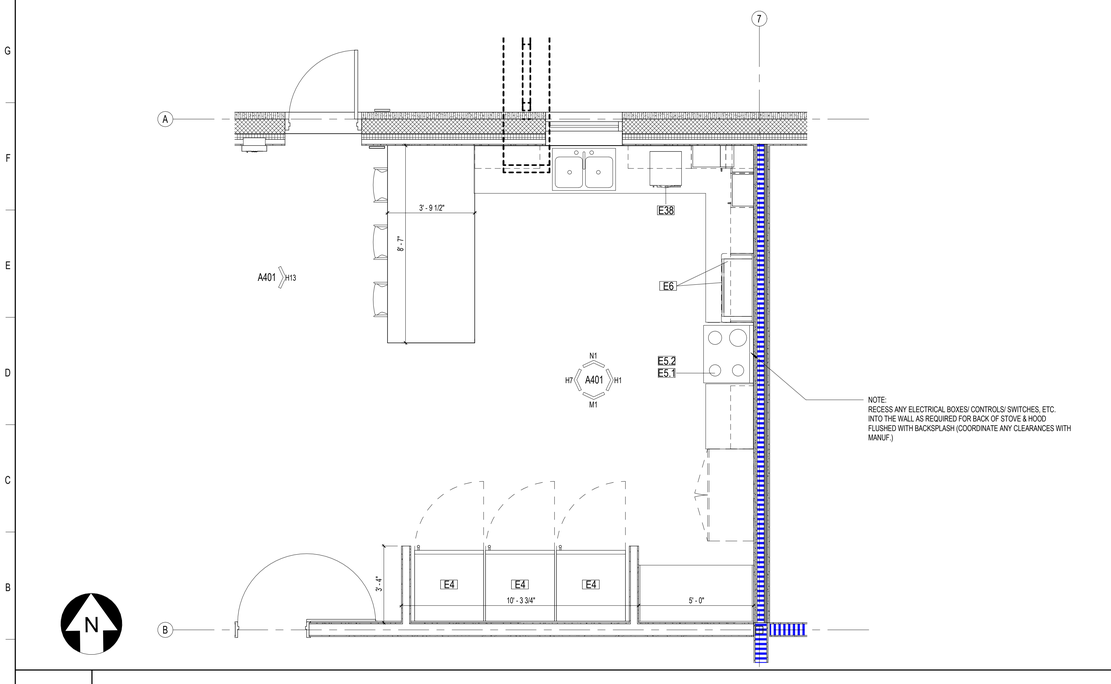
H7 ENLARGED BREAK ROOM ELEVATION

3/8" = 1'-0"



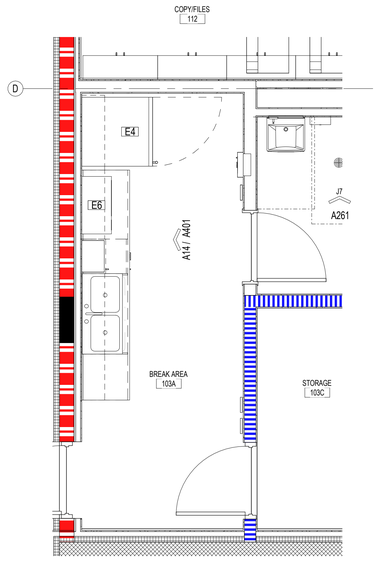
H13 ENLARGED BREAK ROOM ELEVATION

3/8" = 1'-0"



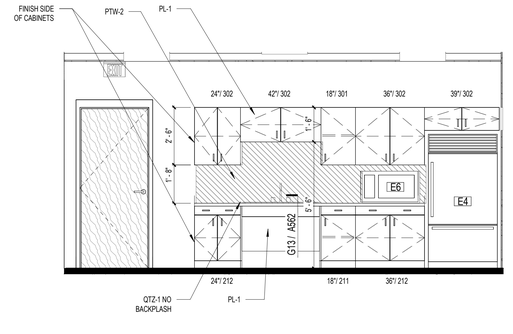
A1 ENLARGED BREAK ROOM FLOOR PLAN

3/8" = 1'-0"



A10 ENLARGED KITCHEN FLOOR PLAN

3/8" = 1'-0"



A14 ENLARGED BREAK ROOM ELEVATION

3/8" = 1'-0"

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
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REVISIONS

MARK	DESCRIPTION	DATE
1	OWNER REVISIONS MEETING	09/22/2023

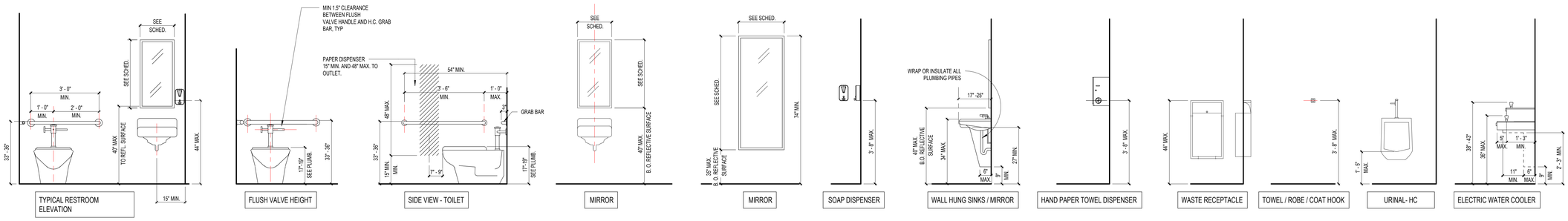
COMM. NO.: 2021815
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ENLARGED FLOOR PLANS AND ELEVATIONS

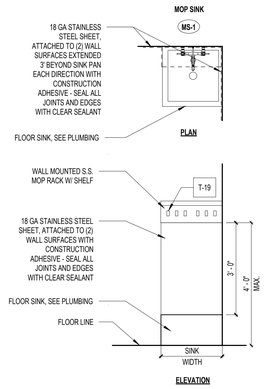
A401
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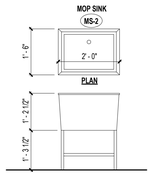
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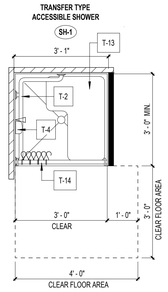
ACCESSORY MOUNTING HEIGHTS

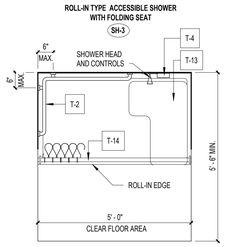


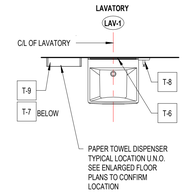
PLUMBING ACCESSORY MOUNTING HEIGHTS

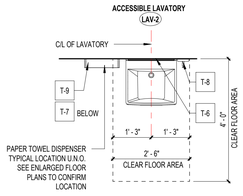


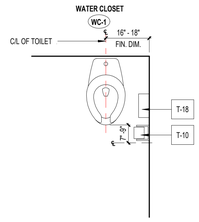


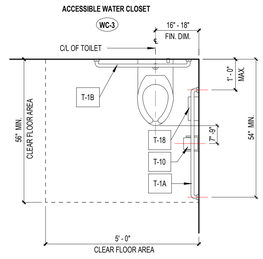


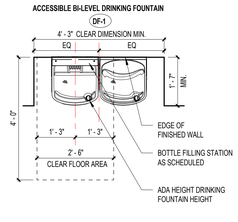








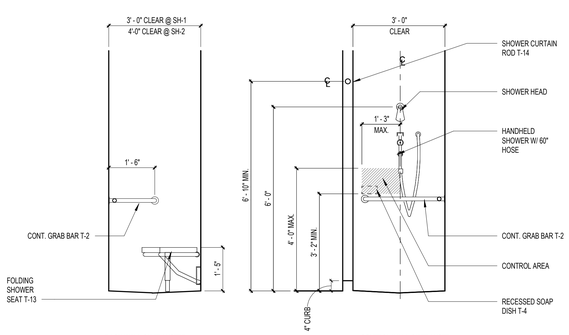




NOTES:

1. ALL TOILET ACCESSORIES SHOWN ARE DIAGRAMMATIC IN NATURE AND NOT INTENDED TO ACCURATELY REFLECT THE SPECIFIED PRODUCT. REFER TO TOILET ACCESSORY SCHEDULE AND SPECIFICATIONS.
2. PLUMBING FIXTURES SHOWN ARE DIAGRAMMATIC IN NATURE AND NOT INTENDED TO ACCURATELY REFLECT THE SPECIFIED PRODUCT. REFER TO PLUMBING FIXTURE SCHEDULE.
3. CONTRACTOR TO NOTIFY ARCHITECT OF ANY DISCREPANCIES IN THE REQUIRED INSTALLATION MOUNTING HEIGHTS AND CLEARANCES PRIOR TO INSTALLATION OF FIXTURES AND/OR ACCESSORIES.
4. PROVIDE ITEM T-3 ROBE HOOK. SHALL BE INSTALLED ON THE BACK OF ALL TOILET ROOM / TOILET STALL DOORS, AND AT EACH SHOWER LOCATION, U.N.O.
5. PROVIDE ITEM T-3A HEAVY DUTY HOOK. SHALL BE INSTALLED AT ALL TOILET ROOMS / STALLS. SEE ADDITIONAL LOCATION IN ENLARGED FLOOR PLANS.
6. ITEM T-9 PAPER TOWEL DISPENSER, TO BE LOCATED AS INDICATED ON FLOOR PLANS.
7. ITEMS LAV-3 & LAV-4 ARE SPECIALTY LAVATORIES, SEE SPECIFICATIONS AND FINISH SCHEDULE FOR MORE INFORMATION.
8. ALL DIMENSIONS ARE TO FINISH.
9. REFER TO 'EQUIPMENT SCHEDULE' ON A170'S SHEET SERIES FOR ADDITIONAL EQUIPMENT REFERENCED IN ANY RESTROOMS, TYP.
10. CONTRACTOR TO PROVIDE ADEQUATE BLOCKING & BACKING SUBSTRATE WITHIN THE WALLS TO SUPPORT ALL PLUMBING FIXTURES & TOILET ACCESSORIES AS REQUIRED, TYP.
11. ITEM T-18 SANITARY NAPKIN RECEPTACLE. SHALL BE INSTALLED IN FEMALE TOILET ROOMS / STALLS ONLY.
12. PROVIDE ITEM T-6 AT ALL LAVATORIES U.N.O.

TYPICAL PLUMBING FIXTURE CONFIGURATION LEGEND



NOTES:

1. ALL HEIGHTS TO MEET FLOORDIA ACCESSIBILITY STANDARD
2. COORDINATE MOUNTING HEIGHTS W/ MEP DRAWINGS

TYPICAL TOILET ACCESSORY SCHEDULE

TAG #	FIXTURE OR ACCESSORY	MANUFACTURER	MODEL #	REMARKS	OFOI	OFCI	CFCI
T-1A	GRAB BAR - 42 INCH	BOBRICK	B-5806				X
T-1B	GRAB BAR - 36 INCH	BOBRICK	B-5806				X
T-2	GRAB BAR - HORIZONTAL COMPARTMENT BAR 24X36 INCH	BOBRICK	B-58616				X
T-3	ROBE/COAT HOOK	BOBRICK	B-76717	60" H. TYPICAL. 44" H. MAX AT HANDYCAP LOCATIONS.			X
T-3A	HEAVY DUTY HOOK	BOBRICK	B-2116	60" H. TYPICAL. 44" H. MAX AT HANDYCAP LOCATIONS.			X
T-4	SOAP DISH	BOBRICK	B-6807				X
T-6	MIRROR - GLASS WITH S.S. FRAME	BOBRICK	B-293 1830	18" X 30" HT.			X
T-7	WASTE RECEPTACLE - SURFACED MOUNTED	BOBRICK	B-277				X
T-8	SOAP DISPENSER	BOBRICK	818615				X
T-9	PAPER TOWEL DISPENSER. DOUBLE ROLL - SURFACE MOUNTED	BOBRICK	B-2974	COORDINATE WITH ELECTRICAL			X
T-10	TOILET PAPER - DOUBLE ROLL - SURFACE MOUNTED	BOBRICK	B-4288				X
T-13	FOLDING SHOWER SEAT	BOBRICK	B-518				X
T-13A	SOLID PHENOLIC FOLDING SEAT	BOBBRICK	B-5193				X
T-14	SHOWER ROD / SHOWER CURTAIN HOOK / SHOWER CURTAIN	BOBRICK	B-4207 / 204-1 / 204-2				X
T-18	SANITARY NAPKIN RECEPTACLE	BOBRICK	B-254				
T-19	SHELF, RAG, & HOOK BROOM HOLDER	BOBRICK	B-239 X 34				X
T-19A	S.S. SHELF UNIT	BOBRICK	B-295	24" WIDE, MOUNTED AT 72" A.F.F / (2) T-3A UNDERNEATH EACH SHELF			X

SHOWER ADA ELEVATIONS

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REVISIONS

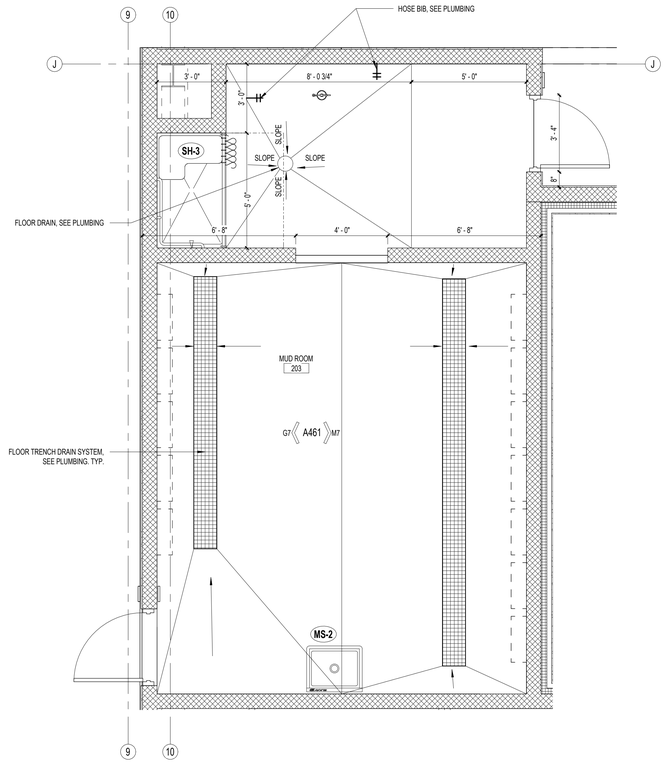
MARK	DESCRIPTION	DATE

COMM. NO.: 2021815
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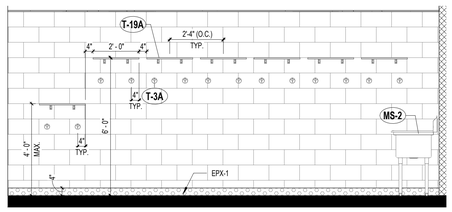
TYPICAL TOILET FIXTURE & ACCESSORY SCHEDULE

A460
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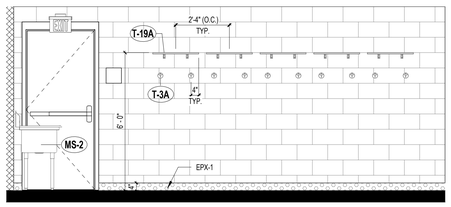
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G1	ENLARGE- MUD ROOM AT WAREHOUSE
3/8" = 1'-0"	



M7	ENLARGED MUD ROOM ELEVATION
3/8" = 1'-0"	

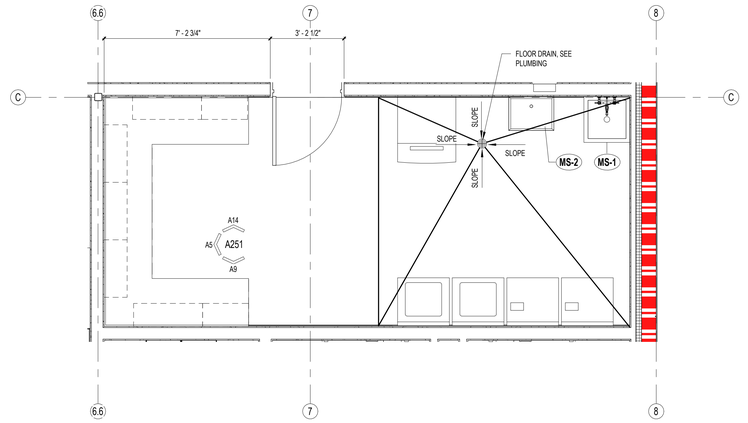


G7	ENLARGED MUD ROOM ELEVATION
3/8" = 1'-0"	

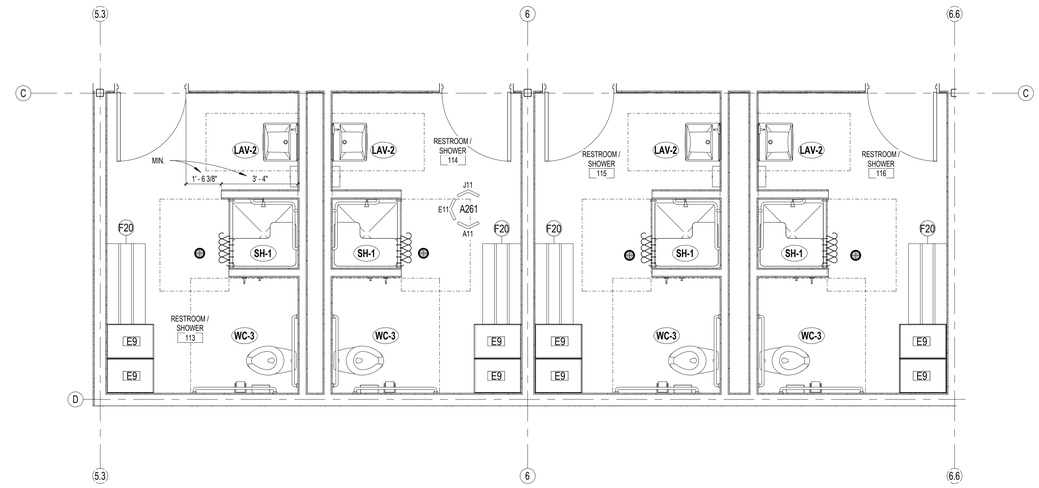
PLUMBING FIXTURE GROUP	
TYPE MARK	COUNT
DF-1	2
LAV-2	7
MS-1	1
MS-2	3
SH-1	4
SH-3	1
WC-3	7

GENERAL NOTES:

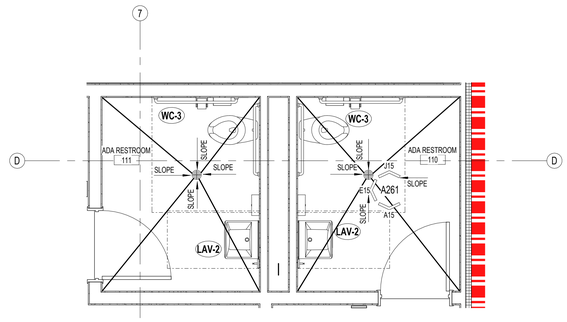
1. FOR ADDITIONAL ACCESSORIES INFORMATION, SEE SHEET A460



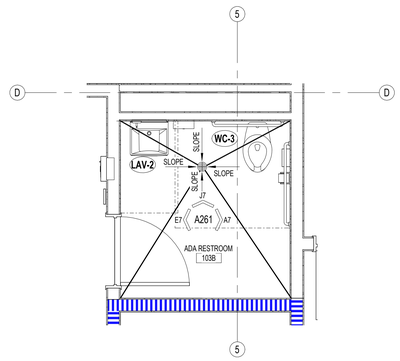
J11	ENLARGED FLOOR PLAN LAUNDRY
3/8" = 1'-0"	



A1	ENLARGED FLOOR PLAN UNISEX RESTROOMS
3/8" = 1'-0"	



A10	ENLARGED FLOOR PLAN UNISEX RESTROOMS
3/8" = 1'-0"	



A15	ENLARGED FLOOR PLAN UNISEX RESTROOMS
3/8" = 1'-0"	

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REVISIONS		
MARK	DESCRIPTION	DATE
1	SITE PERMIT COORDINATION	01/XX/2023
2	OWNER REVISIONS MEETING	06/22/2023

COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
DRAWN BY: IMR/MD

ENLARGED FLOOR PLANS - TOILET/MUD ROOM

A461
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DOOR SCHEDULE

DOOR NUMBER	ROOM NAME	DOOR PANEL LEAF					DOOR FRAME		DOOR / FRAME RATING	STC RATING	DETAILS			COMMENTS
		HEIGHT	WIDTH	TYPE	MATERIAL	GLAZING	TYPE	MATERIAL			HEAD	JAMB	SILL	
101A	CONFERENCE/ TRAINING ROOM	7' - 0"	3' - 0"	G	WD		3	HM	45 MINUTE		H1/A511	E1/A511	A1/A511	
101B	CONFERENCE/ TRAINING ROOM	7' - 0"	3' - 0"	G	WD		3	HM	45 MINUTE		H1/A511	E1/A511	A1/A511	
101C	CONFERENCE/ TRAINING ROOM	10' - 0"	39' - 3"	OP (F10/A501)	SEE SPECS			SEE SPECS			A11/A563	J1/A563	A11/A563	OPERABLE WALL PANEL
102	STORAGE	7' - 0"	6' - 0"	F(2)	WD		4	HM	SMOKE		H1/A511	E1/A511	A1/A511	
103A	BREAK AREA	7' - 0"	3' - 0"	F	WD		3	HM	45 MINUTE		L1/A511	L51/A511	A1/A511	
103B	ADA RESTROOM	7' - 0"	3' - 0"	F	WD		1	HM			H1/A511	F1/A512	A1/A512	
103C	STORAGE	7' - 0"	3' - 0"	F	WD		3	HM	SMOKE		H1/A511	E1/A511	A1/A511	
104	OFFICE	7' - 0"	3' - 0"	N	WD		1	HM			H1/A511	E1/A511	A1/A511	
105	OFFICE	7' - 0"	3' - 0"	N	WD		1	HM			H1/A511	E1/A511	A1/A511	
106	OFFICE	7' - 0"	3' - 0"	N	WD		1	HM			H1/A511	E1/A511	A1/A511	
107	WAREHOUSE/ STOREKEEPER	7' - 0"	3' - 0"	N	WD		1	HM			H1/A511	E1/A511	A1/A511	
108	VENDOR ENTRY	7' - 0"	3' - 0"	G2 (2)	WD		1	HM			H1/A511	E1/A511	A1/A511	
109A	VENDOR ENTRY	7' - 4"	3' - 0"	G2	AL		SEE ELEV.	AL			SEE ELEV	SEE ELEV.	SEE ELEV.	
109B	VENDOR ENTRY	7' - 0"	3' - 0"	G2	HM		3	HM	45 MINUTE		L7/A510	F7/A510	A7/A510	
110	ADA RESTROOM	7' - 0"	3' - 0"	F	WD		1	HM			H1/A511	E1/A511	A1/A511	
111	ADA RESTROOM	7' - 0"	3' - 0"	F	WD		1	HM			H1/A511	E1/A511	A1/A511	
113	RESTROOM / SHOWER	7' - 0"	3' - 0"	F	WD		1	HM			H1/A511	E1/A511	A1/A512	
114	RESTROOM / SHOWER	7' - 0"	3' - 0"	F	WD		1	HM			H1/A511	E1/A511	A1/A512	
115	RESTROOM / SHOWER	7' - 0"	3' - 0"	F	WD		1	HM			H1/A511	E1/A511	A1/A512	
116	RESTROOM / SHOWER	7' - 0"	3' - 0"	F	WD		1	HM			H1/A511	E1/A511	A1/A512	
117	LAUNDRY / JANITOR	7' - 0"	3' - 0"	G	WD		1	HM			H1/A511	E1/A511	A1/A511	
118	CREW CHIEF	7' - 0"	3' - 0"	N	WD		1	HM			H1/A511	E1/A511	A1/A511	
119A	SEWER COLLECTIONS CREW RM	7' - 0"	3' - 0"	G	WD		1	HM			H1/A511	E1/A511	A1/A511	
119B	SEWER COLLECTIONS CREW RM	7' - 0"	3' - 0"	G	WD		1	HM			H1/A511	E1/A511	A1/A511	
120	SUPERVISOR OFFICE	7' - 0"	3' - 0"	N	WD		1	HM			H1/A511	E1/A511	A1/A511	
121	CREW CHIEF	7' - 0"	3' - 0"	N	WD		1	HM			H1/A511	E1/A511	A1/A511	
122A	DISTRIBUTION CREW RM	7' - 0"	3' - 0"	G	WD		1	HM			H1/A511	E1/A511	A1/A511	
122B	DISTRIBUTION CREW RM	7' - 0"	3' - 0"	G	WD		1	HM			H1/A511	E1/A511	A1/A511	
123	SUPERVISOR OFFICE	7' - 0"	3' - 0"	N	WD		1	HM			H1/A511	E1/A511	A1/A511	
124	CREW CHIEF	7' - 0"	3' - 0"	N	WD		1	HM			H1/A511	E1/A511	A1/A511	
125A	METERING CREW RM	7' - 0"	3' - 0"	G	WD		1	HM			H1/A511	E1/A511	A1/A511	
125B	METERING CREW RM	7' - 0"	3' - 0"	G	WD		1	HM			H1/A511	E1/A511	A1/A511	
126	SUPERVISOR OFFICE	7' - 0"	3' - 0"	N	WD		1	HM			H1/A511	E1/A511	A1/A511	
127	ADMIN OFFICE	7' - 0"	3' - 0"	N	WD		1	HM			H1/A511	E1/A511	A1/A511	
128	ADMIN OFFICE	7' - 0"	3' - 0"	N	WD		1	HM			H1/A511	E1/A511	A1/A511	
129	ADMIN OFFICE	7' - 0"	3' - 0"	N	WD		1	HM			H1/A511	E1/A511	A1/A511	
130	MANAGER OFFICE	7' - 0"	3' - 0"	N	WD		1	HM			H1/A511	E1/A511	A1/A511	
131	MANAGER OFFICE	7' - 0"	3' - 0"	N	WD		1	HM			H1/A511	E1/A511	A1/A511	
132	MANAGER OFFICE	7' - 0"	3' - 0"	N	WD		1	HM			H1/A511	E1/A511	A1/A511	
133	MANAGER OFFICE	7' - 0"	3' - 0"	N	WD		1	HM			H1/A511	E1/A511	A1/A511	
134A	CREW BREAK ROOM (COMBINED)	7' - 0"	3' - 0"	G2	HM		3	HM			M14/A511	J14/A511	A7/A510	
134B	CREW BREAK ROOM (COMBINED)	7' - 0"	3' - 0"	G2	HM		3	HM			M14/A511	J14/A511	A7/A510	
140	BREEZEWAY	7' - 0"	6' - 0"	F(2)	HM		4	HM	45 MINUTE		L7/A510	F7/A510	A7/A510	
141	IT TELECOMM	7' - 0"	3' - 0"	F	HM		3	HM	45 MINUTE		L7/A510	F7/A510	A7/A510	
142	BREEZEWAY	7' - 0"	6' - 0"	F(2)	HM		4	HM	45 MINUTE		L7/A510	F7/A510	A7/A510	
151	CORRIDOR	7' - 4"	3' - 0"	G2	AL		SEE ELEV.	AL			SEE ELEV	SEE ELEV.	SEE ELEV.	
152	CORRIDOR	7' - 0"	3' - 0"	G2	HM		3	HM			M14/A511	J14/A511	A7/A510	
154	CORRIDOR	7' - 0"	3' - 0"	G2	HM		3	HM	45 MINUTE		L7/A510	F7/A510	A7/A510	
201A	WAREHOUSE STORAGE / INVENTORY BAYS	12' - 0"	14' - 0"	OHC-1	HM		N/A	HM			K13/A510	F9/A510	A15/A510	
201B	WAREHOUSE STORAGE / INVENTORY BAYS	7' - 0"	3' - 0"	G2	HM		3	HM			M14/A511	J14/A511	A7/A510	
201C	WAREHOUSE STORAGE / INVENTORY BAYS	12' - 0"	14' - 0"	OHC-1	HM		N/A	HM			K13/A510	F9/A510	A15/A510	
201D	WAREHOUSE STORAGE / INVENTORY BAYS	12' - 0"	14' - 0"	OHC-1	HM		N/A	HM			K13/A510	F9/A510	A15/A510	
201E	WAREHOUSE STORAGE / INVENTORY BAYS	7' - 0"	3' - 0"	G	HM		3	HM			M14/A511	J14/A511	A7/A510	
201F	WAREHOUSE STORAGE / INVENTORY BAYS	7' - 0"	3' - 0"	G	HM		3	HM			M14/A511	J14/A511	A7/A510	
203A	ALCOVE	7' - 0"	3' - 0"	F	HM		3	HM			M14/A511	J14/A511	A7/A510	
203B	BREEZEWAY	7' - 0"	3' - 0"	F	HM		3	HM			M14/A511	J14/A511	A7/A510	
204A	COLD STORAGE / SUPPLIES	7' - 0"	3' - 0"	F	HM		3	HM			E14/A511	A14/A511	A1/A511	
204B	COLD STORAGE / SUPPLIES	7' - 0"	3' - 0"	F	HM		3	HM			M14/A511	J14/A511	A7/A510	
204C	WAREHOUSE STORAGE / INVENTORY BAYS	8' - 0"	8' - 0"	OHC-2	HM		N/A	HM			K9/A510	F9/A510 SIM.	A15/A510	
204D	COLD STORAGE / SUPPLIES	8' - 0"	8' - 0"	OHC-1	HM		N/A	HM			K13/A510	F9/A510	A15/A510	
205A	DISTRIBUTION CREW WRKSHP	7' - 0"	3' - 0"	F	HM		3	HM			M14/A511	J14/A511	A7/A510	
205B	DISTRIBUTION CREW WRKSHP	12' - 0"	14' - 0"	OHC-1	HM		N/A	HM			K13/A510	F9/A510	A15/A510	
205C	DISTRIBUTION CREW WRKSHP	7' - 0"	3' - 0"	G	HM		3	HM			E14/A511	A14/A511	A1/A511	
206A	SEWER COLLECT / METERING CREW WRKSHP	12' - 0"	14' - 0"	OHC-1	HM		N/A	HM			K13/A510	F9/A510	A15/A510	
206B	SEWER COLLECT / METERING CREW WRKSHP	7' - 0"	3' - 0"	G2	HM		3	HM			M14/A511	J14/A511	A7/A510	
206C	SEWER COLLECT / METERING CREW WRKSHP	12' - 0"	14' - 0"	OHC-1	HM		N/A	HM			K13/A510	F9/A510	A15/A510	

GENERAL NOTES - DOOR SCHEDULE

A. FOR DOOR HARDWARE SET NUMBERS, REFER TO SPECIFICATION SECTION: TYP.
B. CONTRACTOR TO PREPARE DOOR FRAMES TO RECEIVE CONDUIT FOR ELECTRONIC STRIKES TYPICAL AT ALL DOOR JAMBS (TO EACH SIDE OF DOORS, ALSO COORDINATE WITH ELECTRICAL)
C. ALL GLAZING SHALL BE 1/4" TEMPERED CLEAR GLAZING (GT) UNLESS NOTED OTHERWISE, SEE SPECS
D. ALL EXTERIOR COMPONENTS INCLUDING EXTERIOR DOORS & EXTERIOR GLAZING SHALL MEET "WIND LOADING & IMPACT CODE COMPLIANCE" NOTES (SEE SHEET A201 NOTES)
E. ALL GLAZING AT FIRE RATED DOORS SHALL BE FIRE RATED (RATING TO MATCH PARTITION) , SEE SPECS
F. PROVIDE GALVANIZED DOOR & FRAME: TYP. AT ALL EXTERIOR DOORS AND INTERIOR DOORS WHERE WATER MAY OCCUR
G. PROVIDE INSULATED DOORS; TYP. AT ALL EXTERIOR DOORS
H. PROVIDE TAMPER PROOF HINGES; TYP. AT ALL EXTERIOR DOORS
I. PROVIDE WEATHER SEALS AROUND DOOR PERIMETER; TYP. AT ALL EXTERIOR DOORS
J. PROVIDE THRESHOLD; TYP. AT ALL EXTERIOR DOORS
K. OVERHEAD DOOR OVERALL HEIGHT MUST INCLUDE OPENING HEIGHT PLUS DISTANCE TO HOUSING/OPERATOR LOCATION ABOVE CEILING
L. PROVIDE 1 INCH UNDERCUT DOOR WHERE REQUIRED BY MECHANICAL. (COORDINATE WITH MECHANICAL DWG'S, TYP.)
M. INTERIOR WOOD DOOR FINISH TO BE PER SHEET A160 'ID-WOOD SCHEDULE'; TYP.
N. INTERIOR DOOR FRAME / TRIM TO BE PAINTED PER SHEET A160 'ID-PAINT SCHEDULE'; TYP.

DOOR SCHEDULE COMMENTS:

1. SEE STOREFRONT ELEVATIONS
2. DOOR CLOSER, ALSO COORDINATE WITH DOOR HARDWARE SPECIFICATIONS
3. DOOR GASKETING, ALSO COORDINATE WITH DOOR HARDWARE SPECIFICATIONS
4. RAIN GUARD (EXTERIOR DOORS), ALSO COORDINATE WITH DOOR HARDWARE SPECIFICATIONS
5. DOOR PROVIDED WITH AN ELECTRIC COMPONENT (I.E., POWERED EXIT DEVICE / CLOSER, ELECTRIC HINGE / STRIKE, CARD READER, ETC.); COORDINATE WITH ELECTRICAL AND DOOR HARDWARE SPECIFICATIONS)

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

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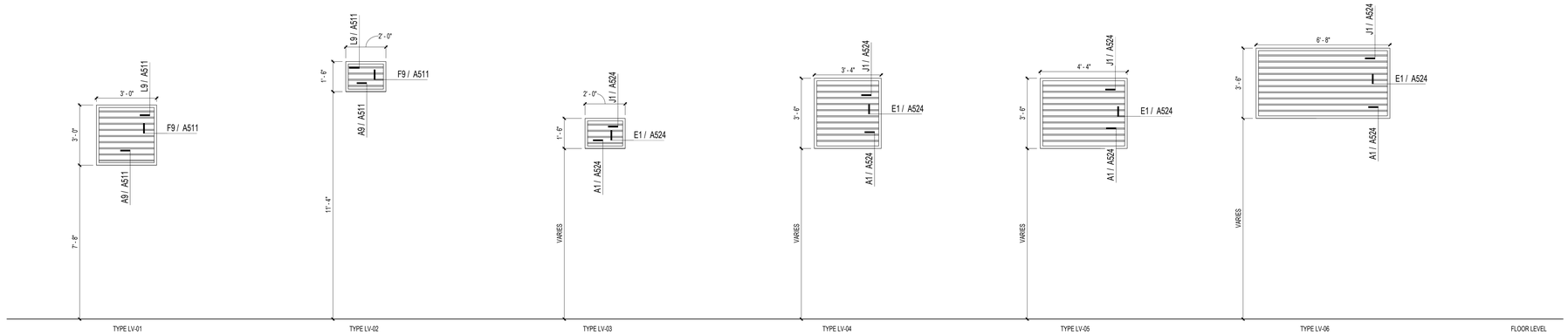
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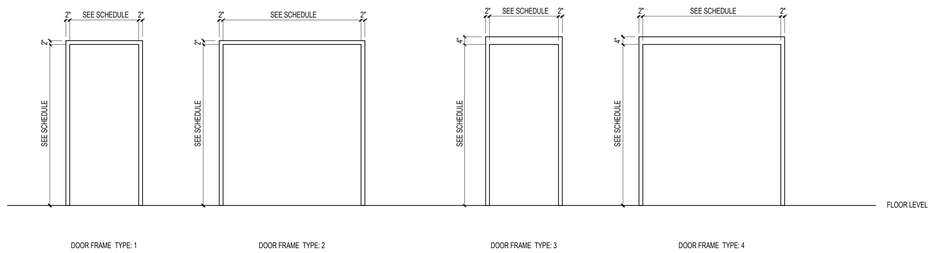
DOOR SCHEDULE

A500
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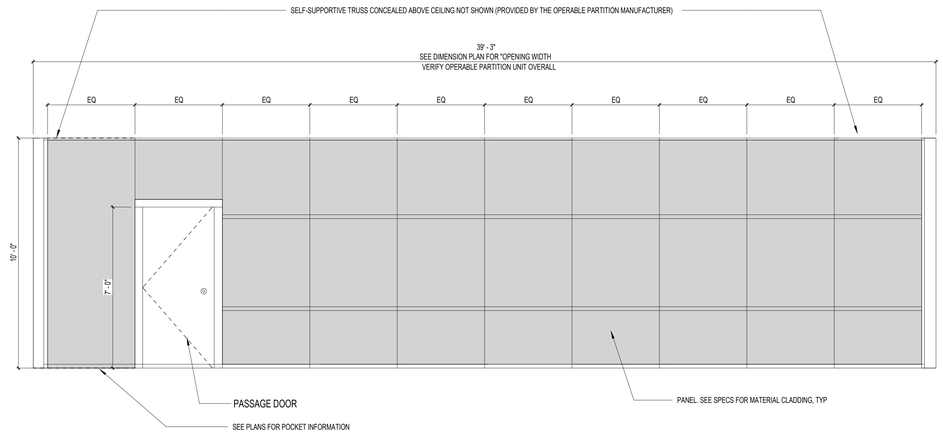


NOTE:
-THE FINAL SIZE AND LOCATION OF THE OPENING FOR THE LOUVER MUST BE COORDINATED WITH MECHANICAL DRAWINGS.
-PSMB TO ESTABLISH THE EXACT LOCATION OF LOUVERS IN COORDINATION WITH THE STRUCTURE

LOUVER TYPES

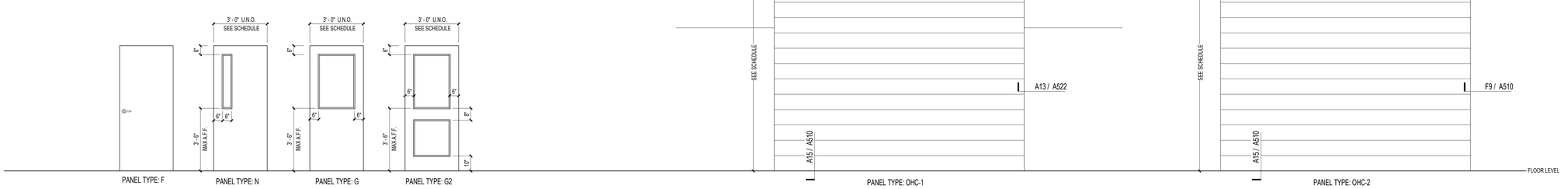


HOLLOW METAL DOOR FRAME TYPES



F10
3/8" = 1'-0"

OPERABLE WALL PARTITION ELEVATION



DOOR PANEL TYPES

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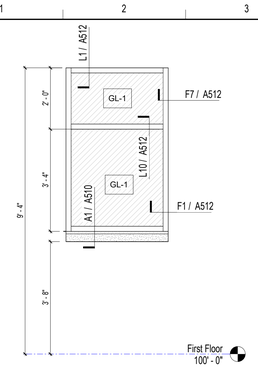
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DOOR, FRAME & LOUVER TYPES

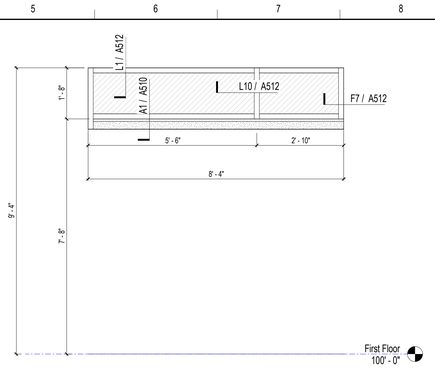
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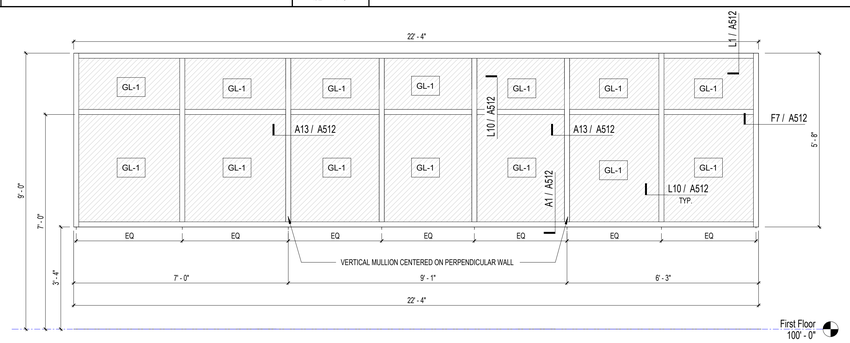
SF-5 STOREFRONT

1/2" = 1'-0"



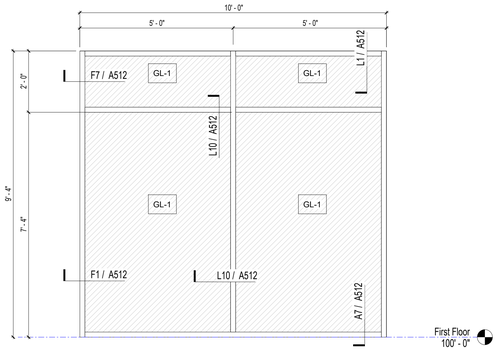
SF-6 STOREFRONT

1/2" = 1'-0"



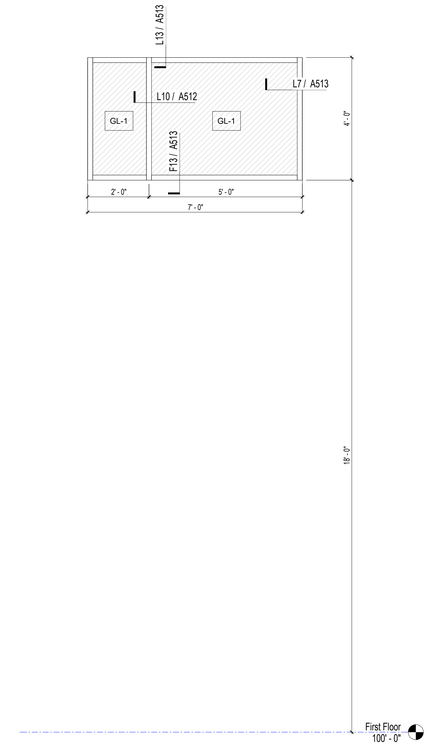
SF-3 STOREFRONT

1/2" = 1'-0"



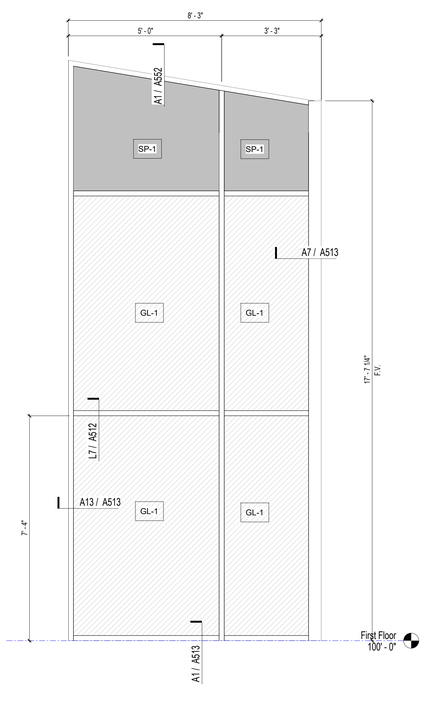
SF-4 STOREFRONT

1/2" = 1'-0"



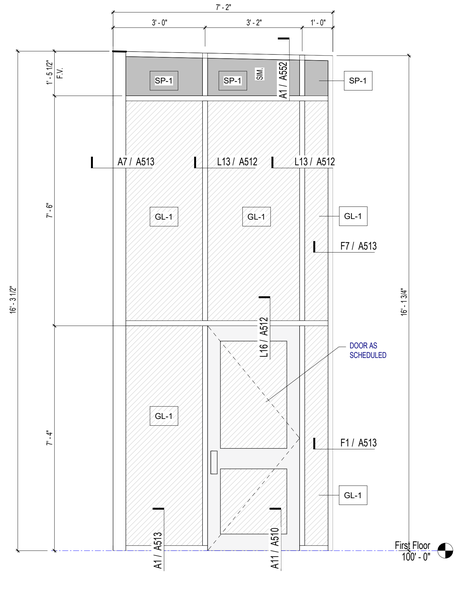
SF-7 STOREFRONT

1/2" = 1'-0"



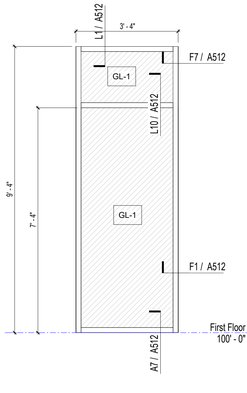
CW-1 CURTAIN WALL

1/2" = 1'-0"



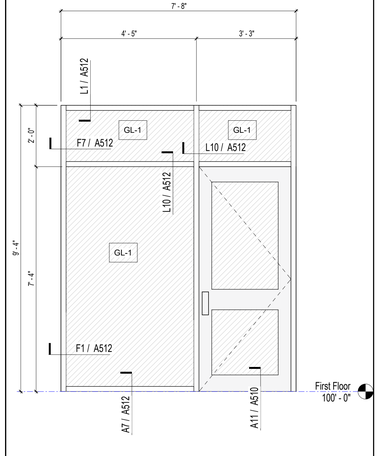
CW-2 CURTAIN WALL

1/2" = 1'-0"



SF-1 STOREFRONT

1/2" = 1'-0"



SF-2 STOREFRONT

1/2" = 1'-0"

GLAZING LEGEND

GL-1	CLEAR GLAZING - SEE SPECS.
SP-1	SPANDREL GLAZING - SEE SPECS.
GT	TEMPERED CLEAR GLAZING - SEE SPECS.

NOTE:
1.ALL GLAZING SHALL BE 1/4" TEMPERED CLEAR GLAZING (GT) UNLESS NOTED OTHERWISE
2.ALL GLAZING ON EXTERIOR DOORS SHALL BE LARGE MISSILE IMPACT RESISTANT LEVEL E

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1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

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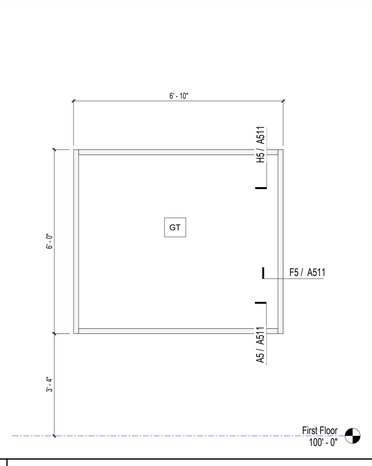
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1	SITE PERMIT COORDINATION	01/XX/2023
2	OWNER REVISIONS MEETING	06/22/2023

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ALUMINUM STOREFRONT & CURTAINWALL TYPES, GLAZING LEGEND

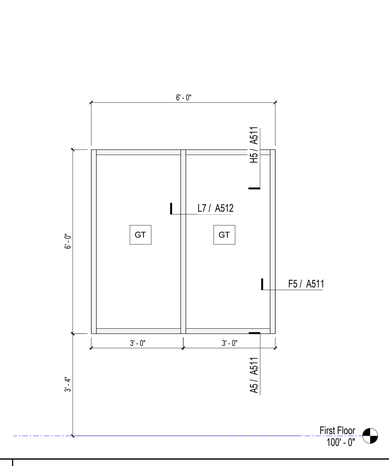
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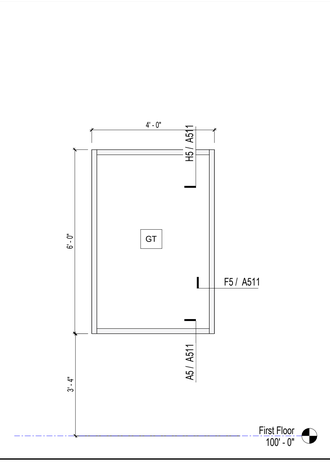
W1 WINDOW

1/2" = 1'-0"



W2 WINDOW

1/2" = 1'-0"



W3 WINDOW

1/2" = 1'-0"

GLAZING LEGEND

GL-1	CLEAR GLAZING - SEE SPECS.
SP-1	SPANDREL GLAZING - SEE SPECS.
GT	TEMPERED CLEAR GLAZING - SEE SPECS.

NOTE:
1 ALL GLAZING SHALL BE 1/4" TEMPERED CLEAR GLAZING (GT) UNLESS NOTED OTHERWISE
2 ALL GLAZING ON EXTERIOR DOORS SHALL BE LARGE MISSILE IMPACT RESISTANT LEVEL E

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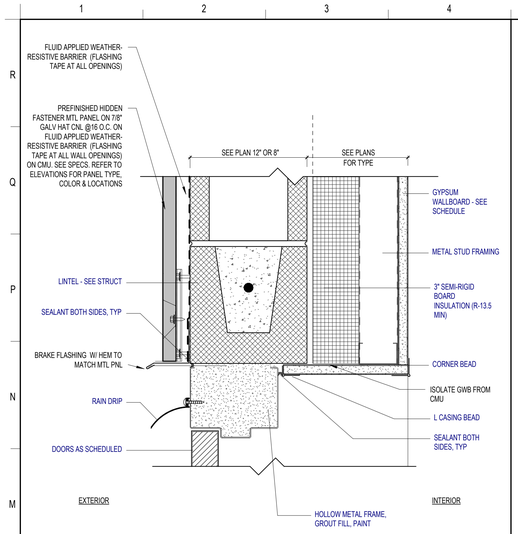
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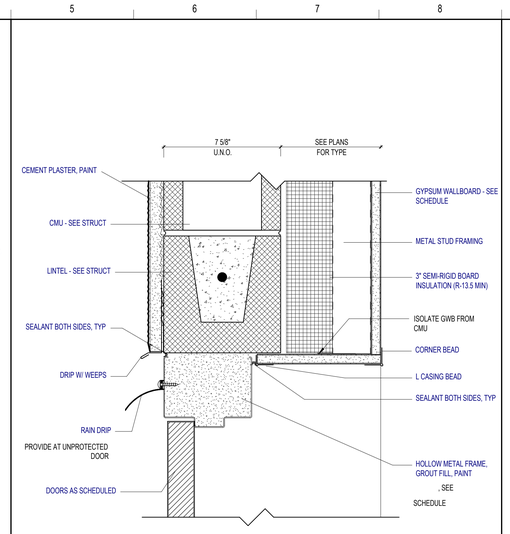
ALUMINUM STOREFRONT & CURTAINWALL TYPES, GLAZING LEGEND

A503
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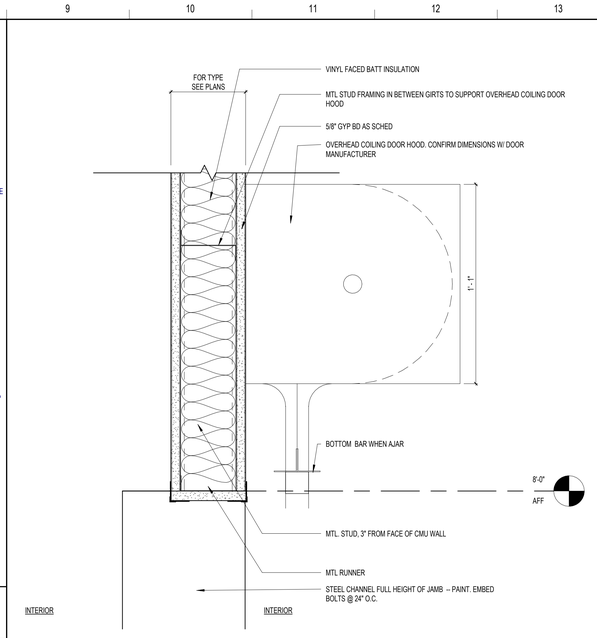
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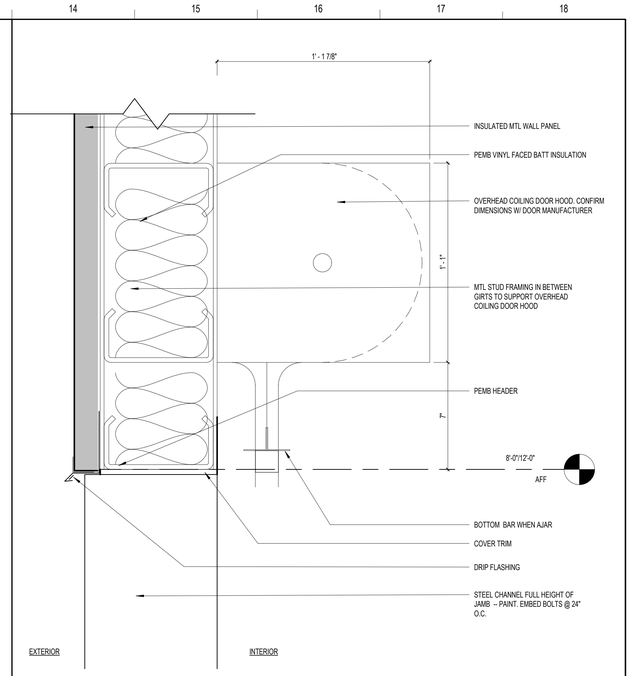
L1	HOLLOW METAL DOOR HEAD 4" (EWS-CPM)
3" = 1'-0"	



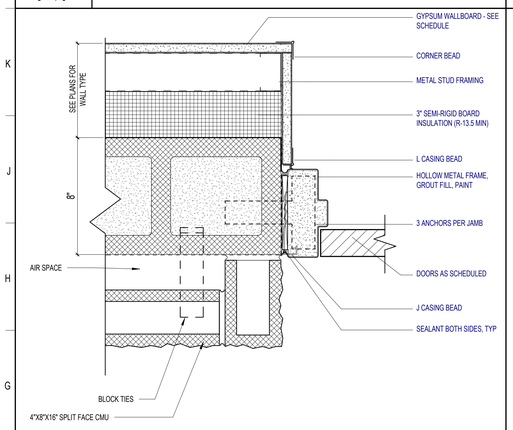
L7	HOLLOW METAL DOOR HEAD CMU-STUCCO
3" = 1'-0"	



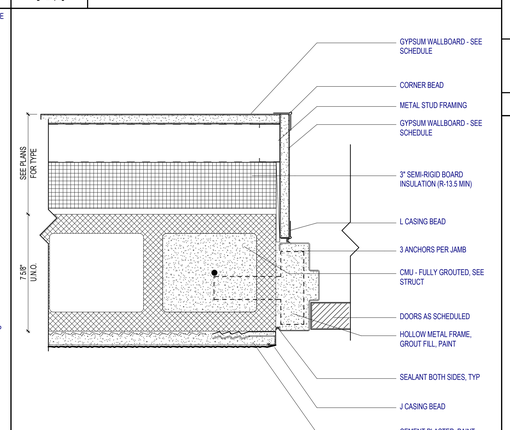
K9	OVERHEAD COILING DOOR HEAD
3" = 1'-0"	



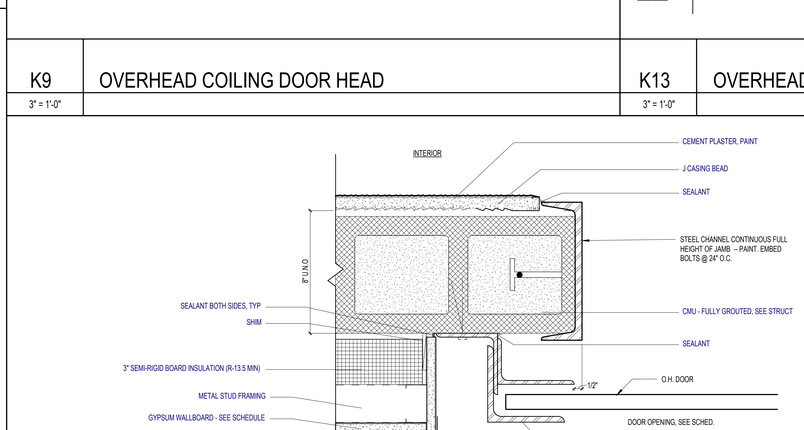
K13	OVERHEAD COILING DOOR HEAD
3" = 1'-0"	



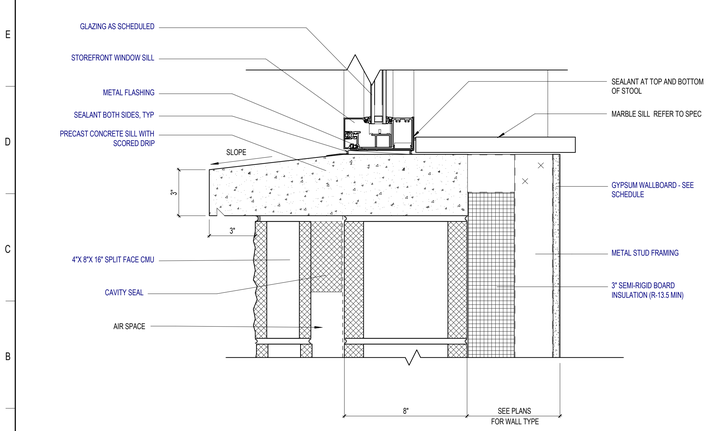
F1	HOLLOW METAL DOOR JAMB @ SPLIT-FACE BLOCK VENEER
3" = 1'-0"	



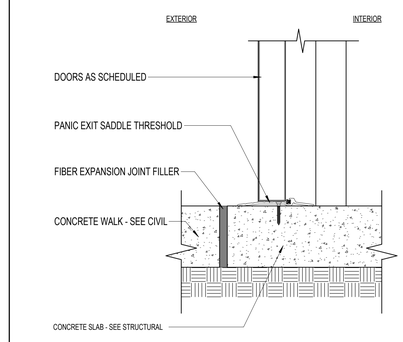
F7	HOLLOW METAL DOOR JAMB CMU-STUCCO
3" = 1'-0"	



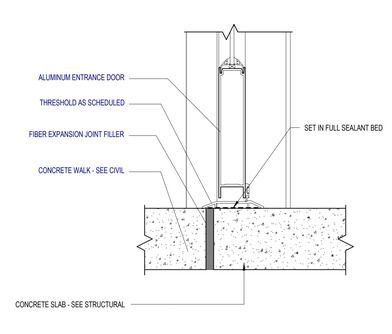
F9	INTERIOR OVERHEAD COILING DOOR JAMB
3" = 1'-0"	



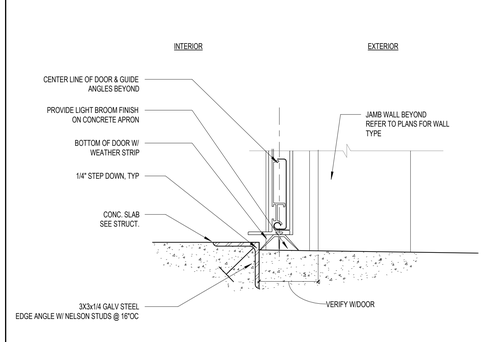
A1	STOREFRONT WINDOW SILL @ SPLIT-FACE BLOCK VENEER
3" = 1'-0"	



A7	EXTERIOR DOOR SILL
3" = 1'-0"	



A11	STOREFRONT_ENTRANCE DOOR SILL DETAIL
3" = 1'-0"	



A15	OH DOOR SILL
3" = 1'-0"	

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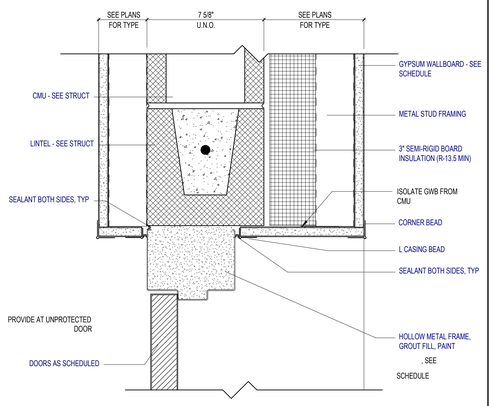
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DETAILS - DOOR / WINDOW / LOUVER

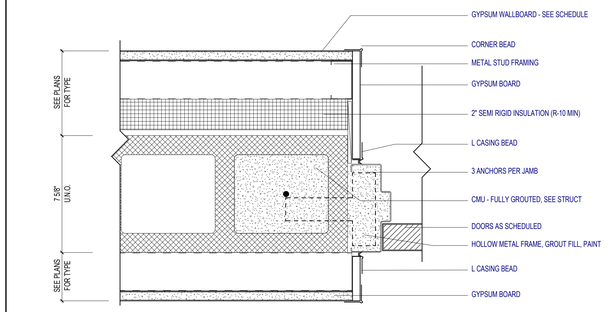
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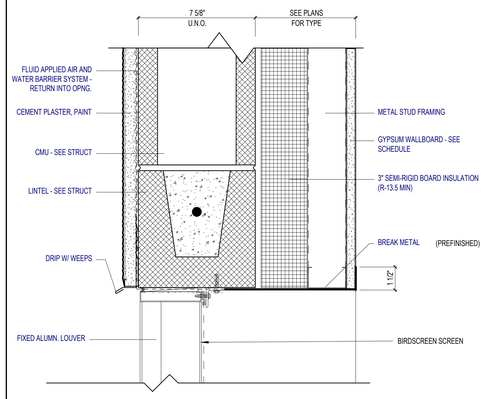
L1 HOLLOW METAL DOOR HEAD CMU-INT

3" = 1'-0"



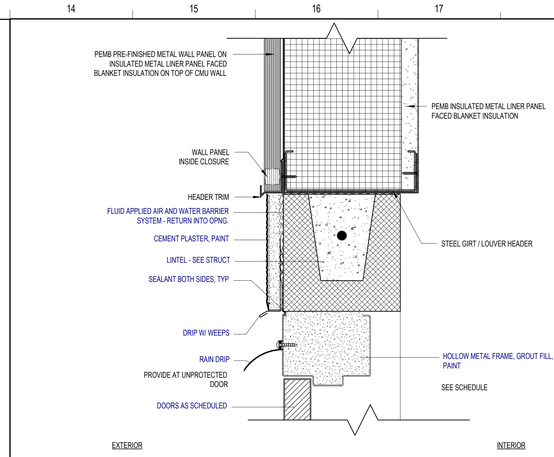
L5.1 HOLLOW METAL DOOR JAMB CMU- INTERIOR

3" = 1'-0"



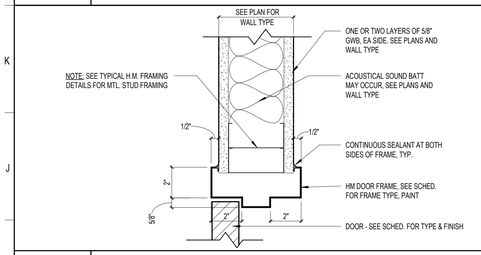
L9 ALUMINUM LOUVER HEAD

3" = 1'-0"



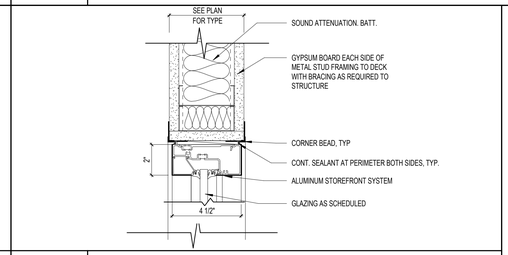
M14 PEMB - HOLLOW METAL DOOR HEAD

3" = 1'-0"



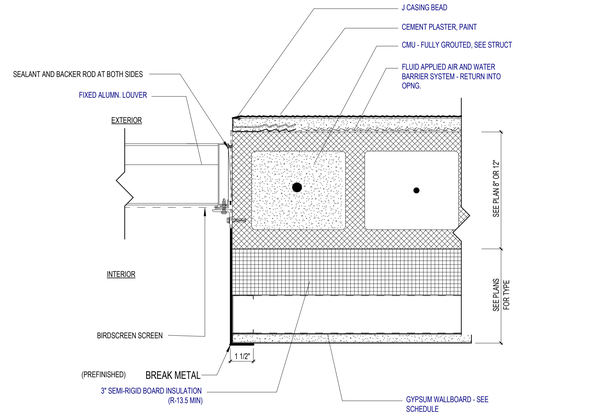
H1 HM DOOR HEAD @ GWB

3" = 1'-0"



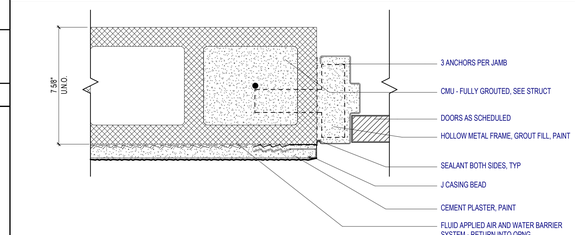
H5 STOREFRONT HEAD @ GWB

3" = 1'-0"



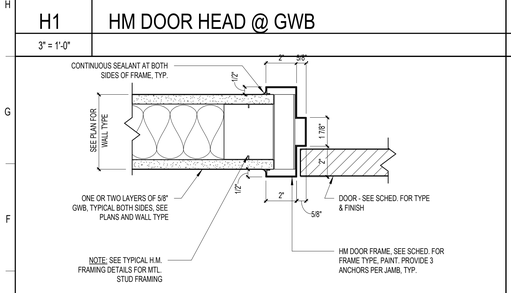
F9 ALUMINUM LOUVER JAMB @ STUCCO

3" = 1'-0"



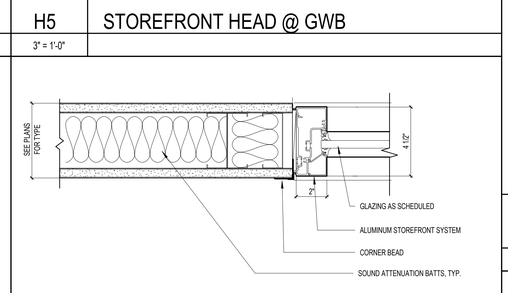
J14 HOLLOW METAL DOOR JAMB CMU-STUCCO

3" = 1'-0"



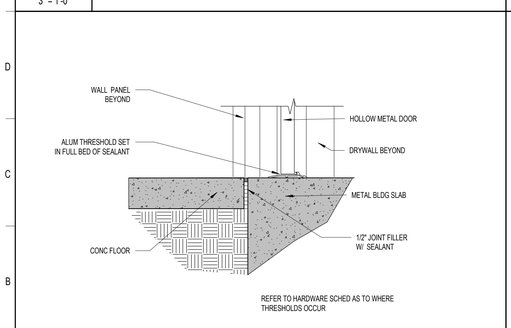
E1 HM DOOR JAMB @ GWB

3" = 1'-0"



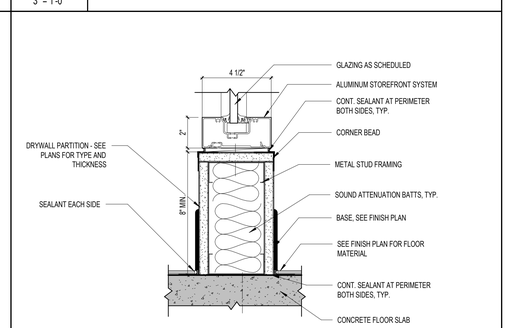
F5 STOREFRONT JAMB @ GWB

3" = 1'-0"



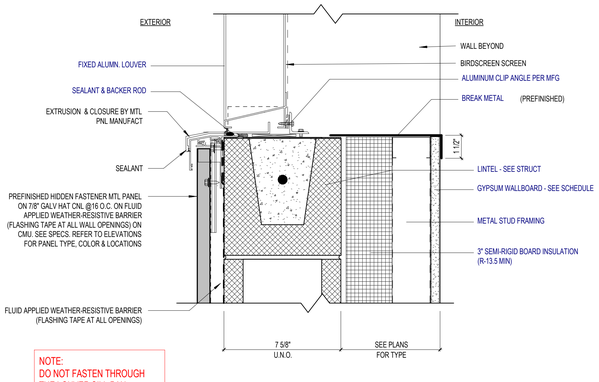
A1 INTERIOR DOOR SILL

1 1/2" = 1'-0"



A5 STOREFRONT SILL @ @ GWB

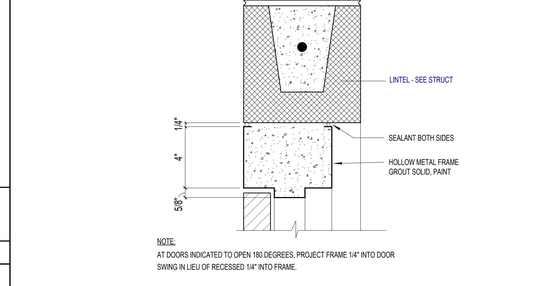
3" = 1'-0"



NOTE:
DO NOT FASTEN THROUGH THE LOUVER SILL PAN.

A9 ALUMINUM LOUVER SILL @ METAL PANEL

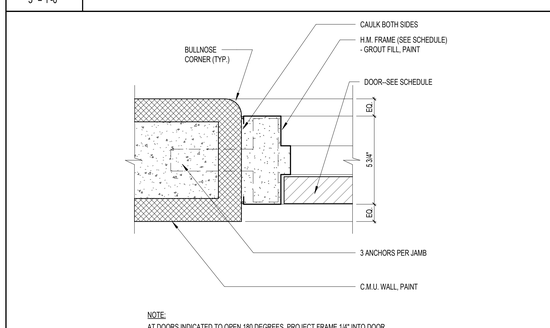
3" = 1'-0"



NOTE:
AT DOORS INDICATED TO OPEN 180 DEGREES, PROJECT FRAME 1/4" INTO DOOR SWING IN LIEU OF RECESSED 1/4" INTO FRAME.

E14 H.M DOOR HEAD @ CMU

3" = 1'-0"



NOTE:
AT DOORS INDICATED TO OPEN 180 DEGREES, PROJECT FRAME 1/4" INTO DOOR SWING IN LIEU OF RECESSED 1/4" INTO FRAME.

A14 H.M. DOOR JAMB @ CMU

3" = 1'-0"

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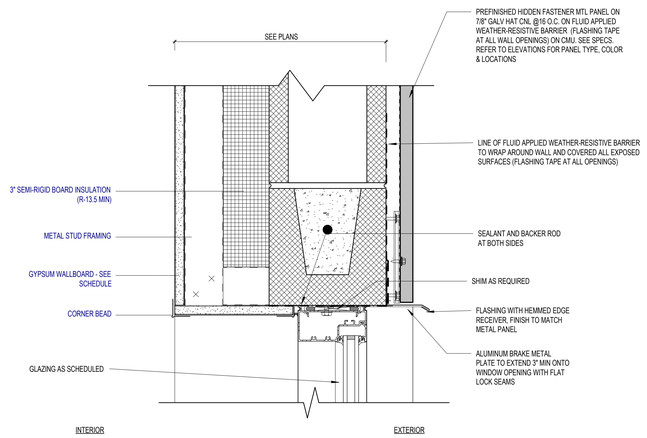
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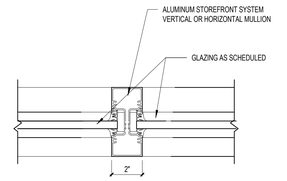
DETAILS - DOOR / WINDOW / LOUVER

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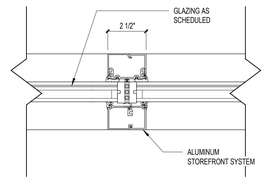


L1	STOREFRONT HEAD - MTL PNL
3" = 1'-0"	



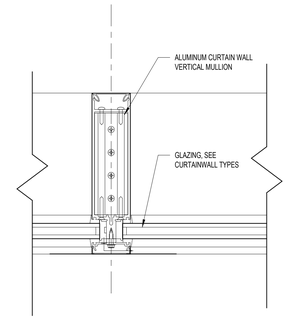
HORIZONTAL MULLION SIMILAR

L7	INT. STOREFRONT INTERMEDIATE MULLION
3" = 1'-0"	

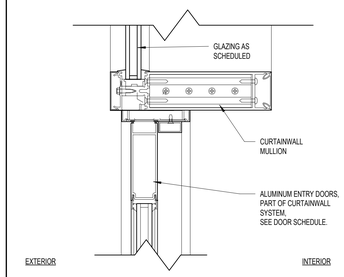


HORIZONTAL MULLION SIMILAR

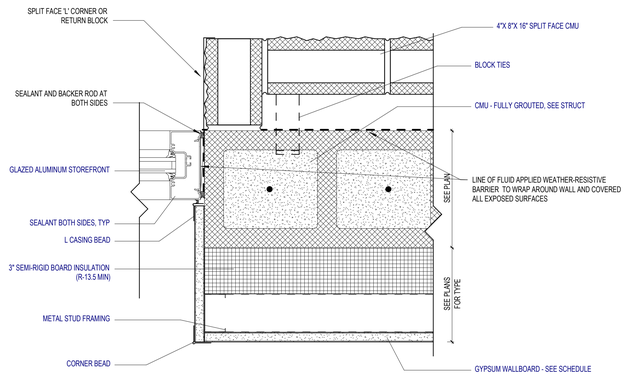
L10	EXT. STOREFRONT INTERMEDIATE MULLION
3" = 1'-0"	



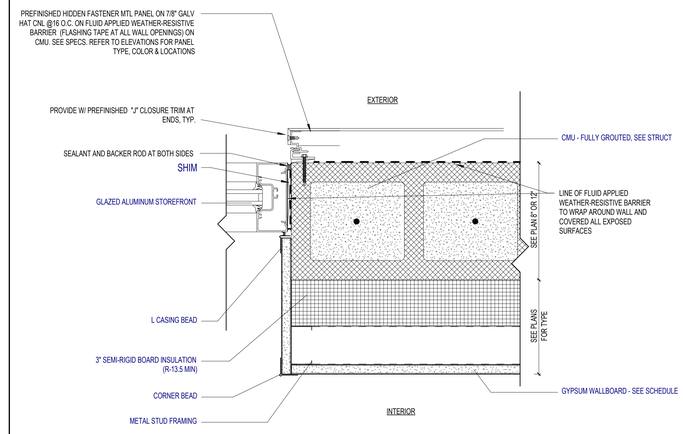
L13	CURTAINWALL MULLION
3" = 1'-0"	



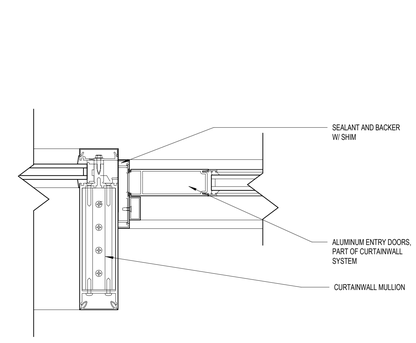
L16	CURTAINWALL DOOR HEAD AND TRANSOM
3" = 1'-0"	



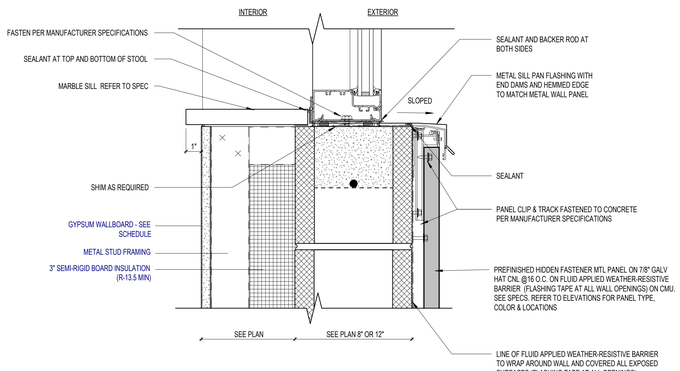
F1	STOREFRONT JAMB - CMU SPLITFACE
3" = 1'-0"	



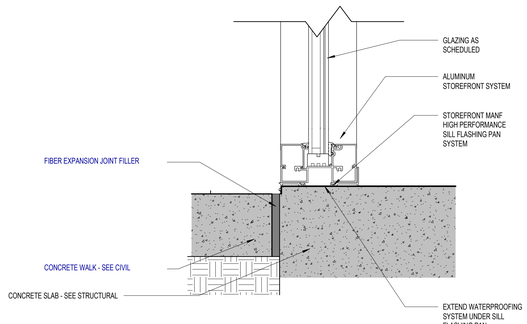
F7	STOREFRONT JAMB - METAL PANEL
3" = 1'-0"	



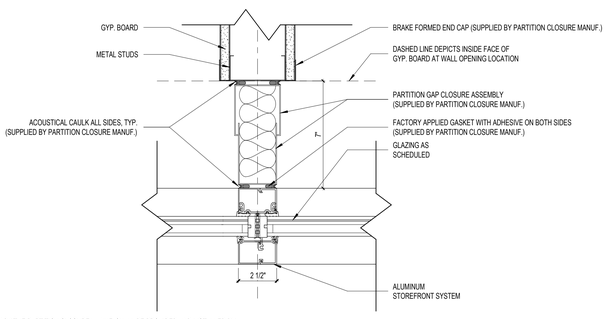
F13	CURTAINWALL DOOR JAMB
3" = 1'-0"	



A1	STOREFRONT SILL - MTL PNL
3" = 1'-0"	



A7	STOREFRONT SILL
3" = 1'-0"	



GENERAL NOTES:

1. ALL ITEMS SUPPLIED BY THE PARTITION CLOSURE MANUF. SHALL BE PROVIDED AND INSTALLED BY GENERAL CONTRACTOR
2. PARTITION GAP CLOSURE ASSEMPLY BASIS OF DESIGN: MULLION MATE - SERIES 40, SPRING-LOADED PARTITION CLOSURE, WITH UP TO STC 56 NOISE REDUCTION, AS MANUFACTURED BY GORDON, INC. FINISHED TO MATCH STOREFRONT SYSTEM. FACTURY CUT TO LENGTH AND PRE-ASSEMBLED. FOLLOW ALL MANUFACTURER'S INSTALLATIONS AND RECOMMENDATIONS AS REQUIRED.

A13	EXTERIOR STOREFRONT MULLION @ PARTITION GAP CLOSURE
3" = 1'-0"	

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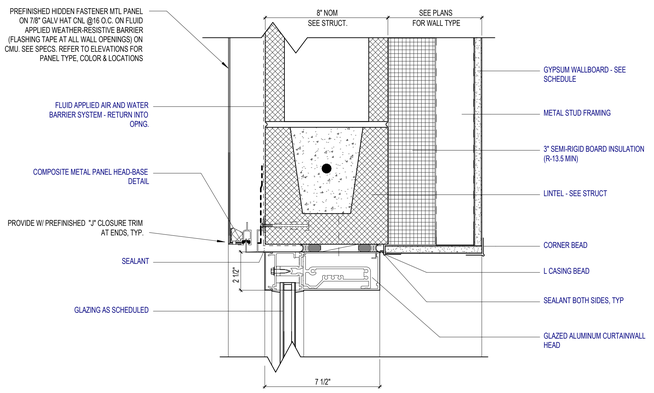
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DETAILS - STOREFRONT / CURTAINWALL

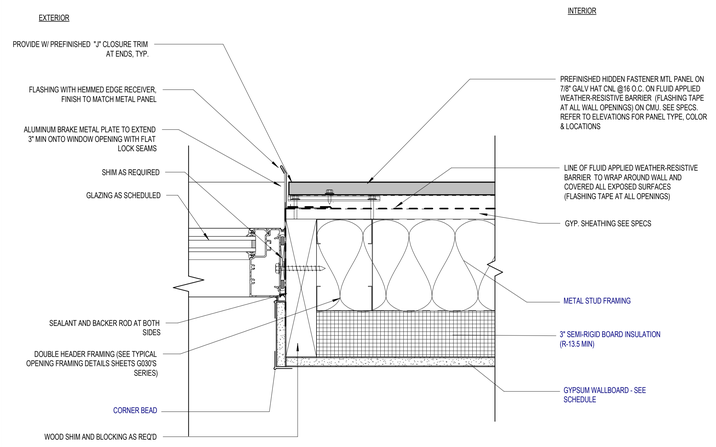
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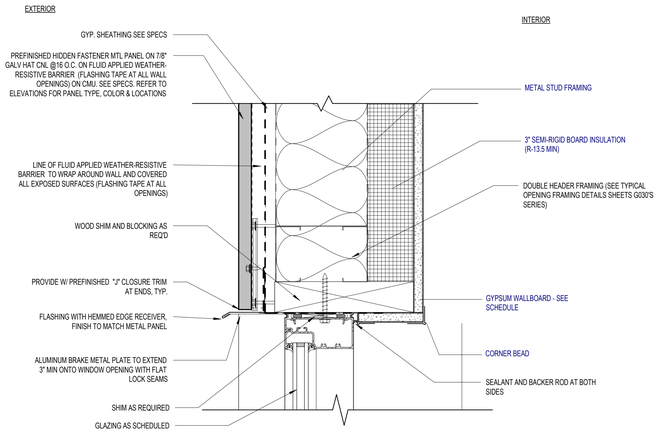
L1 CURTAINWALL WINDOW HEAD @ COMPOSITE METAL PANEL/CMU/FURRED

3" = 1'-0"



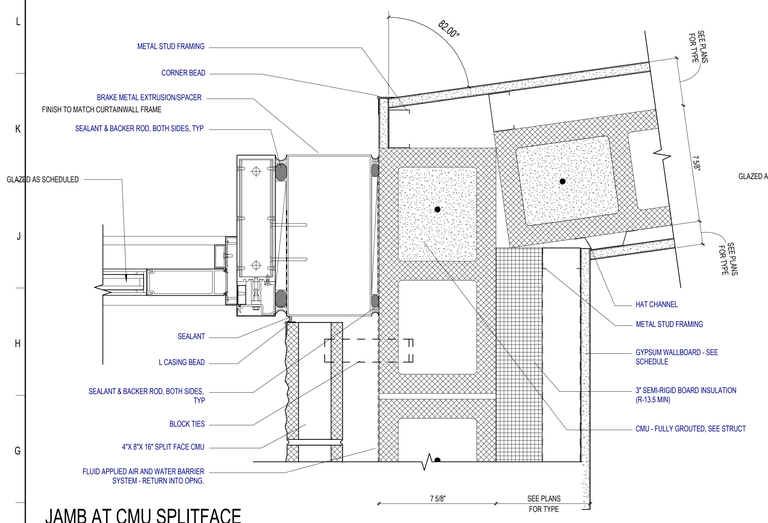
L7 STOREFRONT JAM- METAL PANEL

3" = 1'-0"

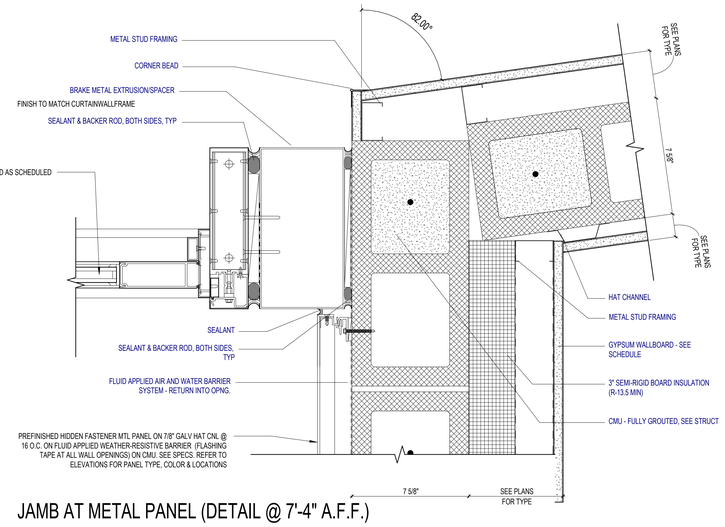


L13 STOREFRONT HEAD - MTL PNL

3" = 1'-0"



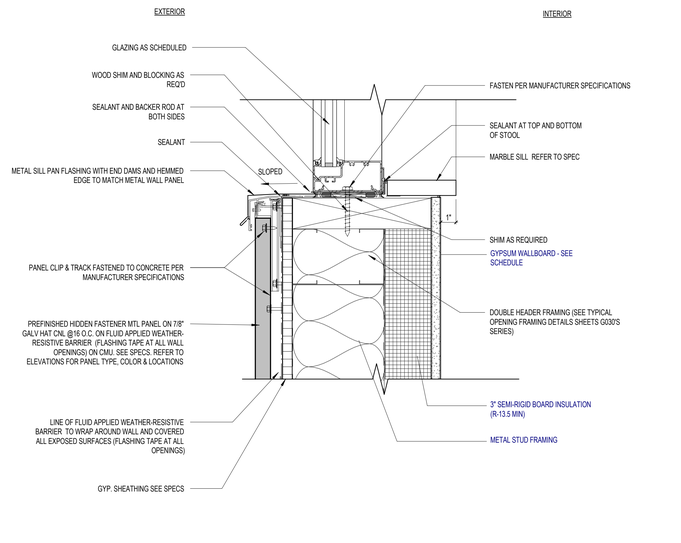
JAMB AT CMU SPLITFACE



JAMB AT METAL PANEL (DETAIL @ 7'-4" A.F.F.)

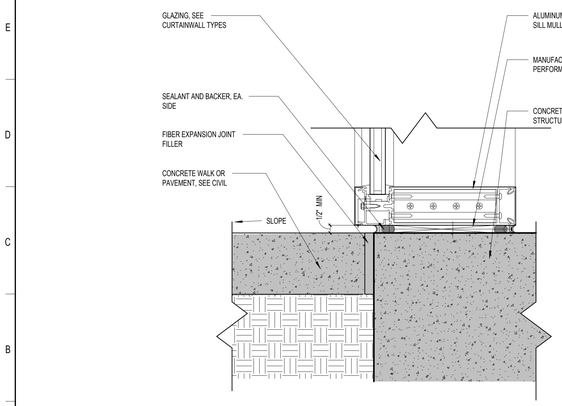
F1 CURTAINWALL JAMB

3" = 1'-0"



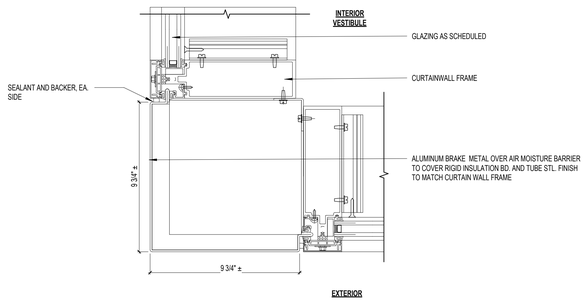
F13 STOREFRONT SILL- METAL PANEL

3" = 1'-0"



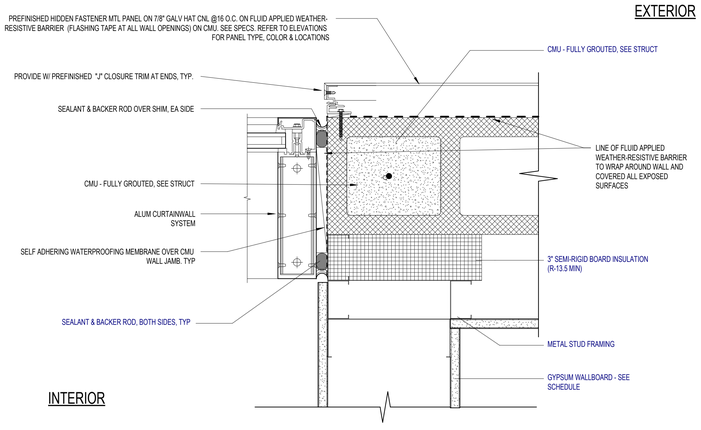
A1 CURTAIN WALL SILL @ FLOOR

3" = 1'-0"



A7 DETAIL - CURTAIN WALL - CORNER

3" = 1'-0"



A13 CURTAIN WALL JAMB

3" = 1'-0"

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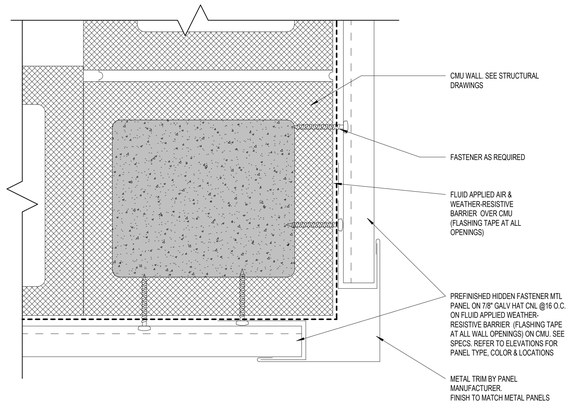
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DETAILS - STOREFRONT / CURTAINWALL

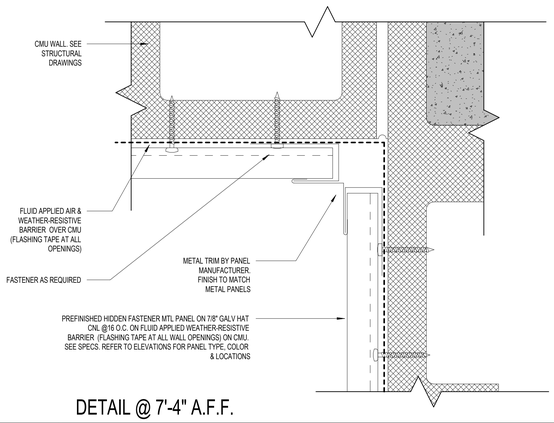
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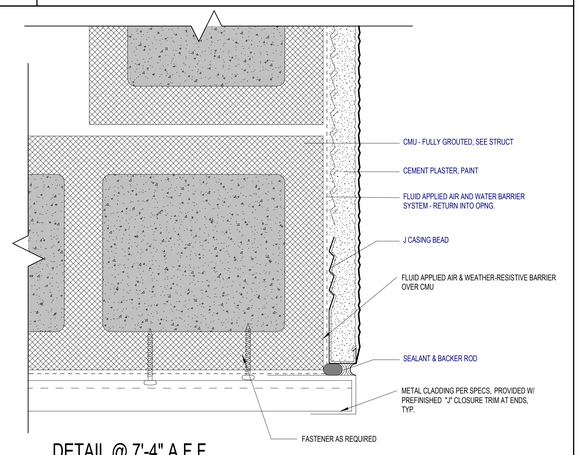
DETAIL @ 7'-4" A.F.F. & @ CLERESTORE

L1	MTL PANEL OUTSIDE CORNER AT CMU WALL
6" = 1'-0"	



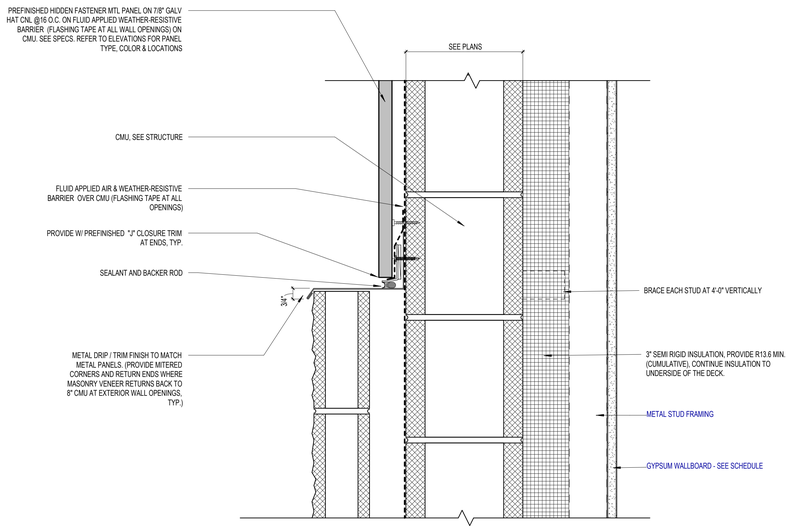
DETAIL @ 7'-4" A.F.F.

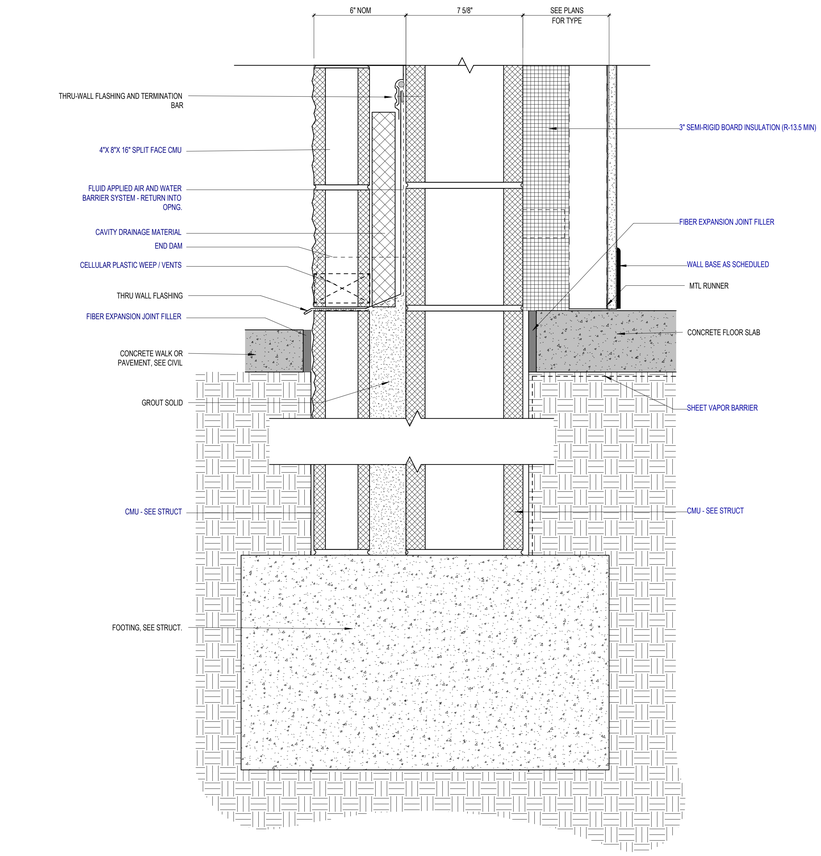
E1	MTL PANEL INSIDE CORNER AT CMU WALL
6" = 1'-0"	



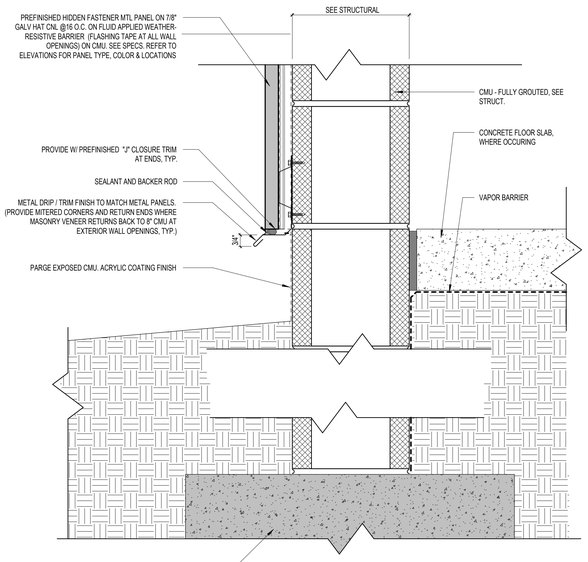
DETAIL @ 7'-4" A.F.F.

A1	MTL PANEL OUTSIDE CORNER AT CEMENT PLASTER
6" = 1'-0"	

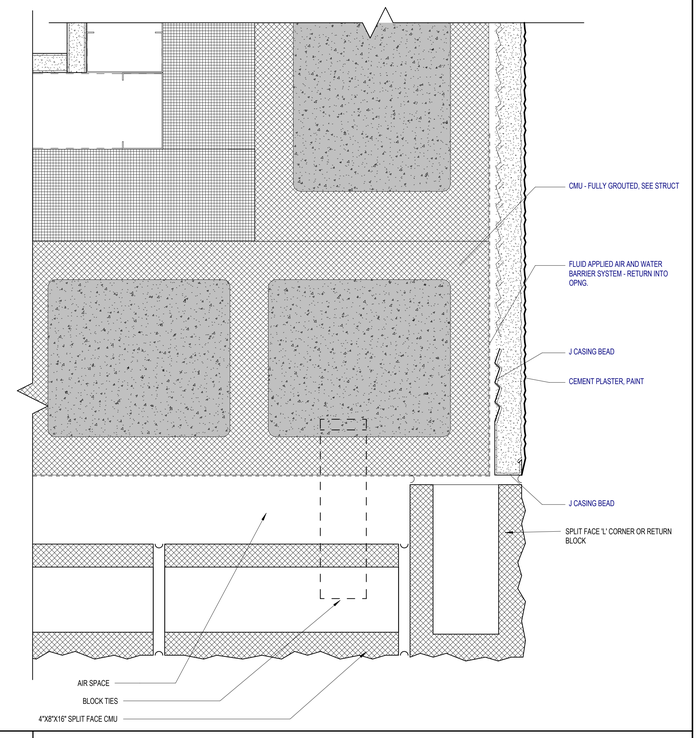




A6	WALL FOOTING - SPLIT FACE VENEER BASE & METAL PANEL ABOVE
3" = 1'-0"	



J13	WALL FOOTING - METAL PANEL BASE
3" = 1'-0"	



A13	SPLIT FACE VENEER AT CEMENT PLASTER CORNER
6" = 1'-0"	

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1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

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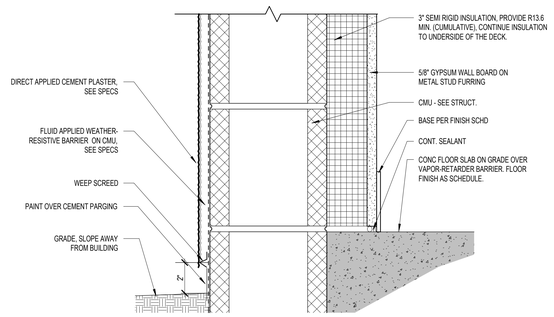
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DETAILS - EXTERIOR

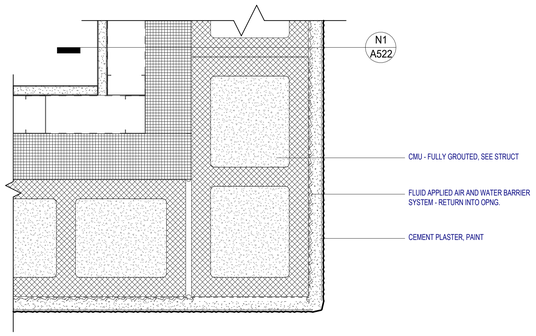
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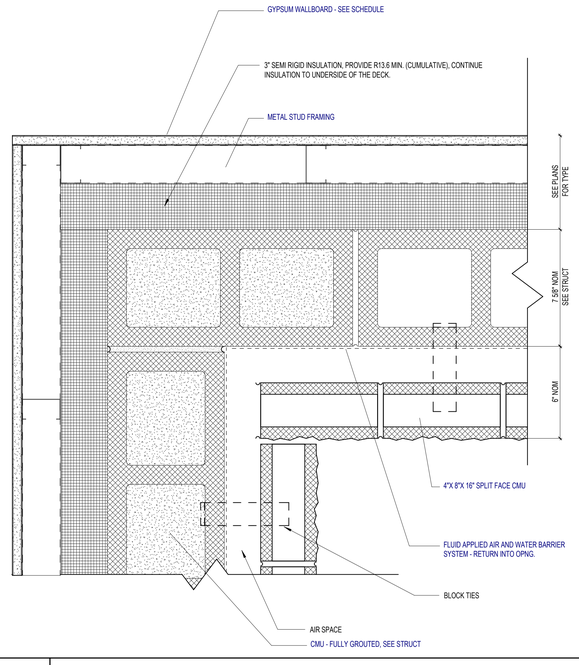
N1 — TYP. STUCCO TERMINATION ON CMU BASE

3" = 1'-0"



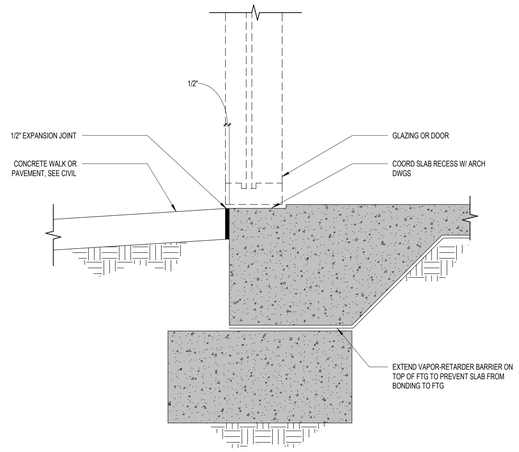
H1 — CEMENT PLASTER/CMU

3" = 1'-0"



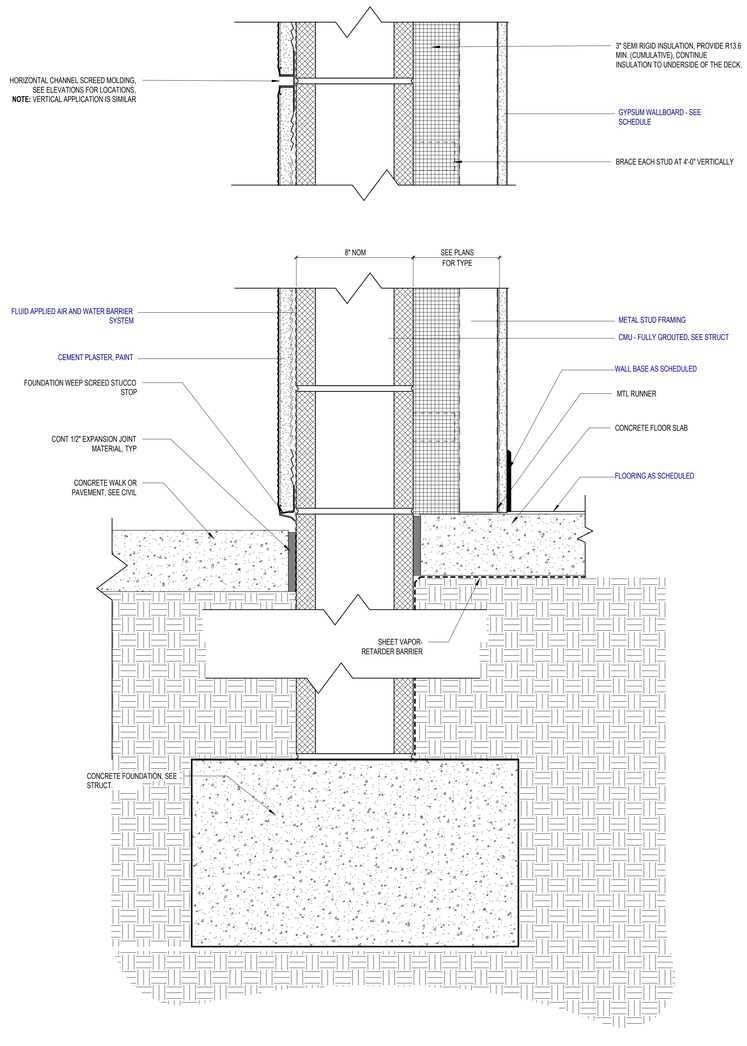
A1 — SPLIT FACE VENEER INSIDE CORNER

3" = 1'-0"



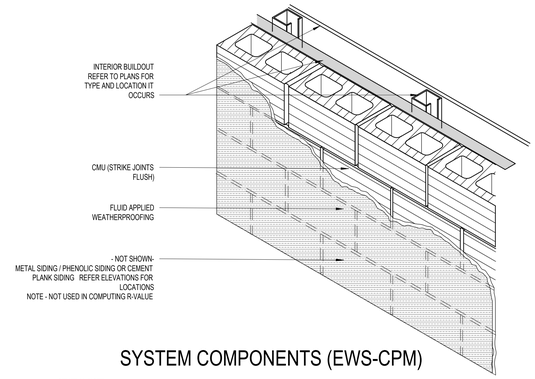
M6 — WALL FOOTING

1 1/2" = 1'-0"



A6 — WALL FOOTING - CEMENT PLASTER BASE & METAL PANEL ABOVE

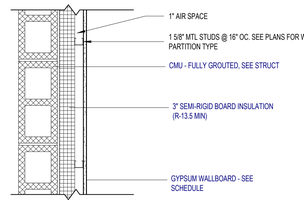
3" = 1'-0"



SYSTEM COMPONENTS (EWS-CPM)

GENERAL NOTE:

- THE DETAILS ON THIS SHEET ARE INTENDED TO ANNOTATE TYPICAL CONSTRUCTION COMPONENTS AND APPLY TO SIMILAR AREAS THROUGHOUT THE PROJECT UNO.
- MASONRY UNIT EXPANSION JOINTS (EJ) AND CONTROL JOINTS (CJ) TO BE PLACED AT:
  - 3/8" (10MM) WIDE CONTROL JOINTS AS INDICATED BUT DO NOT EXCEED 30FT (9.14M) ON CENTERS.

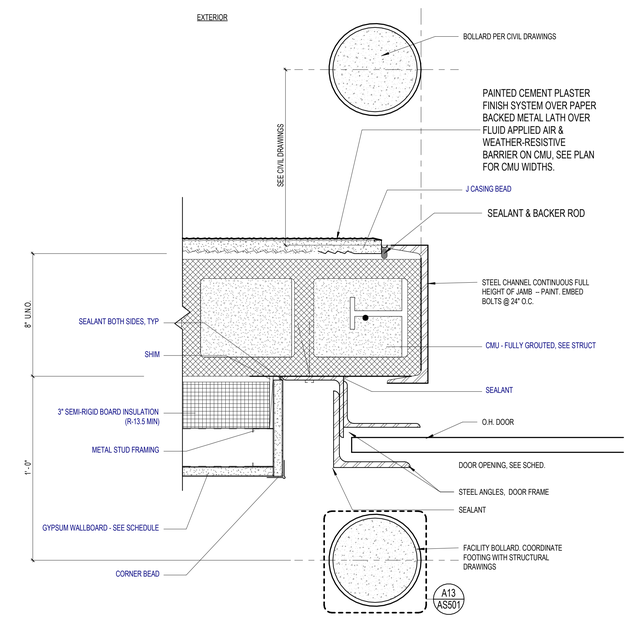


CALCULATED R- VALUE

ASSEMBLY ITEM	R-VALUE
VARIOUS CLADDING	NOT CALCULATED
OUTSIDE AIR FILM	0.17
8"CMU	1.11
SEMI- RIGID INSULATION - 3" CONTINUOUS (MIN. R-VALUE)	13.0 MIN
INSIDE AIR FILM	0.68
AIR SPACE (MIN. 1")	NOT CALCULATED
GYPSUM BOARD	NOT CALCULATED
TOTAL CALCULATED MIN. CONTINUOUS R-VALUE	14.96

F12 — EXTERIOR WALL CPM - PLAN DETAIL

1" = 1'-0"



A13 — EXT OVERHEAD COILING DOOR JAMB

3" = 1'-0"

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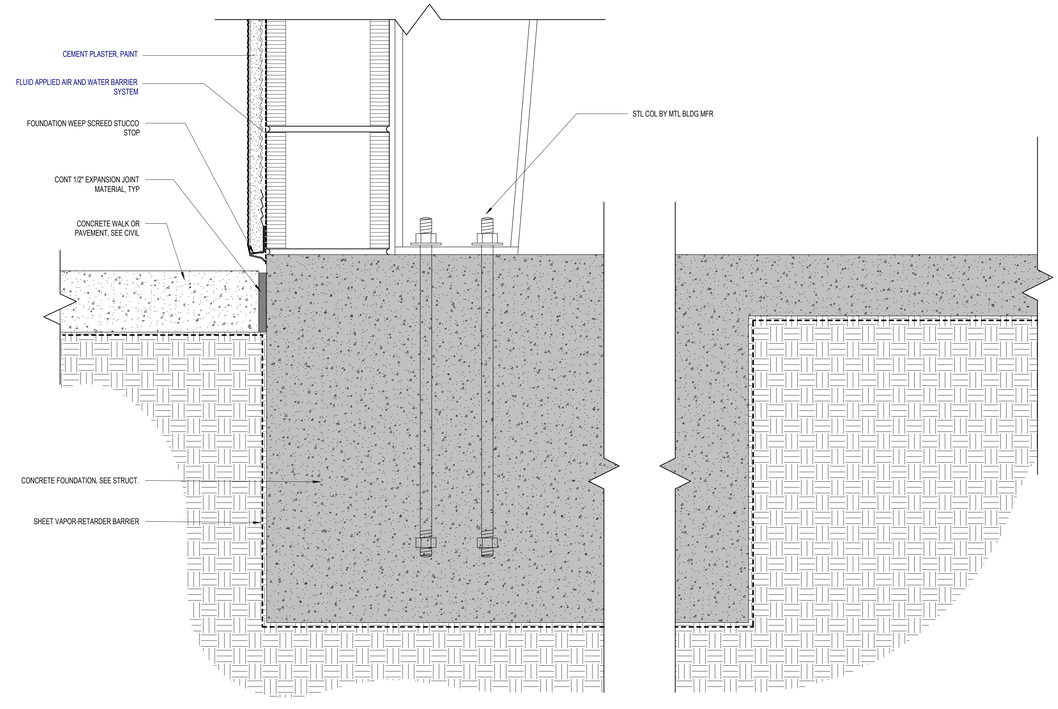
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DETAILS - EXTERIOR

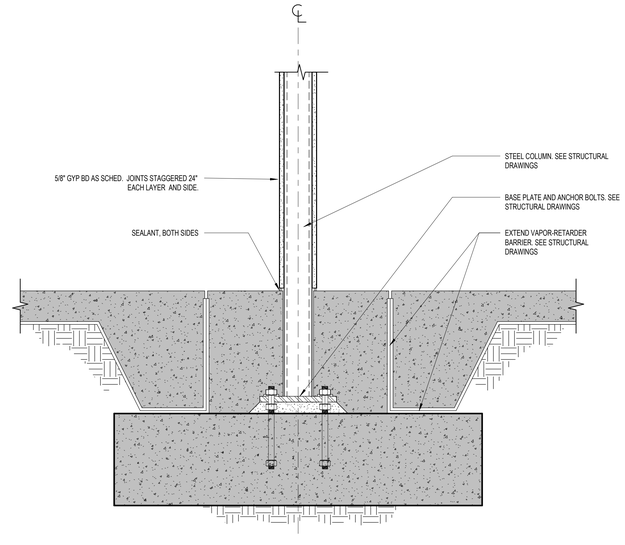
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A1 WALL FOOTING @ PEMB

3" = 1'-0"



A13 WALL FOOTING

1 1/2" = 1'-0"

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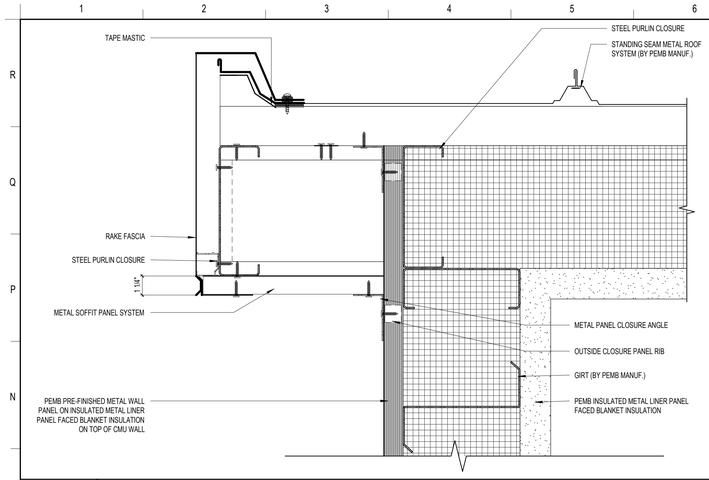
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DETAILS - EXTERIOR

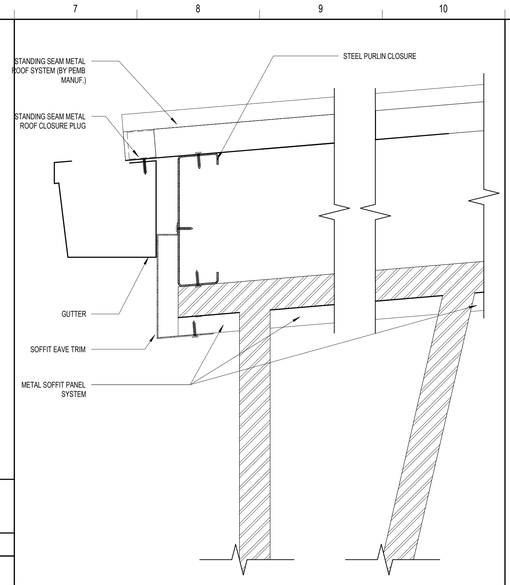
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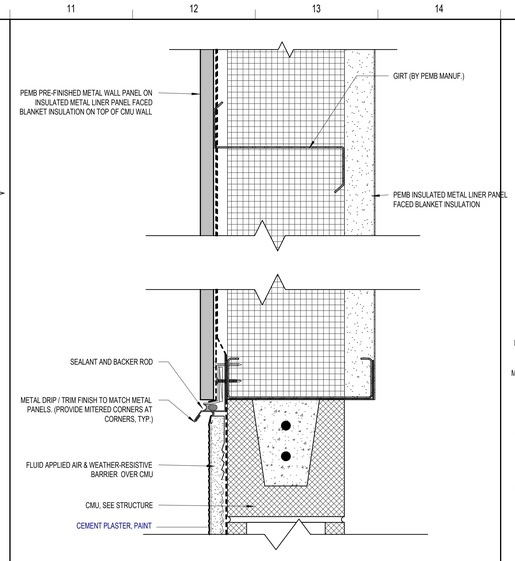
N1 PEMB - ROOF RAKE DETAIL

3" = 1'-0"



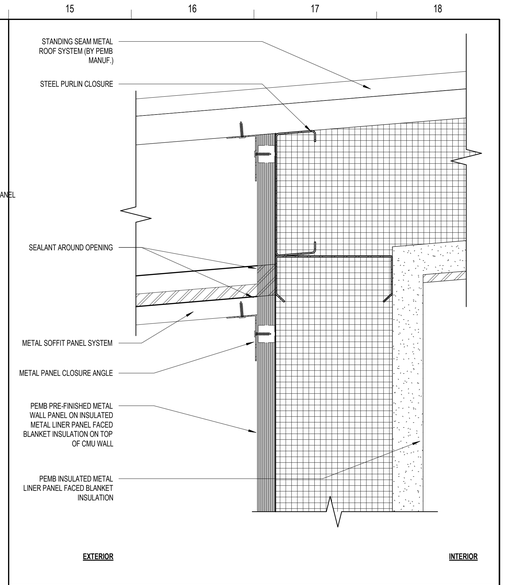
L7 PEMB - EAVE GUTTER

3" = 1'-0"



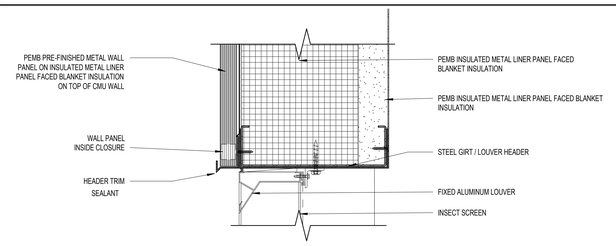
L11 WALL TRANSITION @ PEMB

3" = 1'-0"



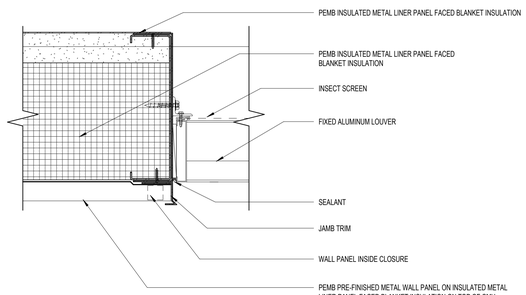
L15 PEMB - METAL PANEL @ PATIO

3" = 1'-0"



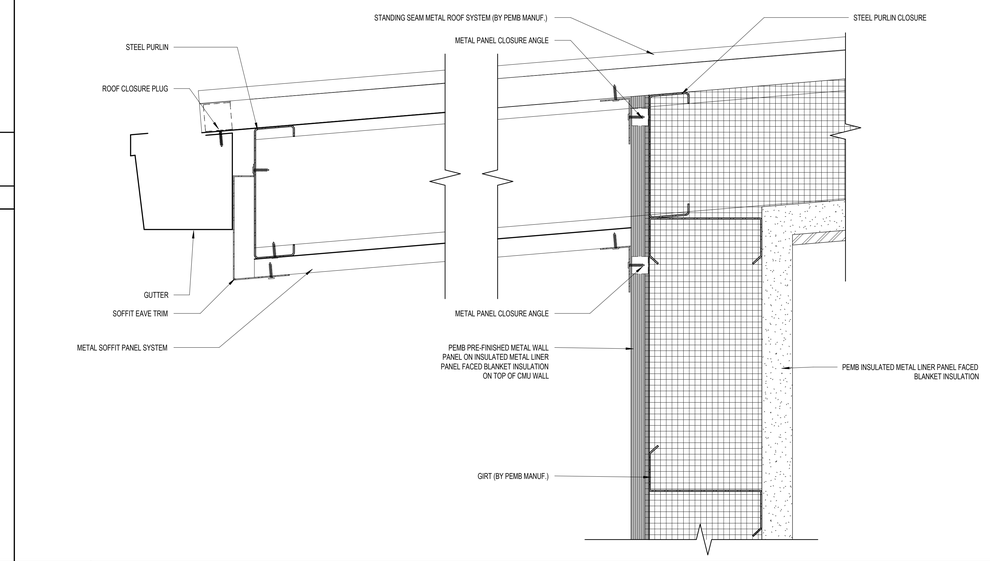
J1 PEMB - LOUVER HEAD

3" = 1'-0"



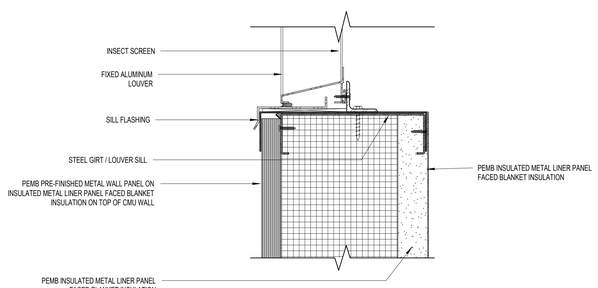
E1 PEMB - LOUVER JAMB

3" = 1'-0"



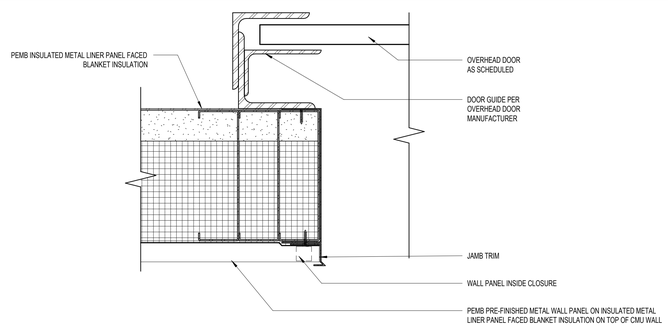
E7 PEMB - ROOF @ EAVE GUTTER

3" = 1'-0"



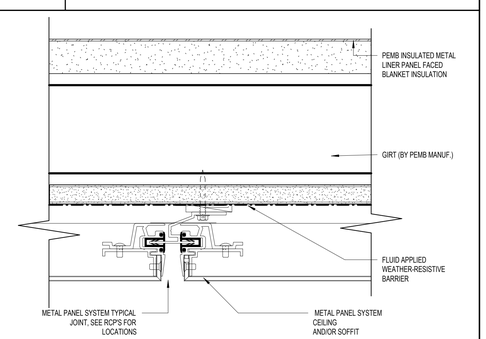
A1 PEMB - LOUVER SILL

3" = 1'-0"



A7 PEMB - OVERHEAD DOOR JAM

3" = 1'-0"



A15 METAL PANEL CEILING / SOFFIT JOINT

6" = 1'-0"

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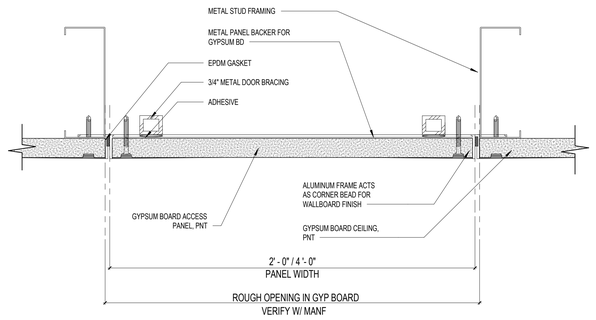
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PRE-ENGINEERED METAL BUILDING DETAILS

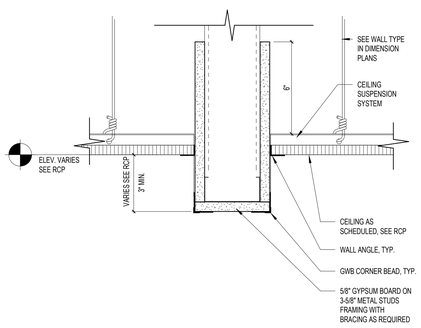
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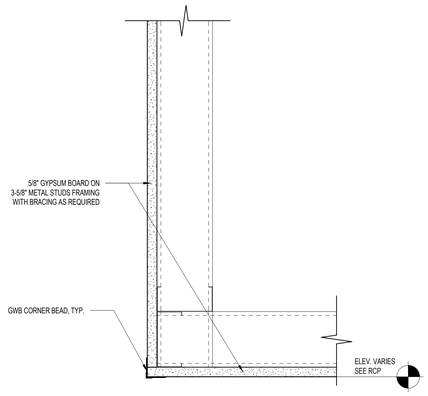
M1 CEILING ACCESS PANEL SECTION

6" = 1'-0"



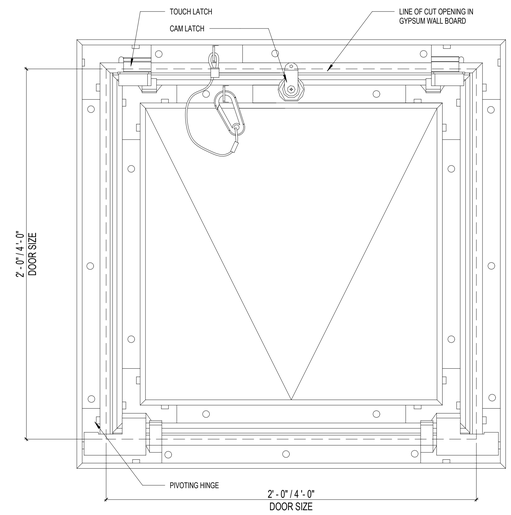
M7 CEILING DETAIL

3" = 1'-0"

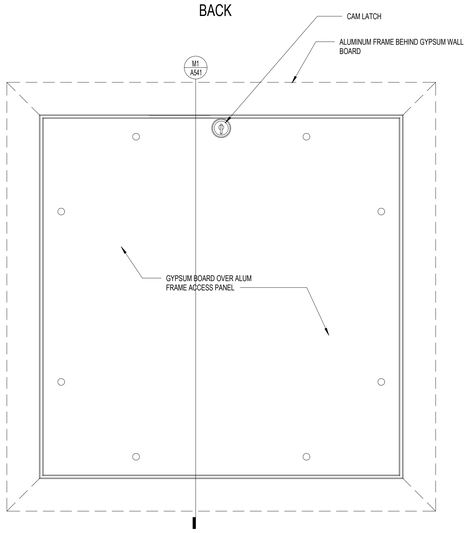


M11 CEILING DETAIL

3" = 1'-0"



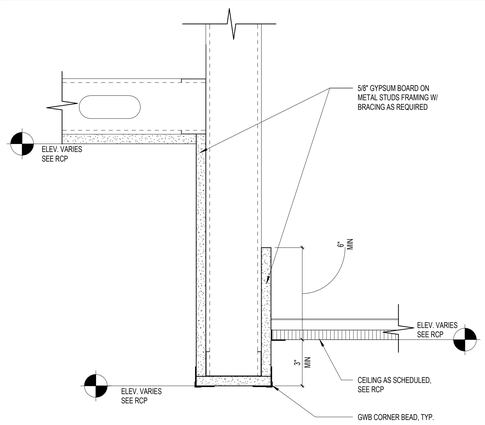
BACK



FRONT

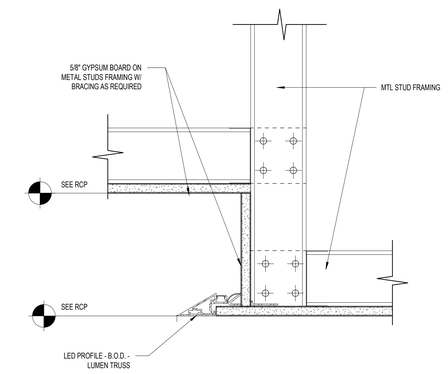
A1 CEILING ACCESS PANEL PLAN

6" = 1'-0"



A7 CEILING DETAIL

3" = 1'-0"



A13 SOFFIT DETAIL @ ACT

3" = 1'-0"

G7 CEILING DETAIL

3" = 1'-0"

G11 LIGHT COVE CEILING DETAIL

3" = 1'-0"

G15 CEILING DETAIL

3" = 1'-0"

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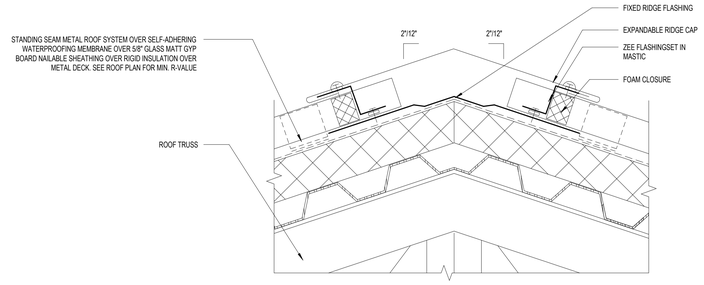
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DETAILS - CEILING

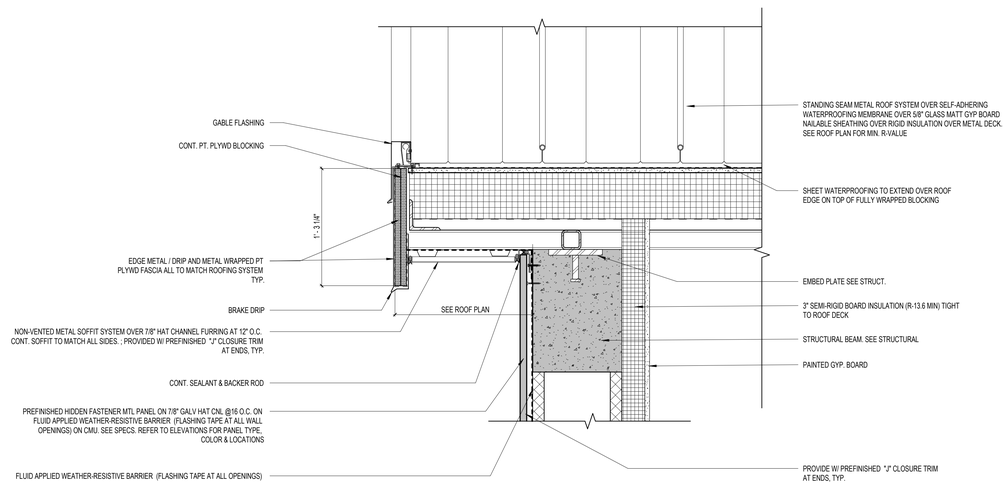
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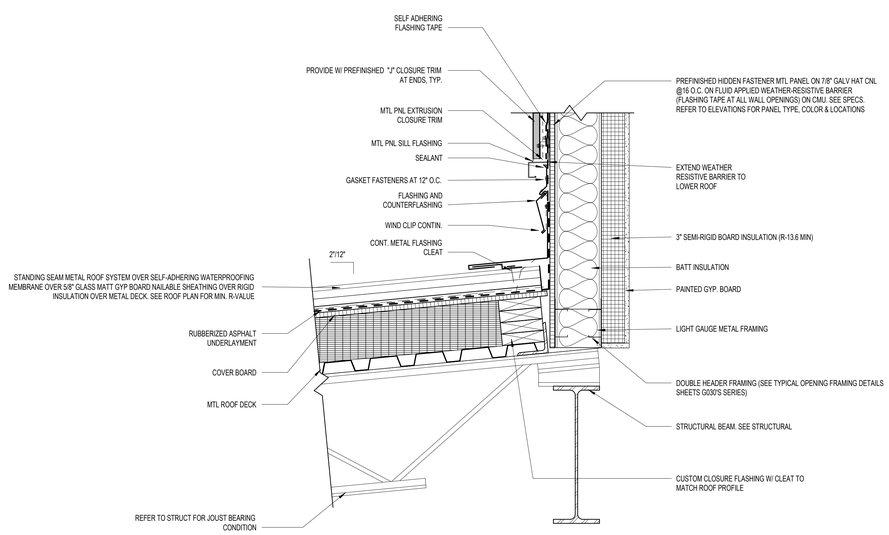
N1 ROOF RIDGE DETAIL

3" = 1'-0"



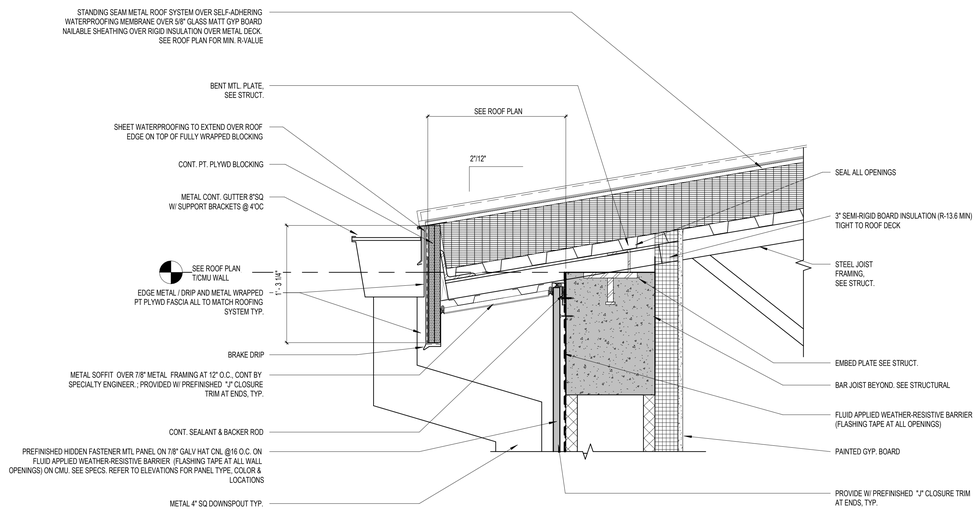
G1 ROOF FASCIA

1 1/2" = 1'-0"



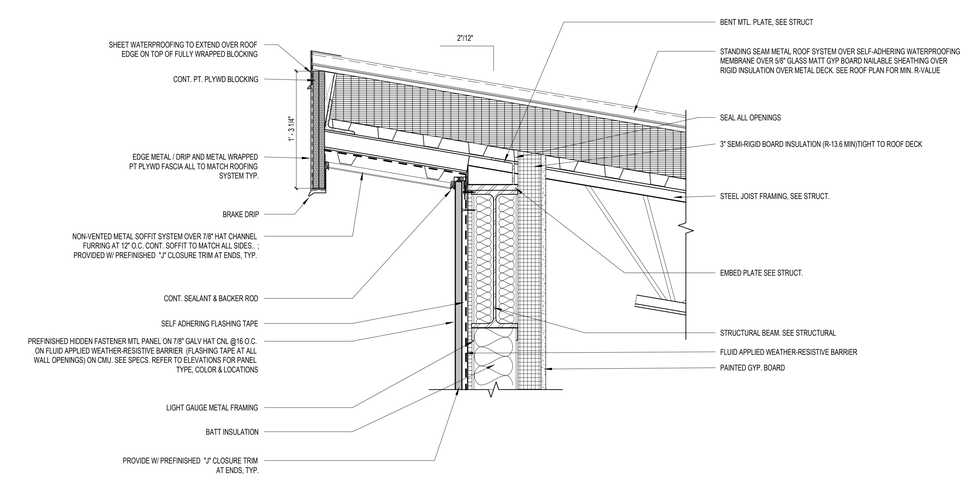
G9 METAL ROOF TO EXTERIOR WALL

1 1/2" = 1'-0"



A1 ROOF EDGE AT LOW WALL

1 1/2" = 1'-0"



A9 ROOF EDGE AT HIGH WALL

1 1/2" = 1'-0"

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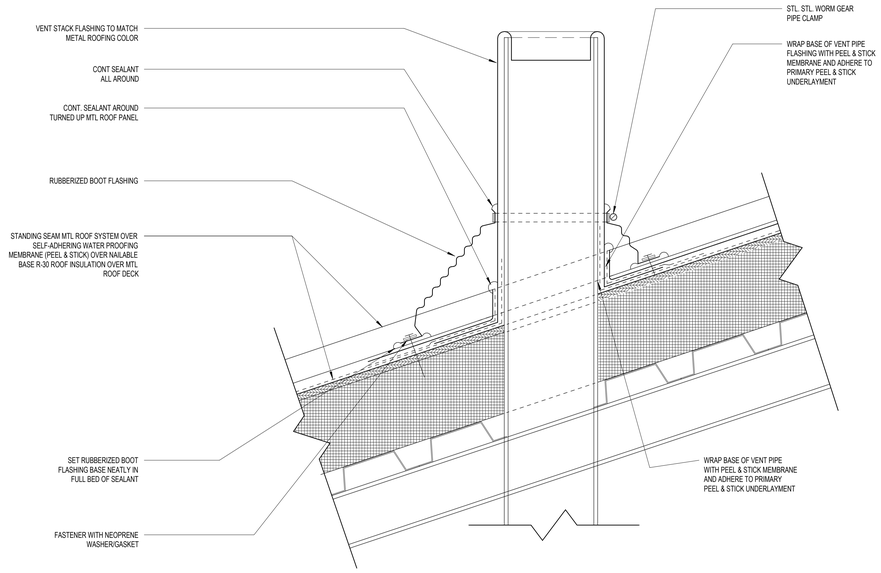
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DETAILS - ROOF SYSTEM

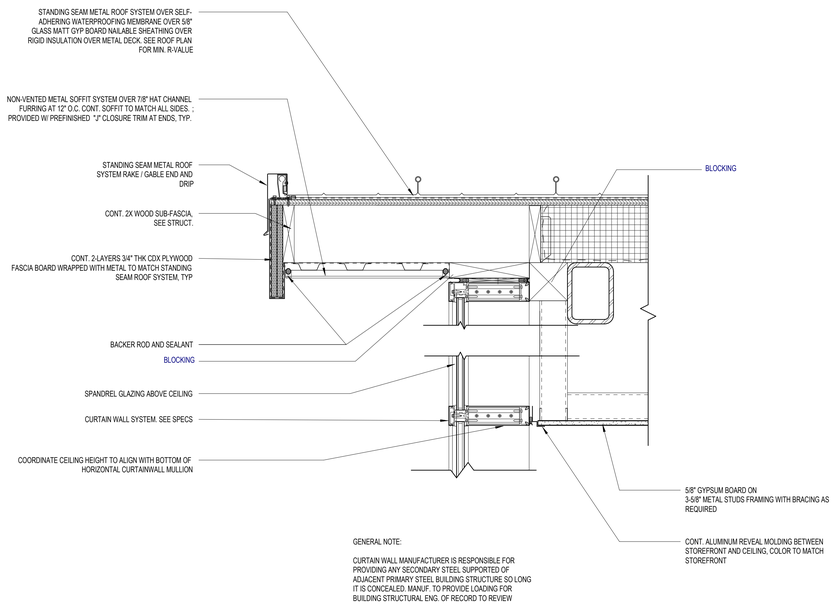
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K1 — PLUMBING VENT FLASHING (RS-SS)

3" = 1'-0"

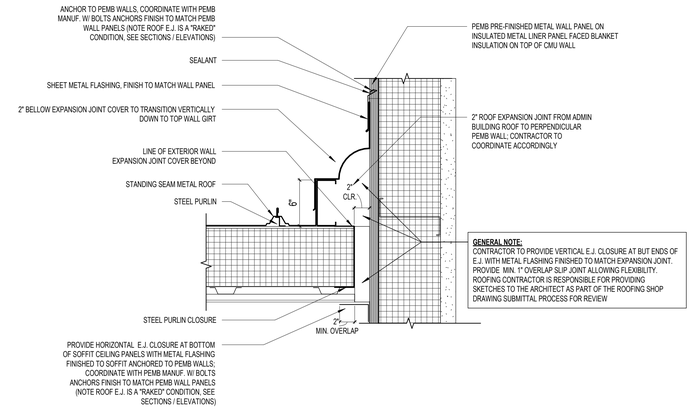


GENERAL NOTE:

CURTAIN WALL MANUFACTURER IS RESPONSIBLE FOR PROVIDING ANY SECONDARY STEEL SUPPORTED OF ADJACENT PRIMARY STEEL BUILDING STRUCTURE SO LONG IT IS CONCEALED. MANUF. TO PROVIDE LOADING FOR BUILDING STRUCTURAL ENG. OF RECORD TO REVIEW

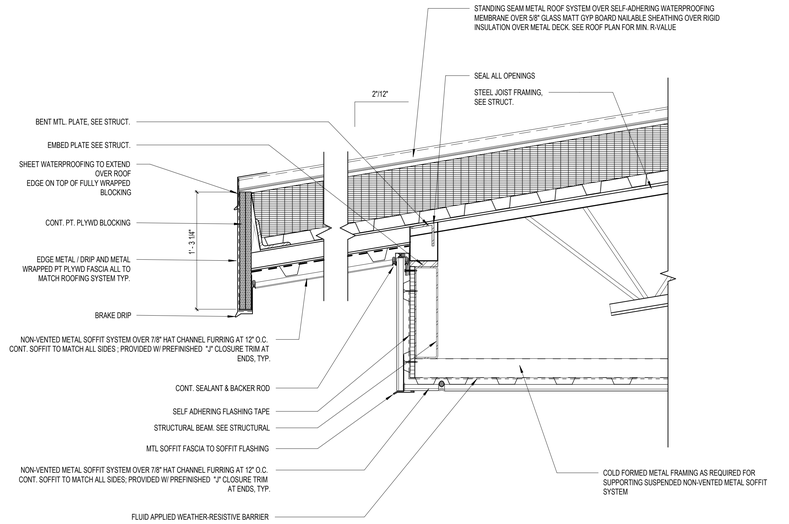
A1 — ROOF EDGE AT CURTAIN WALL

1 1/2" = 1'-0"



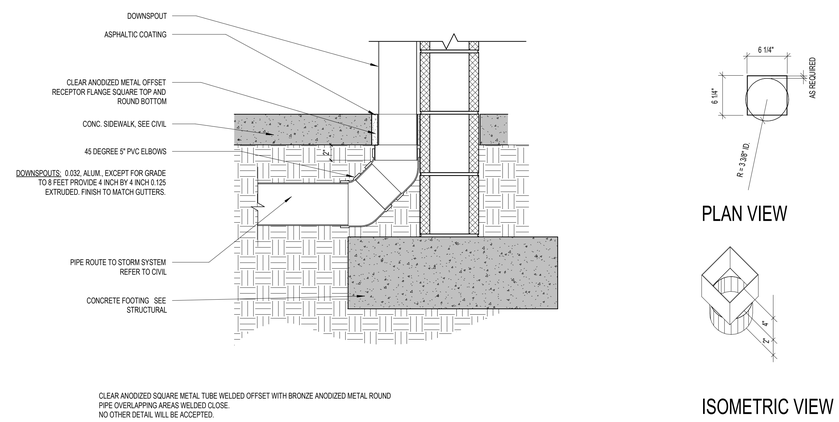
K10 — IMP - FLASHING TO METAL ROOF

1 1/2" = 1'-0"



F10 — ROOF EDGE AT PATIO

1 1/2" = 1'-0"



CLEAR ANODIZED SQUARE METAL TUBE WELDED OFFSET WITH BRONZE ANODIZED METAL ROUND PIPE OVERLAPPING AREAS WELDED CLOSE.
NO OTHER DETAIL WILL BE ACCEPTED.

A10 — DOWNSPOUT CONNECTION DETAIL - TYP.

1 1/2" = 1'-0"

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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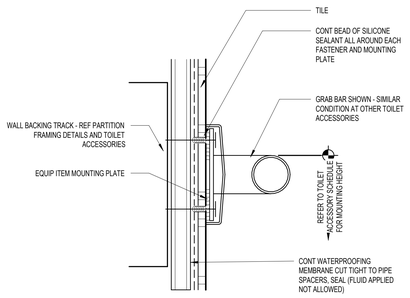
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COMM. NO.: 2021815
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DETAILS - ROOF SYSTEM

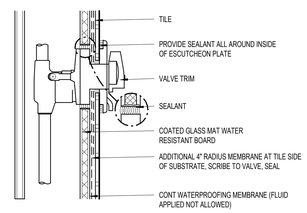
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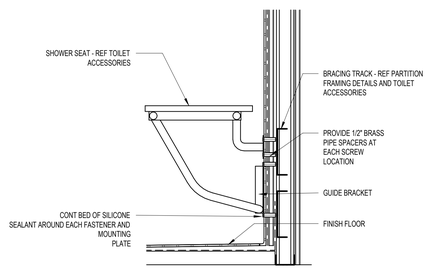
J1 SHOWER ACCESSORIES PENETRATION DETAIL

6" = 1'-0"



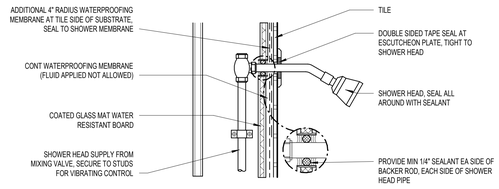
J4 SHOWER CONTROL VALVE PENETRATION DETAIL

3" = 1'-0"



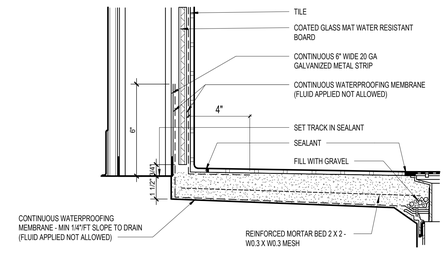
J7 ACCESSIBLE SHOWER SEAT PENETRATION DETAIL

1 1/2" = 1'-0"



E1 SHOWER HEAD PENETRATION DETAIL

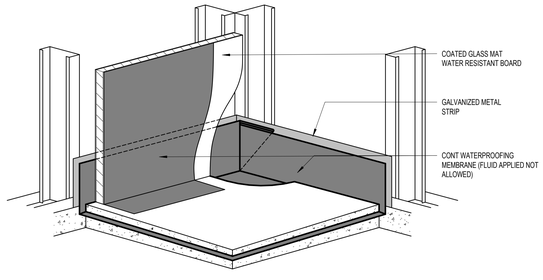
3" = 1'-0"



E6 SHOWER DETAIL @ FLOOR TO WALL

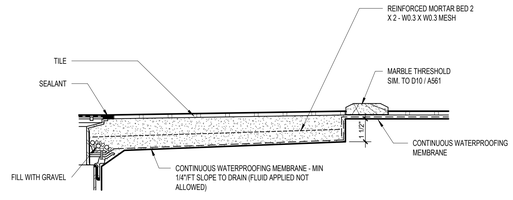
3" = 1'-0"

NOTE :
USE TCNA B415 FOR 1ST FLOOR SHOWERS FLOORS AND W244C FOR SHOWER WALLS



A1 FOLDED CORNER @ SHOWER

1 1/2" = 1'-0"



A6 SHOWER DETAIL @ ENTRY

3" = 1'-0"

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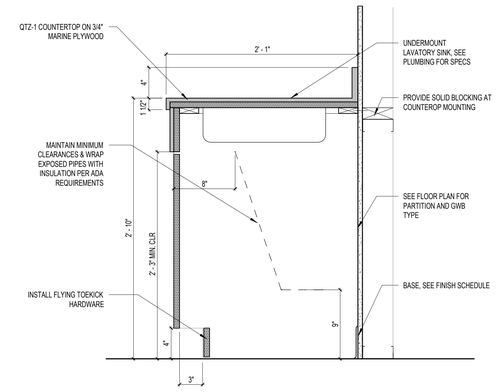
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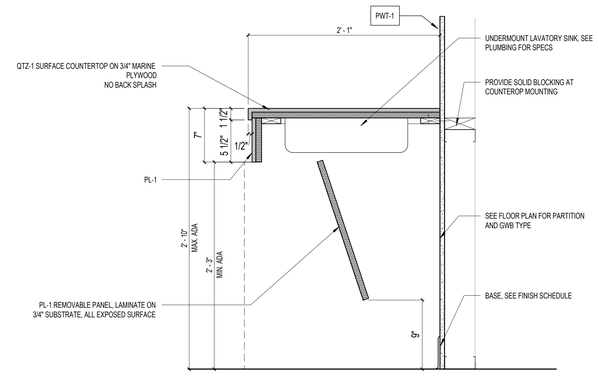
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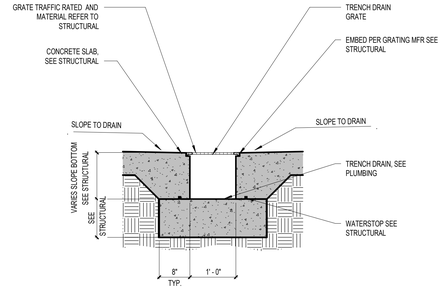
M13 COUNTER/SINK SECTION FLYING TOEKICK

1 1/2" = 1'-0"



G13 COUNTER/SINK/LAVATORY SECTION

1 1/2" = 1'-0"



A13 DETAIL SECTION THRU TRENCH DETAIL

3/4" = 1'-0"

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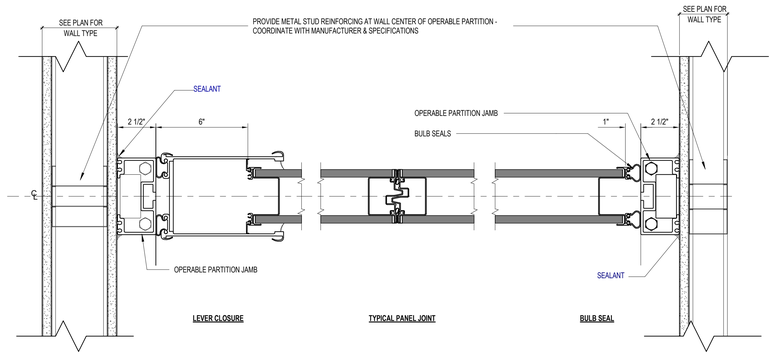
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DETAILS - INTERIOR

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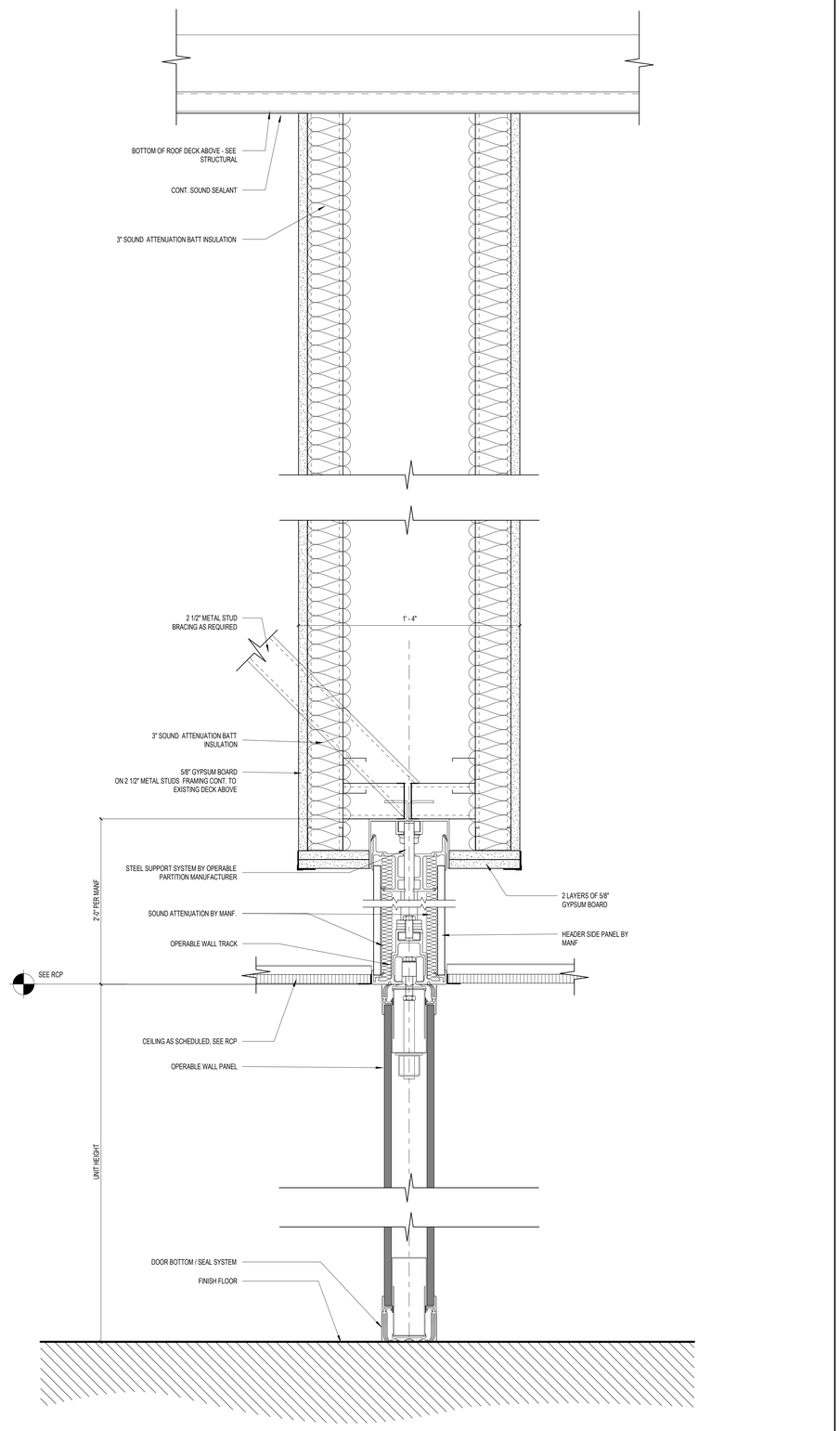
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J1

OPERABLE WALL PARTITION JAMB

3" = 1'-0"



A11

OPERABLE WALL PARTITION HEAD AND SILL

3" = 1'-0"

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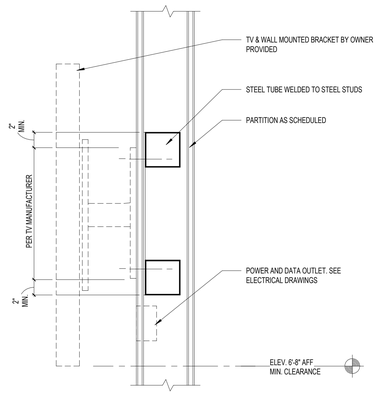
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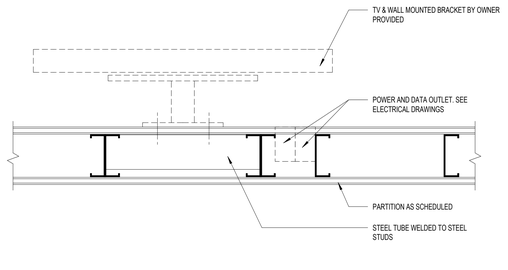
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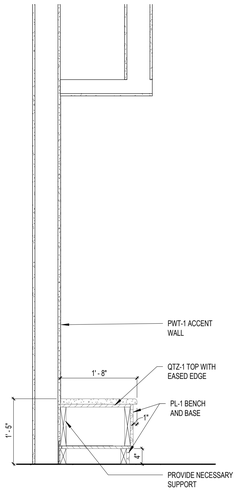
G1 WALL MOUNTED TV BLOCKING SECTION DETAIL

1 1/2" = 1'-0"



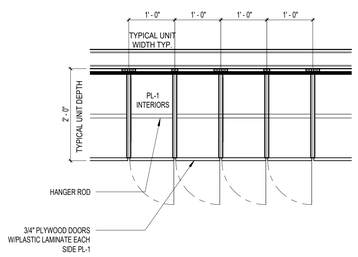
G7 WALL MOUNTED TV BLOCKING PLAN DETAIL

1 1/2" = 1'-0"



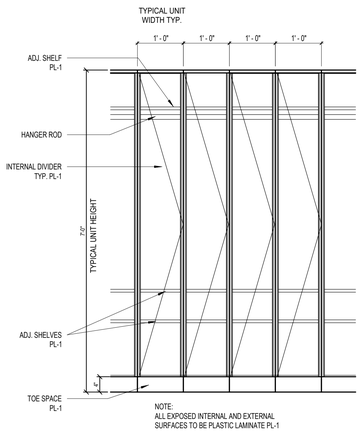
G13 BENCH SECTION

3/4" = 1'-0"



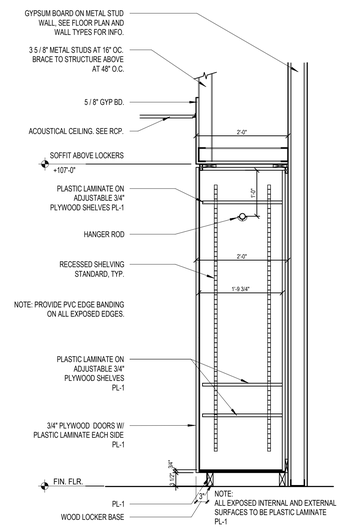
A1 RECESSED LOCKER PLAN

3/4" = 1'-0"



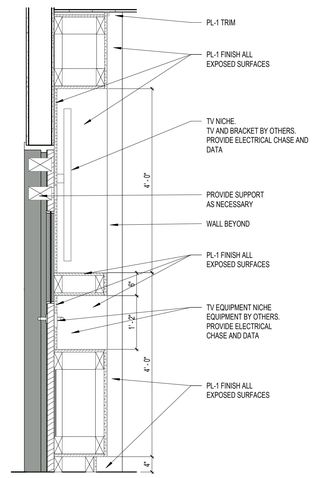
A5 RECESSED LOCKER ELEVATION

3/4" = 1'-0"



A9 RECESSED LOCKER SECTION

3/4" = 1'-0"



A13 TV WALL-CREW BREAKROOM

3/4" = 1'-0"

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1	OWNER REVISIONS MEETING	06/22/2023

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PLUMBING FIXTURE SCHEDULE

(WC-1) ADA ACCESSIBLE FLOOR MOUNTED WATER CLOSET, SENSOR OPERATED, FLUSH VALVE

BASIS OF DESIGN
CHINA - AMERICAN STANDARD 3043.001-1.28 GPF
SEAT - ELONGATED OPEN FRONT LESS COVER
SENSOR OPERATED/HARD WIRED POWER 1.28 GPF FLUSH VALVE

(L-1) ADA ACCESSIBLE WALL HUNG LAVATORY - SENSOR OPERATED

BASIS OF DESIGN
SINK - AMERICAN STANDARD - COMRADE #0124.131
FAUCET - SLAON - MODEL #EAF-200-P-ISM - .5 GPM (6VDC PLUG IN TRANSFORMER OPERATED)
TRIM PLATE - SLAON - 4" CENTERS
SUPPLIES - MCGUIRE - 2165CC
TRAP - MCGUIRE - 8912
CARRIER - ZURN OR EQUAL

(JS-1) JANITORIAL MOP SINK

BASIS OF DESIGN
MOP BASIN - STERN WILLIAMS - SBC-1725
SERVICE FAUCET - SPEAKMAN - SC-5812
MOP HANGER - STERN WILLIAMS - T-40
HOSE - STERN WILLIAMS - T-35
BACK SPLASH PROTECTOR - STERN WILLIAMS - BP

(SH-1) SHOWER

BASIS OF DESIGN
SYMMONS - SAFETYMIX SHOWER SYSTEM #1-100-1.5 (1.5 GPM)
SUPER SHOWERHEAD #4-231, SHOWERHEAD ARM AND FLANGE (ALL CHROME FINISH)
TILED ENCLOSURE BY GENERAL CONTRACTOR WITH DRAIN EQUAL TO FD-1

(EWC-1) ADA ACCESSIBLE BI-LEVEL ELECTRIC WATER COOLER W/ BOTTLE FILLER

BASIS OF DESIGN
ELKAY - #EZH20
WITH RECESSED CHILLER

(HB-1) HOSE BIBB

HOSE BIBB COMPLETE WITH BRASS VALVE BODY, VACUUM BREAKER AND WITH CHROME FINISH

BASIS OF DESIGN
WOODFORD MODEL 24

(WH-1) WALL HYDRANT WATER BOX

ENCLOSED WALL ANTI-SIPHON WALL HYDRANT COMPLETE WITH BRONZE CASING, VACUUM BREAKER, ALL BRONZE INTERIOR PARTS AND NON TURNING OPERATING ROD WITH FREE FLOATING COMPRESSION CLOSURE VALVE. WATER BOX DOOR SHALL BE BRASS CASTING WITH CHROME FINISH AND OPERATING KEY.

BASIS OF DESIGN
WOODFORD MODEL B65

(S-1) DOUBLE COMPARTMENT UNDERMOUNT STAINLESS STEEL SINK

BASIS OF DESIGN
SINK - ELKAY - LRAD3319
FAUCET - B2855-BWH4/B199-06F1.5
SUPPLIES - MCGUIRE - 2165CC
CONTINUOUS WASTE - ELKAY - LK-53
TRAP - MCGUIRE - 1000 WC / 8912
TMV-WATTS-LFMMV

(S-2) ADA ACCESSIBLE LAUNDRY SINK

BASIS OF DESIGN
SINK - JUST - LAUNDRY SINGLE TUB WITH LEGS, STAINLESS STEEL SINK #J-127FAUCET - JUST - MODEL #J-1174-KS
SUPPLIES - MCGUIRE - 2165CC
TRAP - MCGUIRE - 8912

(TMV-1) THERMOSTATIC MIXING VALVE ASSEMBLY

BASIS OF DESIGN
BRADLEY MIXING VALVE W/ BRACKET, PRE-PIPED INLET/OUTLET SHOUT-OFF AND THERMOSTAT MODEL #S59-2045-T-B-P(SET @109°F)

BASIS OF DESIGN
BRADLEY MODEL S59-2045-T-B-P

(RCP-1) RECIRCULATING PUMP(DOMESTIC HOT WATER)

BASIS OF DESIGN
RECIRCULATING PUMP (BELL & GOSSETT MODEL #PL-50B - 115v / 1.8amps / 1/6hp - 8GPM @ 20FT HD.)

PLUMBING FIXTURE SCHEDULE - CONTINUED

(GD-1) GARBAGE DISPOSAL

MULTI-GRIND W/ SOUND SEAL, 3/4 HP MOTOR W/ STAINLESS STEEL GRIND CHAMBER & COMPONENTS

BASIS OF DESIGN
SERVICE BOX - GUY GRAY - MODEL #W4012 W/ SEPARATE SUPPLY CONNECTION.

(WB-1) DISHWASHING MACHING DRAIN BOX W/SUPPLY

BASIS OF DESIGN
SERVICE BOX - GUY GRAY - MODEL #W4012 W/ SEPARATE SUPPLY CONNECTION.

(IMB-1) ICE MAKER SUPPLY BOX

BASIS OF DESIGN
SERVICE BOX - GUY GRAY - MODEL #BIM875AB

(FD-1) FLOOR DRAIN - AREA FLOOR DRAIN

COATED CAST IRON BODY WITH BOTTOM OUTLET, COMBINATION INVERTIBLE MEMBRANE CLAMP AND ADJUSTABLE TYPE "S" NICKEL BRONZE STRAINER, 6" SQUARE TOP, TAPPED FOR TRAP PRIMER CONNECTION, VANDAL PROOF.
(SEE FLOOR PLAN FOR DRAIN AND P-TRAP SIZES IN EACH LOCATION.)

BASIS OF DESIGN
ZURN - ZN415S-P

(FD-2) FLOOR DRAIN - MECHANICAL

COATED CAST IRON BODY WITH BOTTOM OUTLET, COMBINATION INVERTIBLE MEMBRANE CLAMP AND TROWEL FLANGE TOP, 12" ROUND TOP, DEEP SEAL TRAP, VANDAL PROOF.
(SEE FLOOR PLAN FOR DRAIN AND P-TRAP SIZES IN EACH LOCATION.)

BASIS OF DESIGN
ZURN - Z532-VP

(HD-1) HUB DRAIN - MECHANICAL CONDENSATE

COATED CAST IRON BODY WITH BOTTOM OUTLET, COMBINATION INVERTIBLE MEMBRANE CLAMP AND AND ADJUSTABLE TYPE "I" NICKEL BRONZE STRAINER, 9" RAISED ROUND TOP AND DEEP SEAL TRAP.
(SEE FLOOR PLAN FOR DRAIN AND P-TRAP SIZES IN EACH LOCATION.)

BASIS OF DESIGN
ZURN - ZN415I-VP

(TP-1) AUTOMATIC TRAP PRIMER VALVE

MACHINED OF CORROSION RESISTANT BRASS SHALL NOT CONTAIN SPRINGS OR DIAPHRAGMS. "O" RING SEALS TESTED FOR RELIABILITY BETWEEN -40 TO 450D F. INLET OPENING SHALL BE 1/2-INCH MALE NPT, OUTLET SHALL BE 1/2-INCH FEMALE NPT.

TRAP PRIMER OPERATES VIA LINE PRESSURE DROP AND DOES NEED TO BE PLACED NEAR A FIXTURE. REFER TO MANUFACTURER FOR PROPER INSTALLATION.

BASIS OF DESIGN
PRECISION PLUMBING PRODUCTS - P-1 OR P-2

PISTON OPERATED, TYPE "K" COPPER BARREL WITH BRASS THREADED ADAPTOR. ALL JOINTS SHALL BE MADE WITH 95-5 LEAD FREE SOLDER. THE PISTON SHALL BE EQUIPPED WITH TWO (2) "O" RINGS TO PROVIDE A PERMANENT MECHANICAL BARRIER BETWEEN FLUID AND PRE-LOAD AIR CHARGE. ARRESTORS MAY BE INSTALLED IN VERTICAL AND HORIZONTAL POSITION.

THE ARRESTOR SHALL BE FULLY GUARANTEED FOR ENTIRE SYSTEM LIFE.

NOTE: SHOCK ARRESTORS SHALL BE PROVIDED AT ALL QUICK CLOSING FIXTURES AND BATTERIES OF FIXTURES, IN ACCORDANCE WITH THE PLUMBING DRAINAGE INSTITUTE RECOMMENDATIONS, WHETHER OR NOT THEY ARE SHOWN ON THE DRAWINGS.

BASIS OF DESIGN
PRECISION PLUMBING PRODUCTS - SC SERIES

(CO) CLEANOUTS

GENERAL(ALL FLOOR CLEANOUTS): DURO-COATED CAST IRON CLEANOUT WITH MEMBRANE FLANGE WITH CADMIUM PLATED CAST IRON COUNTERSUNK PLUG. CLEANOUT CAN BE ADJUSTED TO FINISH FLOOR LEVEL AFTER CONCRETE HAS SET.

FLOOR: HEAVY DUTY ROUND SCORIATED NICKEL BRONZE TOP

CARPETED FLOOR: HEAVY DUTY ROUND NICKEL BRONZE TOP RECESSED FOR CARPET.

TILE FLOOR: HEAVY DUTY ROUND NICKEL BRONZE TOP RECESSED FOR TILE.

WALL: CAST IRON CLEANOUT TEE, CADMIUM PLATED CAST IRON COUNTERSUNK PLUG, SMOOTH SQUARE NICKEL BRONZE WALL ACCESS COVER AND FRAME.

PLUG: DURA-COATED CAST IRON FERRULE AND CADMIUM PLATED CAST IRON COUNTERSUNK PLUG.

BASIS OF DESIGN
FLOOR - ZURN - ZN-1400
CARPETED FLOOR - ZURN - ZN-1400-CF
TILE FLOOR - ZURN - ZN-1400-DC
EXTERIOR FLOOR - ZURN - ZN-1406
WALL - ZURN - 1445-4
PLUG - ZURN - Z-1440

(TD-1) TRENCH DRAIN

6-3/4" WIDE REVEAL, 4" THROAT. MODULAR HEEL PROOF, TOP MADE OF HIGH DENSITY POLYETHYLENE (HDPE). PROVIDE WITH CHANNELS THAT LOCK DOWN TO FRAME AND CERTIFIED TO ASTM A536-84 AND CLASS C RATED.

BASIS OF DESIGN
ZURN - Z886-HD-DGC

PLUMBING SYMBOLS

SYMBOL	DESCRIPTION
CD	- CONDENSATE DRAIN PIPING
CW	- DOMESTIC COLD WATER PIPING
HW	- DOMESTIC HOT WATER PIPING
HWR	- DOMESTIC HOT WATER RETURN PIPING
S	- SANITARY WASTE PIPING
V	- VENT PIPING
ST	- STORM DRAIN PIPING
STO	- OVERFLOW STORM DRAIN PIPING
G	- FUEL GAS PIPING
	- HOSE BIBB OR WALL HYDRANT
CO	- CLEANOUT PLUG
CO	- WALL CLEANOUT
CO	- FLOOR CLEANOUT / EXTERIOR CLEANOUT
FD	- FLOOR DRAIN
FS	- FLOOR SINK
DD	- DECK DRAIN
	- SHUT-OFF VALVE
	- BALL VALVE
	- CALIBRATED BALANCING VALVE
	- CHECK VALVE (SWING)
	- PRESSURE REDUCING VALVE
S	- SOLENOID OPERATING VALVE
	- GAS COCK
	- GAS PRESSURE REGULATOR
DETAIL No. 4 / P4.101 SHEET No. SHOWN ON	- DETAIL REFERENCE
4" S PIPE SIZE — PLUMBING SYSTEM	- PIPE TAG
1	- REVISION REFERENCE

PLUMBING ABBREVIATIONS

CA	-	COMPRESSED AIR
AFF	-	ABOVE FINISH FLOOR
AW	-	ACID WASTE
AV	-	ACID VENT
CB	-	CATCH BASIN
CD	-	CONDENSATE DRAIN
CFH	-	CUBIC FEET PER HOUR
CO	-	CLEANOUT
CONT	-	CONTINUATION
CW	-	DOMESTIC COLD WATER
DI	-	DEIONIZED WATER
DN	-	DOWN
DS	-	DOWNSPOUT
DWG	-	DRAWING
EXIST	-	EXISTING
°F	-	DEGREE FAHRENHEIT
FCO	-	FLOOR CLEANOUT
FD	-	FLOOR DRAIN
FOF	-	FUEL OIL FILL
FOG	-	FUEL OIL GAGE
FOR	-	FUEL OIL RETURN
FOS	-	FUEL OIL SUPPLY
FOV	-	FUEL OIL VENT
FS	-	FLOOR SINK
FSE#	-	FOODSERVICE EQUIPMENT NUMBER
G	-	GAS
GPH	-	GALLONS PER HOUR
GPM	-	GALLONS PER MINUTE
GR	-	KITCHEN WASTE (GREASE)
HB	-	HOSE BIBB
HD	-	HUB DRAIN
HW	-	DOMESTIC HOT WATER
HWR	-	DOMESTIC HOT WATER RECIRCULATING
IE	-	INVERT ELEVATION
IW	-	INDIRECT WASTE
KW	-	KILOWATT
LBS	-	POUNDS
MH	-	MANHOLE
NC	-	NORMALLY CLOSED
NIC	-	NOT IN CONTRACT
NO	-	NORMALLY OPEN
NP	-	NON-POTABLE WATER
NTS	-	NOT TO SCALE
OD	-	OUTSIDE DIAMETER
PRV	-	PRESSURE REDUCING VALVE
PSI	-	POUNDS PER SQUARE INCH
PVC	-	POLYVINYL CHLORIDE PIPE
RD	-	ROOF DRAIN
RPBP	-	REDUCED PRESSURE BACKFLOW PREVENTOR
SAN	-	SANITARY
SD	-	STORM DRAIN
SF	-	SQUARE FEET
SH	-	SHEET
ST	-	STORM
STO	-	OVERFLOW STORM DRAIN
SW	-	SOFT COLD WATER
V	-	VENT
VAC	-	VACUUM
VC	-	VACUUM CLEANING
VTR	-	VENT THRU ROOF
WCO	-	WALL CLEANOUT
WTR	-	WATER

NOTE: SOME SYMBOLS SHOWN ON THIS LEGEND MAY NOT PERTAIN TO THIS PROJECT

ELECTRIC WATER HEATER SCHEDULE

MARK	MANUFACTURER	MODEL	STORAGE CAPACITY (GAL)	STORAGE TEMP (°F)	DELIVERY TEMP (°F)	KW	VOLT / PHASE	DIMENSIONS	RECOVERY (100°F RISE)	OPERATING WEIGHT (LBS)
EWH-1	OA SMITH		50	140	110	12	208/3			
EWH-2	EEMAX		0	NA		3	208/1			
EWH-3	EEMAX		0	NA		3	208/1			

PLUMBING GENERAL NOTES

1. REFERENCE THE SPECIFICATIONS FOR MATERIAL AND EQUIPMENT INSTALLATION STANDARDS.
2. THE PLUMBING INSTALLATION SHALL COMPLY WITH ALL 2023 FBC CODES FOR FIRE PREVENTION, PLUMBING, AND ENERGY AS WELL AS STATE AND LOCAL CODES.
3. UTILITIES AND SERVICES INDICATED ARE TAKEN FROM VARIOUS OLD AND NEW SURVEYS, AS-BUILT RECORDS AND FIELD INVESTIGATIONS. UNFORSEEN CONDITIONS PROBABLY EXIST AND NEW WORK MAY NOT BE FIELD LOCATED EXACTLY AS SHOWN ON DRAWINGS. COOPERATION WITH OTHER TRADES IN ROUTING AND BURIAL DEPTHS, AS DETERMINED DURING CONSTRUCTION, WILL BE NECESSARY.
4. FIELD VERIFY EXISTING INSTALLATIONS. MODIFY EXISTING PLUMBING SYSTEMS, WHICH ARE TO REMAIN ACTIVE, TO FACILITATE RECONNECTION AND EXTENSION OF THE NEW WORK.
5. NOTIFY OWNER AT LEAST 24 HOURS PRIOR TO INTERRUPTING EXISTING SERVICE. SCHEDULE DISCONNECTION AND TIE-INS TO MINIMIZE DISRUPTION OF SERVICES. SERVICES ARE NOT TO BE LEFT DISRUPTED DURING NON-NORMAL CONTRACTOR WORKING HOURS.
6. PLANS ARE NOT COMPLETELY TO SCALE. PIPE ROUTING SHOWN IS SCHEMATIC AND IS NOT INTENDED TO INDICATE EXACT ROUTING. CONTRACTOR SHALL PROVIDE ANY ADDITIONAL OFFSETS AND FITTINGS REQUIRED FOR PROPER INSTALLATION AND TO MAINTAIN CLEARANCES. VERIFY STRUCTURAL, MECHANICAL AND ELECTRICAL INSTALLATIONS AND OTHER POTENTIAL OBSTRUCTIONS AND ROUTE PIPING TO AVOID INTERFERENCES.
7. PROVIDE ALL OFFSETS AND FITTINGS AND MAKE CONNECTION TO SITE UTILITIES.
8. CONCEAL PIPING ABOVE CEILINGS, WITHIN WALLS OR CHASES EXCEPT IN MECHANICAL ROOMS OR AS SPECIFICALLY NOTED.
9. PROVIDE ACCESS PANELS FOR ALL VALVES CONCEALED IN WALLS OR ABOVE NON-ACCESSIBLE CEILINGS.
10. SLEEVE AND/OR FIRESTOP ALL PENETRATIONS THROUGH RATED WALLS, CEILINGS, AND FLOORS WITH UL LISTED ASSEMBLIES. FIRESTOP ASSEMBLIES SHALL BE EQUAL TO OR EXCEED THE RATING OF THE WALL, CEILING OR FLOOR. SEE ARCHITECTURAL DRAWINGS FOR FINAL FINISHES.
11. FLASH AND COUNTER-FLASH ROOF PENETRATIONS.
12. WHEN BEAM SLEEVE PENETRATIONS ARE NECESSARY, COORDINATE PENETRATIONS WITH ALL TRADES, THE ARCHITECT AND THE STRUCTURAL ENGINEER.
13. PROVIDE FOUNDATION PAD PENETRATION SLEEVES. ALLOW 1" MINIMUM CLEARANCE BETWEEN SLEEVE INSIDE SURFACE AND PIPE EXTERIOR.
14. SEE ARCHITECTURAL DRAWINGS FOR FIXTURE LOCATIONS AND MOUNTING HEIGHTS.
15. PROVIDE AUTOMATIC TRAP PRIMERS FOR FLOOR DRAIN TRAP SEALS.
16. PROVIDE AN AIR GAP, WHEN REQUIRED BY CODE, SERVING INDIVIDUAL FIXTURES, DEVICES, APPLIANCES AND APPARATUS.
17. ALL EXPOSED PIPE AND FITTINGS IN FINISHED AREAS SHALL BE CHROME PLATED.
18. MOUNT HOSE BIBBS 24" ABOVE FINISHED GRADE.
19. PROVIDE CLEANOUTS IN ACCORDANCE WITH ALL STATE AND LOCAL CODES. INSTALL CLEANOUT WITH COVER FLUSH TO FINISH SURFACE.
20. COORDINATE EXACT FLOOR DRAIN LOCATIONS WITH ARCHITECTURAL DRAWINGS. SET FLOOR DRAINS BELOW FINISHED FLOOR TO ALLOW FOR FLOOR SLOPING TO THE DRAIN.
21. COORDINATE PIPING WITH ALL ELECTRICAL EQUIPMENT (PANELS, TRANSFORMERS, ETC.) PRIOR TO ANY INSTALLATION. DO NOT ROUTE ANY PIPING OVER ANY ELECTRICAL PANELS UNDER ANY CIRCUMSTANCES. ANY PIPING RUN OVER PANELS SHALL BE RE-ROUTED AT NO ADDITIONAL COST.
22. ALL WALL MOUNTED LAVATORIES SHALL BE ATTACHED TO FLOOR MOUNTED CARRIER DESIGNED TO WITHSTAND A VERTICAL LOAD OF 250 POUNDS ON THE FRONT OF THE FIXTURE.
23. PROVIDE SANITARY WASTE, VENT, DOMESTIC WATER, ETC. ROUGH-IN AND MAKE FINAL CONNECTIONS (TO INCLUDE PROVIDING ALL NECESSARY RELATED STOPS, VALVES, TRAPS, ETC. AND MAKE READY FOR USE) TO ALL EQUIPMENT, WHETHER FURNISHED BY THIS CONTRACTOR OR FURNISHED BY OTHERS.

PLUMBING DRAWING INDEX

SHEET	DESCRIPTION
P001	PLUMBING SYMBOLS, LEGEND, NOTES AND INDEX
P101A	PLUMBING FLOOR PLAN ADMIN
P101B	PLUMBING FLOOR PLAN WAREHOUSE
P300	PLUMBING DETAILS
P301	PLUMBING RISERS
P302	PLUMBING RISERS
P303	PLUMBING RISERS

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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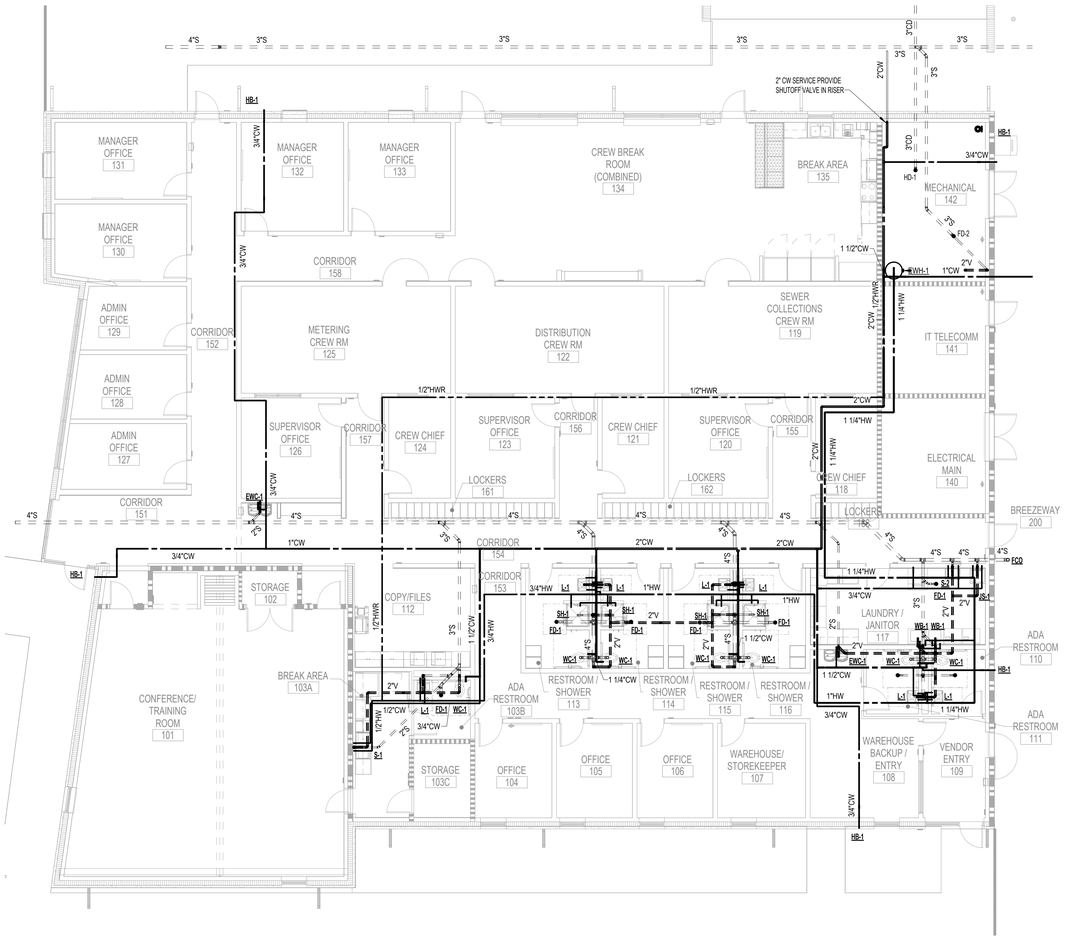
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MARK	DESCRIPTION	DATE

COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
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PLUMBING SYMBOLS, LEGEND, NOTES AND INDEX

P001
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1 PLUMBING FIRST FLOOR PLAN ADMIN ENLARGED

1/8" = 1'-0"

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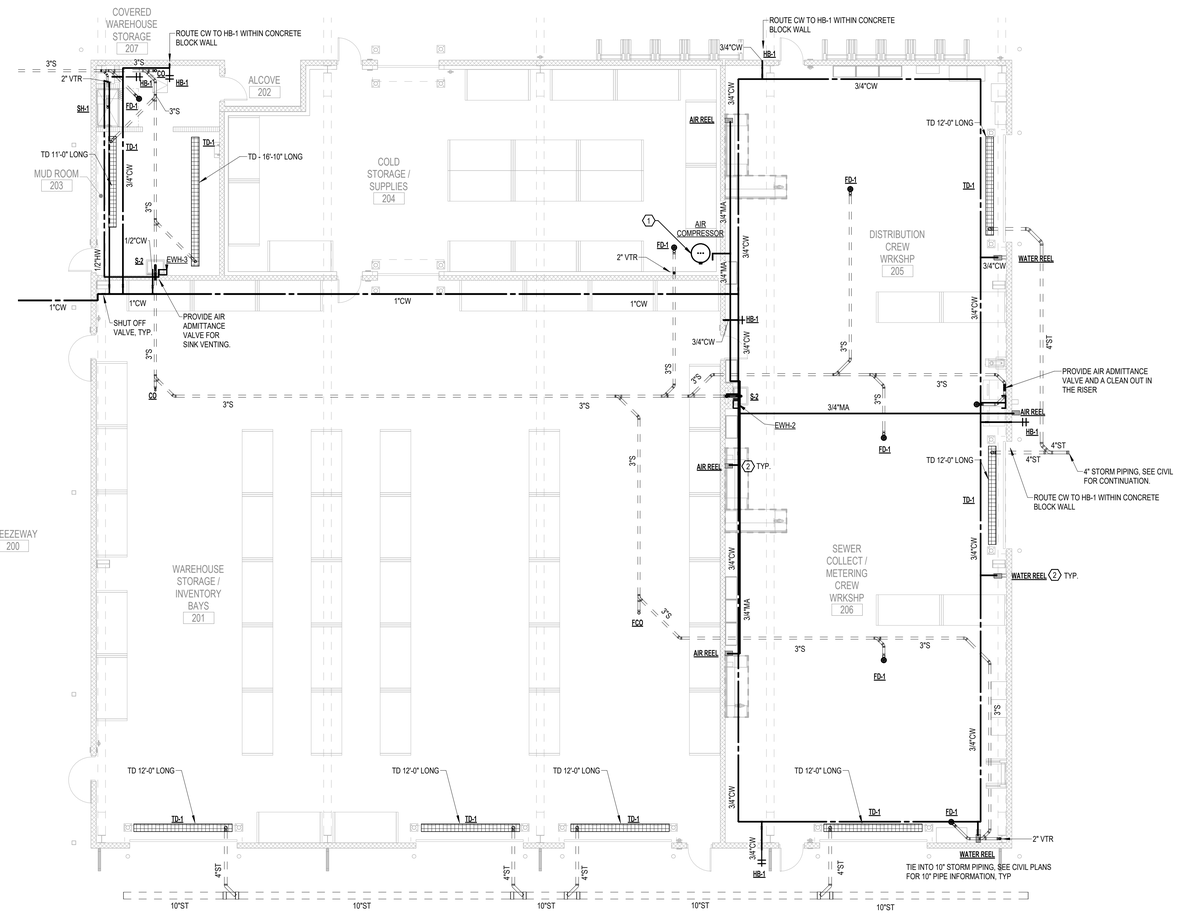
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MARK	DESCRIPTION	DATE

COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
DRAWN BY: JCM

PLUMBING FLOOR PLAN ADMIN

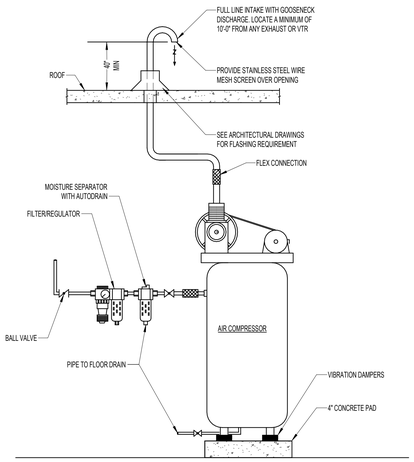
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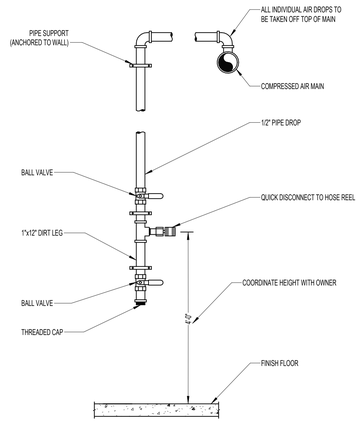


REFERENCED NOTES:

1. AIR COMPRESSOR, (2) 5 HP, 208/1, 80 GALLON, BASIS OF DESIGN: GARDNER DENVER, MODEL API-SD-12
2. AIR REEL, BASIS OF DESIGN: COXREELS, MODEL SH-SS SERIES, 50 FEET HOSE LENGTH, MAX 3000 PSI, 1/2" HOSE. PROVIDE 50' AIR HOSE. SEE DETAIL THIS PAGE.



2 AIR COMPRESSOR - SIMPLEX
N.T.S.



3 COMPRESSED AIR DROP
N.T.S.

1 PLUMBING FIRST FLOOR PLAN WAREHOUSE ENLARGED

1/8" = 1'-0"

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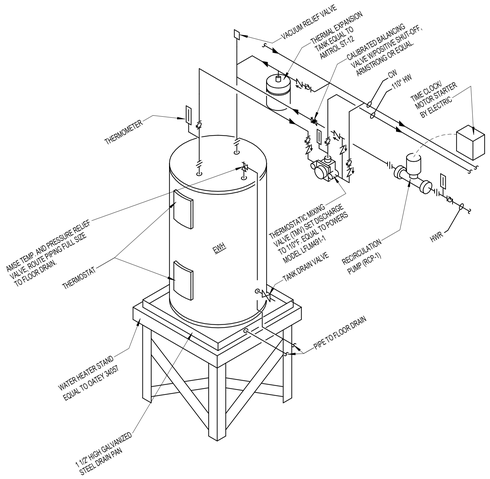
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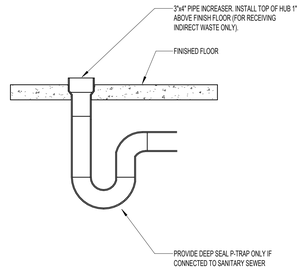
PLUMBING FLOOR PLAN WAREHOUSE

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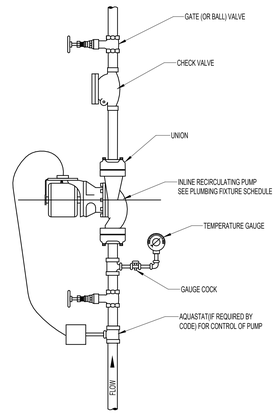
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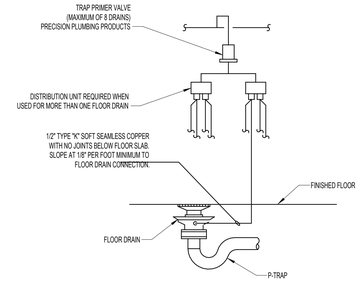
1 ELECTRIC WATER HEATER - EWH-1
N.T.S.



10 HUB DRAIN
12" = 1'-0"



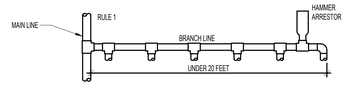
3 RECIRCULATING PUMP
N.T.S.



4 TRAP PRIMER
N.T.S.

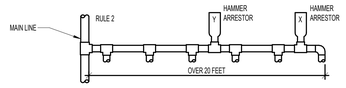
RULE 1: BRANCH LINES OF 20 FEET OR LESS.

THE HAMMER ARRESTOR TO BE PLACED AT THE END OF THE BRANCH LINE BETWEEN THE LAST TWO FIXTURES.



RULE 2: BRANCH LINES OVER 20 FEET

AN ADDITIONAL HAMMER ARRESTOR (Y) TO BE PLACED AS SHOWN (BELOW). THE ADDITIONAL UNIT PLACED AT THE MIDPOINT OF THE RUN LONGER THAN 20 FEET. THE SUM OF THE FIXTURE UNIT RATINGS OF (X) AND (Y) COMBINED, SHOULD BE EQUAL TO OR GREATER THAN THE DEMAND OF ALL BRANCHES. INSTALL IN A ACCESSIBLE AREA

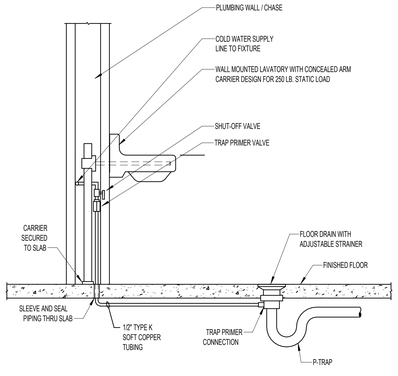


SHOCK ARRESTOR SCHEDULE

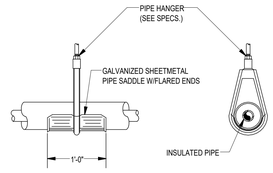
MARK	FIXTURE UNITS	MANUFACTURER	MODEL	N.P.T.
SA-A	1-11	PRECISION PLUMBING PRODUCTS	SC-500A	1/2"
SA-B	12-32	PRECISION PLUMBING PRODUCTS	SC-750B	3/4"
SA-C	33-60	PRECISION PLUMBING PRODUCTS	SC-1000C	1"
SA-D	61-113	PRECISION PLUMBING PRODUCTS	SC-1250D	1"
SA-E	114-154	PRECISION PLUMBING PRODUCTS	SC-1500E	1"
SA-F	155-330	PRECISION PLUMBING PRODUCTS	SC-2000F	1"

NOTES:
1. PISTON OPERATED, TYPE "K" COPPER BARREL WITH BRASS THREADED ADAPTOR, ALL JOINTS SHALL BE MADE WITH 95-5 LEAD FREE SOLDER. THE PISTON SHALL BE EQUIPPED WITH TWO (2) "O" RINGS TO PROVIDE A PERMANENT MECHANICAL BARRIER BETWEEN FLUID AND PRE-LOAD AIR CHARGE. ARRESTORS MAY BE INSTALLED IN VERTICAL AND HORIZONTAL POSITION. THE ARRESTOR SHALL BE FULLY GUARANTEED FOR ENTIRE SYSTEM LIFE.

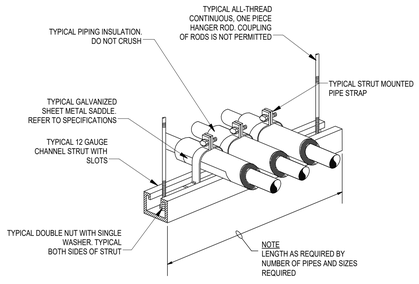
5 SHOCK ARRESTOR
N.T.S.



11 TRAP PRIMER
12" = 1'-0"



8 HANGER(SINGLE)
12" = 1'-0"



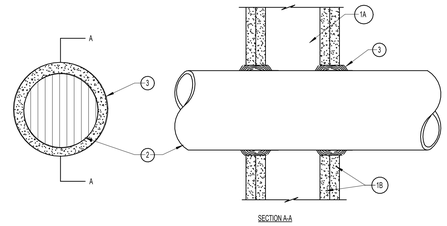
NOTE:

1. REFER TO SPECIFICATIONS AND FLOOR PLANS FOR

2. SPECIFIED HANGER ROD, STRUT, NUTS, WASHER, AND PIPE STRAPS SHALL BE OF GALVANIZED PLATED MATERIALS

9 HANGER(TRAPEEZE)
12" = 1'-0"

System No. W-L-1001
(Formerly System No. 147)
F Rating--1, 2, 3 and 4 Hr (See Items 2 and 3)
T Ratings--0, 1, 2, 3, and 4 Hr (See Items 2 and 3)
L Rating at Ambient--less than 1 CFM/sq ft
L Rating At 400 F--less than 1 CFM/sq ft



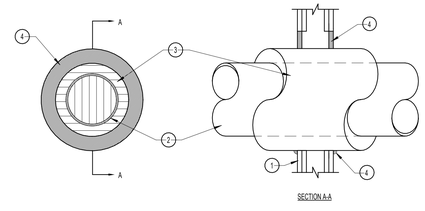
1. Wall Assembly--The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs--Wall framing may consist of either wood studs (max 2 h fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC with nom 2 by 4 in. lumber end plates and cross braces. Steel studs to be min 3-5/8 in. wide by 1-3/8 in. deep channels spaced max 24 in. OC.
   B. Wallboard, Gypsum *--Nom 1/2 or 5/8 in. thick, 4 ft. wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 13-1/2 in.
2. Pipe or Conduit--Nom 12 in. diam (or smaller) Schedule 10 (or heavier) steel pipe, nom 12 in. diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in. diam (or smaller) Class 50 (or heavier) ductile iron pressure pipe, nom 6 in. diam (or smaller) steel conduit, nom 4 in. diam (or smaller) steel electrical metallic tubing, nom 6 in. diam (or smaller) Type L or (or heavier) copper tubing or nom 1 in. diam (or smaller) flexible steel conduit. When copper pipe is used, max F Rating of firestop system (Item 3) is 2 h. Steel pipes or conduits larger than nom 4 in. diam may only be used in walls constructed using steel channel studs. A max of one pipe or conduit is permitted in the firestop system. Pipe or conduit to be installed near center of stud cavity width and to be rigidly supported on both sides of wall assembly.
3. Fill, Void or Cavity Material*--Caulk--Caulk fill material installed to completely fill annular space between pipe or conduit and gypsum wallboard and with a min 1/4 in. diam bead of caulk applied to perimeter of pipe or conduit at its egress from the wall. Caulk installed symmetrically on both sides of wall assembly. The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T Rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

Max pipe or Conduit Diam In.	Annular Space In.	F Rating Hr.	T Rating Hr.
1	3 to 3/16	1 or 2	0+, 1 or 2
1	1/4 to 1/2	3 or 4	3 or 4
4	0 to 1-1/2	1 or 2	0
6	1/4 to 1/2	3 or 4	0
12	3/16 to 3/8	1 or 2	0

+When copper is used, T Rating is 0h.
Minnesota Mining & Mfg. Co. --Types FB-2000, FB-2000+.
*Bearing the UL Classification Marking

6 WALL - DRYWALL - PIPE - 1,2,3,4 HOUR
N.T.S.

System No. W-L-5029
F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 1/2, 3/4, 1 and 1-3/4 Hr (See Item 3)
L Rating At Ambient - 4 CFM/Sq Ft
L Rating At 400 F - Less Than 1 CFM/Sq Ft



1. Wall Assembly - The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC.
   B. Wallboard, Gypsum* - 5/8 in. thick, 4 ft wide, with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 19-5/8 in. The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through Penetrants - One metallic pipe, conduit or tubing to be centered within the firestop system. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe - Nom 12 in diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Conduit - Nom 4 in. diam (or smaller) electrical metallic tubing or steel conduit.
   C. Copper Tubing - Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
   D. Copper Pipe - Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
3. Pipe Covering* - Nom 1, 1-1/2 or 2 in. thick hollow cylindrical heavy density (min 3.5 pcf) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing tap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product.
   See Pipe and Equipment Covering - Materials (BRGU) category in the Building Material Directory for the names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
   The hour T Rating of the firestop system is dependent on the hourly fire rating of the wall assembly in which it is installed, the size and type of through penetrant and the pipe covering thickness, as shown in the table below:

Wall Assembly Rating Hr	Type+	Through Penetrant Max Diam In.	Pipe Covering Thkns In.	Annular Space Min In.	Annular Space Max In.	T Rating Hr
1	A or B	4	1	0	1-1/2	1/2
1	C or D	2	1 or 1-1/2	0	1-1/2	1/2
1	A or B	4	1-1/2	0	1-1/2	1
1	A	12	2	0	1-7/8	3/4
1	C or D	6	2	0	1-7/8	1
2	A or B	4	1	0	1-1/2	1
2	C or D	4	1 or 1-1/2	0	1-1/2	1
2	C or D	6	2	0	1-7/8	1
2	A or B	4	1-1/2	0	1-1/2	1-3/4
2	A	12	2	0	1-7/8	1-1/2
2	C or D	6	2	0	1-7/8	1

+Indicates penetrant type as itemized in Item 2.
4. Fill Void or Cavity Material* - Sealant - Min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall for 1 or 2 hr walls, respectively. At the point contact location between pipe covering and gypsum wallboard, a min 1/2 in. diam bead of fill material shall be applied at the pipe covering/gypsum wallboard interface on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI, Inc - FS-ONE Sealant
*Bearing the UL Classification Marking

7 WALL - DRYWALL - PIPE/INSULATED - 1 AND 2 HOUR
N.T.S.

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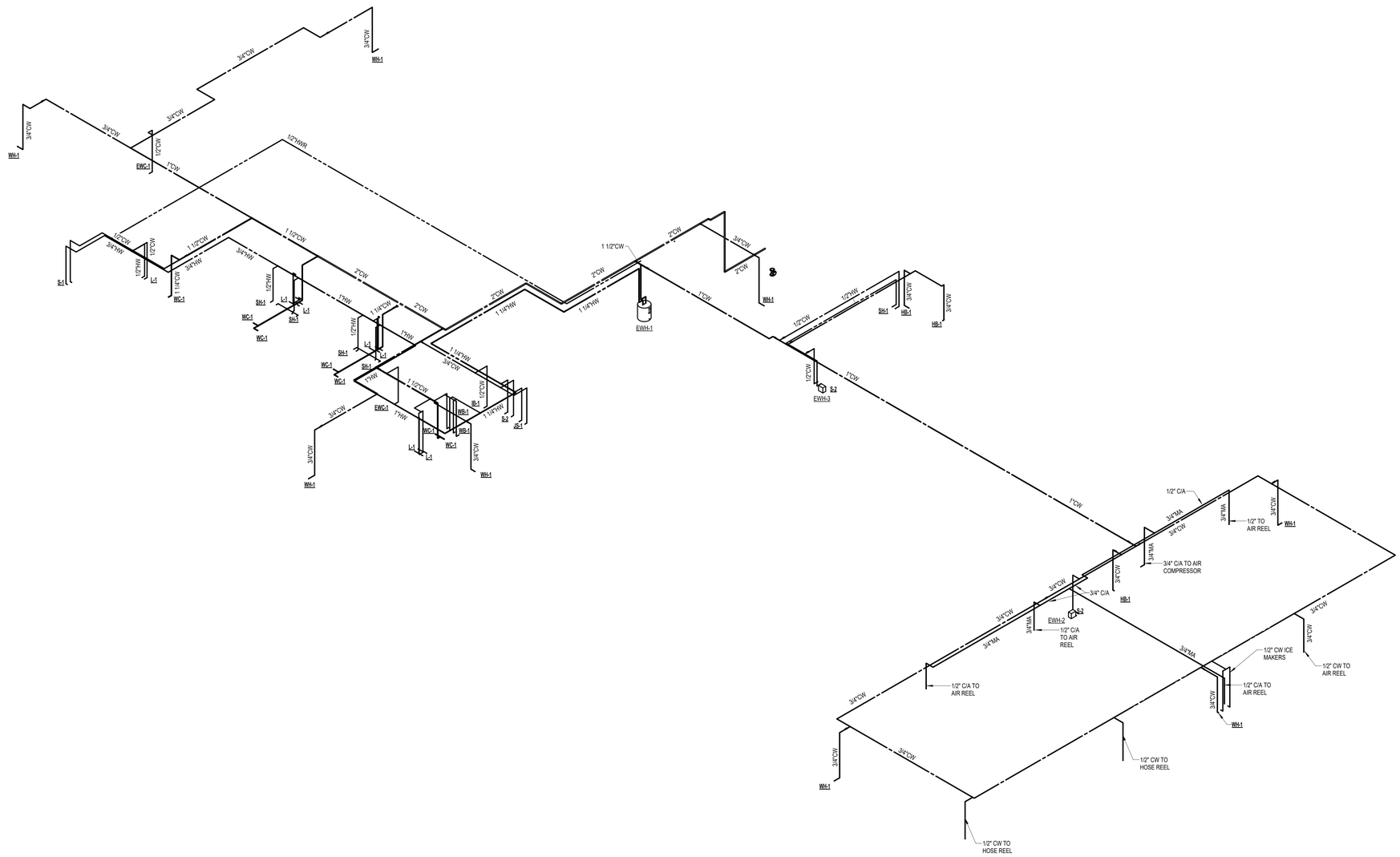
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PLUMBING DETAILS

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1 PLUMBING PRESSURE RISER

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1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
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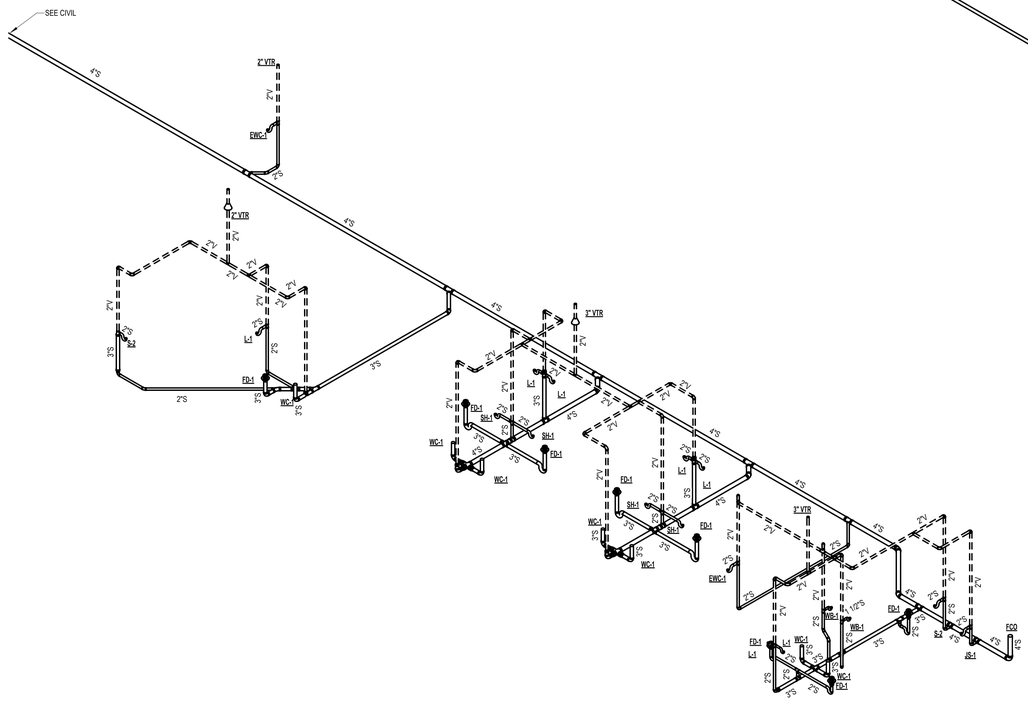
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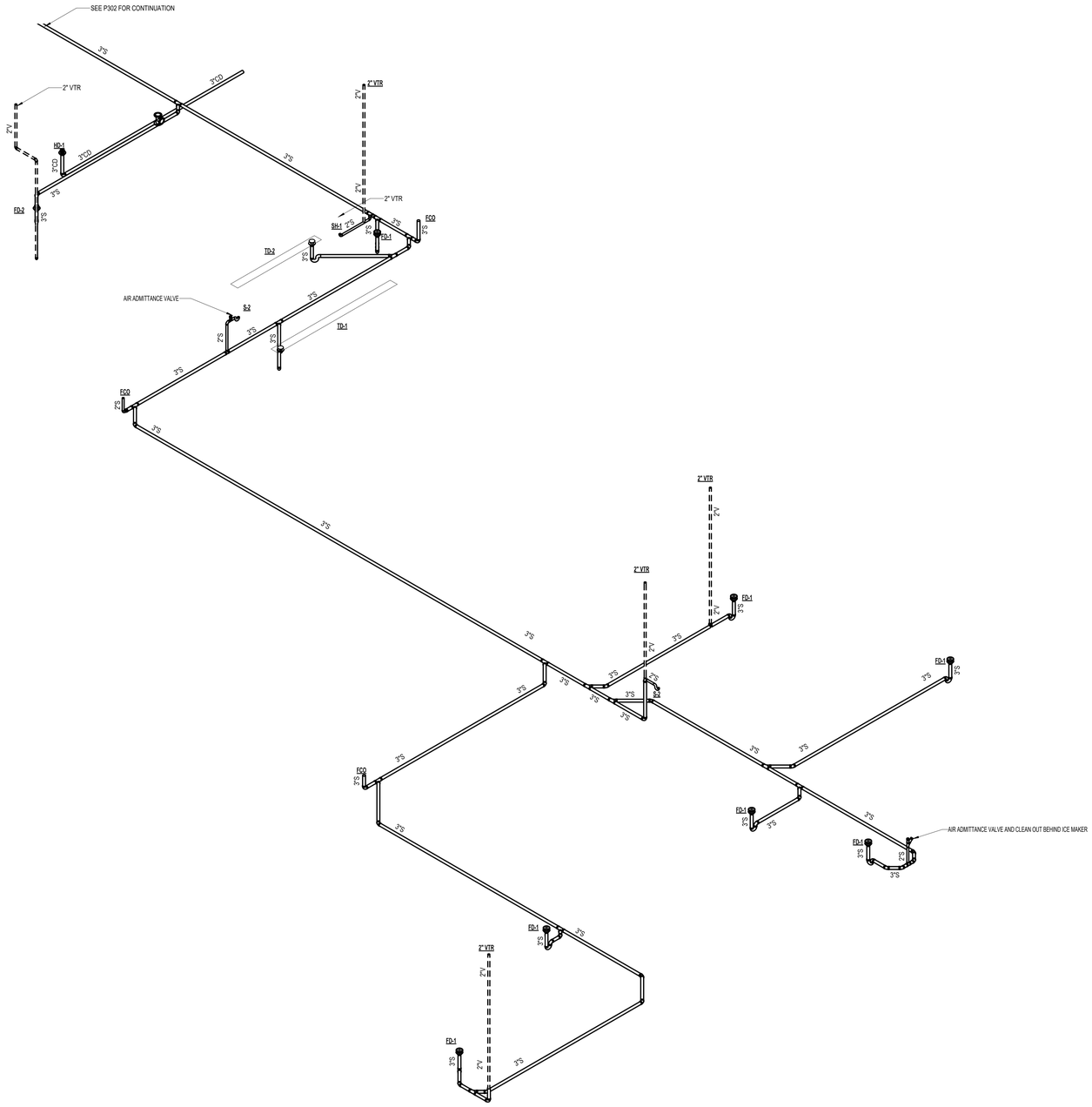
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PLUMBING RISERS

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4"S
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1 PLUMBING GRAVITY RISER CONT.

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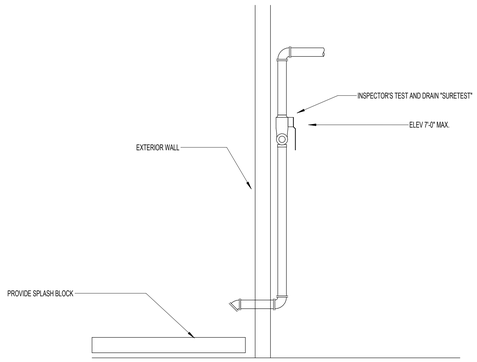
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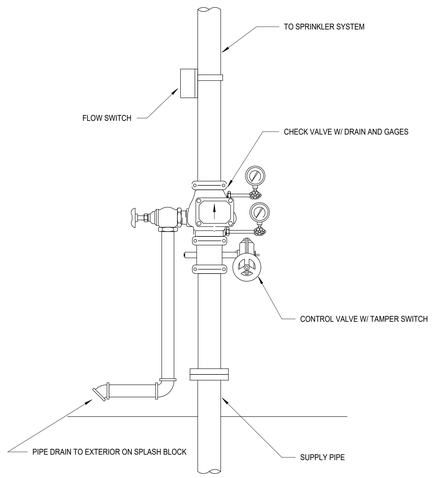
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PLUMBING RISERS

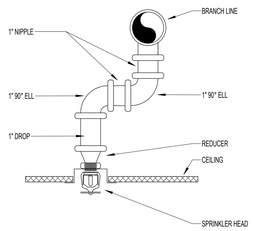
P303
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1 INSPECTOR'S TEST - WET PIPE SYSTEM
N.T.S.



2 SPRINKLER RISER - WET PIPE SYSTEM
N.T.S.



3 SWING JOINT
N.T.S.

FIRE PROTECTION LEGEND

SYMBOL	DESCRIPTION
OR	- CONTROL VALVE W/ TAMPER SWITCH
	- CHECK VALVE
	- FLOW SWITCH
	- FIRE DEPARTMENT CONNECTION (WALL MOUNTED)
	- FIRE DEPARTMENT CONNECTION (SIDEWALK SIAMESE)
	- FIRE VALVE CABINET
	- STANDPIPE WITH FIRE DEPARTMENT VALVE
	- SPRINKLER DRAIN RISER
	- COMBINATION RISER
	- DRAIN VALVE
	- BACKFLOW PREVENTOR
	- BACKFLOW PREVENTOR W/ FDC
1	- REVISION REFERENCE
DETAIL No. 1 FP1.01 SHEET SHOWN ON	- DETAIL REFERENCE CALLOUT

DESIGN CRITERIA

ENTIRE SPACE (EXCEPT AS NOTED):

OCCUPANCY CLASSIFICATION:	LIGHT HAZARD
SYSTEM TYPE:	WET PIPE
DESIGN DENSITY:	.10 GPM/SQ.FT.
HYDRAULIC REMOTE AREA:	1,500 SQ. FT.
SPRINKLER ORIFICE SIZE:	1/2"
DURATION OF SUPPLY:	60 - 90 MIN.
MAX. COVERAGE/SPRINKLER HEAD:	225 SQ. FT. OR SPRINKLER LISTING
HOSE STREAM ALLOWANCE:	100 GPM

STORAGE, MECH./ELEC. ROOMS:

OCCUPANCY CLASSIFICATION:	ORDINARY HAZARD GROUP I
SYSTEM TYPE:	WET PIPE
DESIGN DENSITY:	.15 GPM/SQ.FT.
HYDRAULIC REMOTE AREA:	1,500 SQ. FT.
SPRINKLER ORIFICE SIZE:	1/2"
DURATION OF SUPPLY:	60 - 90 MIN.
MAX. COVERAGE/SPRINKLER HEAD:	130 SQ. FT. OR SPRINKLER LISTING
HOSE STREAM ALLOWANCE:	250 GPM

STANDPIPE:

SYSTEM DESCRIPTION:	AUTOMATIC WET

REFERENCE PUBLICATIONS:

THE FOLLOWING PUBLICATIONS SHALL BE USED AS A REFERENCE FOR DESIGN OF THE FIRE SUPPRESSION SYSTEM ON THIS PROJECT.

1. FLORIDA FIRE PREVENTION CODE, SEVENTH EDITION
2. NFPA 13, STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS, 2016 EDITION
3. NFPA 24, STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES, 2016 EDITION
4. NFPA 25, STANDARD FOR THE INSPECTION, TESTING, AND MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEMS, 2017 EDITION

SPRINKLER TYPE CRITERIA:

SPRINKLERS IN GYPSUM BOARD CEILINGS, RECEPTIONS, SPECIALTY CEILINGS TO BE CONCEALED (WHITE COVERPLATE), AND SHALL BE RATED AT 165°F WITH A 5.6 K-FACTOR.

ALL SPRINKLERS IN OFFICES AND BACK OF HOUSE SPACES TO HAVE SEMI-RECESSED SPRINKLERS (CHROME FINISH), AND SHALL BE RATED AT 165°F WITH A 5.6 K-FACTOR.

ALL SPRINKLERS IN AREAS WITH NO CEILINGS TO HAVE BRASS UPRIGHT SPRINKLERS, AND SHALL BE RATED AT 165° F WITH A 5.6 K-FACTOR. PROVIDE SPRINKLER HEAD WITH GUARDS IN MECHANICAL/ELECTRICAL ROOMS.

FIRE PROTECTION FLOW TEST DATA

STATIC HYDRANT	FLOW HYDRANT	DATE: 06-28-2022
STATIC - 75 PSI RESIDUAL -55 PSI	FLOW -2252 GMP	TIME:11:15

LOCATION: Hyd -#3283

TEST CONDUCTED BY:- Port Orange Dept. of Fire & Rescue

FIRE PROTECTION GENERAL NOTES

1. FIRE PROTECTION DESIGN SHALL COMPLY WITH NFPA 13, 14, 20, 24, THE FLORIDA FIRE PREVENTION CODE AND ALL APPLICABLE LOCAL CODES. REFER TO DESIGN CRITERIA REFERENCE PUBLICATIONS SECTION ON THIS SHEET.
2. FINAL INSPECTION AND APPROVAL BY LOCAL FIRE MARSHAL AND ARCHITECT/ENGINEER.
3. THE FIRE PROTECTION SYSTEMS SHOWN REPRESENT THE DESIGN INTENT OF THE ENGINEER, IN ACCORDANCE WITH STATE REGULATION 61G15-32. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE INSTALLATION WITH ALL OTHER TRADES. SUBMIT COMPLETE SPRINKLER SYSTEM LAYOUT DRAWINGS WITH ANY ADDITIONAL OFFSETS, SPRINKLERS OR SYSTEM COMPONENTS AS REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM AND TO AVOID CONFLICTS WITH OTHER TRADES.
4. SPRINKLER SHOP DRAWINGS AND MATERIAL CUT SHEETS SHALL BE SUBMITTED TO THE ARCHITECT AND LOCAL FIRE MARSHAL FOR APPROVAL PRIOR TO ANY INSTALLATION.
5. PIPE ROUTING SHOWN IS SCHEMATIC ONLY. PROVIDE ALL ADDITIONAL OFFSETS REQUIRED FOR PROPER INSTALLATION AND COORDINATION WITH OTHER TRADES.
6. INSTALL PIPING IN AREAS WITH EXPOSED STRUCTURE AS HIGH AS POSSIBLE TO ALLOW THE OWNER MAXIMUM USE OF THE SPACE.
7. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR CEILING DESCRIPTIONS AND HEIGHTS.
8. COORDINATE SPRINKLERS WITH ALL DIFFUSERS, SPEAKERS, LIGHTING FIXTURES AND LISTING OF THE SPRINKLER.
9. CENTER SPRINKLERS IN THE CENTER OF CEILING TILE. PROVIDE ARMOVER OR SWING JOINT AS REQUIRED.
10. SPRINKLERS IN AREAS WITH EXPOSED STRUCTURE (OBSTRUCTED CONSTRUCTION) SHALL BE INSTALLED WITH DEFLECTOR 1" BELOW THE BOTTOM OF THE BEAM (MAXIMUM 22" BELOW ROOF DECK). EXPOSED BAR JOISTS THAT HAVE SPRAY-ON FIRE PROOFING THAT MAKES THE JOIST SOLID SHALL BE TREATED LIKE A BEAM WITH THE SPRINKLERS 1" BELOW THE BOTTOM OF THE FIRE PROOFING.
11. SLEEVE AND/OR FIRESTOP ALL PENETRATIONS THROUGH RATED WALLS, CEILINGS, AND FLOORS WITH UL LISTED ASSEMBLIES. PROVIDE FIRESTOP ASSEMBLIES EQUAL TO OR EXCEEDING THE RATING OF THE WALL, CEILING OR FLOOR. SEE ARCHITECTURAL DRAWINGS FOR RATINGS.
12. FURNISH ACCESS PANELS TO ALL VALVES ABOVE NON-ACCESSIBLE CEILINGS AND CHASES, FOR INSTALLATION BY GENERAL CONTRACTOR.
13. PROVIDE A PERMANENTLY ATTACHED NAME TAG TO THE RISER STATING THE REQUIRED DESIGN CRITERIA FOR EACH HYDRAULICALLY-DESIGNED SYSTEM.
14. PROVIDE SPRINKLERS UNDERNEATH ALL EXPOSED DUCTWORK WHICH IS OVER 48" WIDE AND SPACE HEADS AROUND ALL OBSTRUCTIONS IN ACCORDANCE WITH NFPA 13. HEADS UNDER DUCTS ARE NOT INDICATED ON THE DRAWINGS BUT ARE REQUIRED. PROVIDE IN ACCORDANCE WITH NFPA 13. COORDINATE SPRINKLER LOCATIONS UNDER DUCTWORK AND AROUND OBSTRUCTIONS WITH FINAL INSTALLED LOCATIONS.
15. PROVIDE SPRINKLERS AT THE TOP AND BOTTOM OF ALL STAIRWELLS.
16. PROVIDE SPRINKLER GUARDS ON ALL HEADS IN ELECTRIC ROOMS, TELEPHONE ROOMS, ELEVATOR ROOMS, ELEVATOR SHAFTS, STORAGE ROOMS, UTILITY ROOMS AND ON ANY HEADS LESS THAN 7'-0" ABOVE THE FLOOR.
17. PROVIDE HANGERS ON END HEADS IN PENDANT POSITION WITHIN 12" OF END OF LINE, IN ACCORDANCE WITH NFPA 13, WHEN SYSTEM PRESSURE EXCEEDS 100 PSI.
18. COORDINATE PIPING WITH ALL ELECTRICAL EQUIPMENT (PANELS, TRANSFORMERS, ETC.) PRIOR TO ANY INSTALLATION. DO NOT ROUTE ANY PIPING OVER ANY ELECTRICAL PANELS UNDER ANY CIRCUMSTANCES. REROUTE ANY PIPING RUN OVER ELECTRICAL EQUIPMENT.
19. PROVIDE 20-GAUGE STEEL SPRINKLER CANOPY SHIELD AT SPRINKLERS IN TRASH CHUTE PER NFPA #13.
20. PROVIDE INTERMEDIATE TEMPERATURE (200°F) SPRINKLERS IN ELEVATOR SHAFTS AND EQUIPMENT ROOMS PER NFPA 13.
21. INSULATE AND PROVIDE ALUMINUM JACKETING ON ALL WET BULK SUPPLY MAINS AND HOSE SUPPLY MAINS EXPOSED TO THE WEATHER.
22. ALL DRAIN AND DRY PIPE SYSTEM PIPING AND FITTINGS SHALL BE GALVANIZED BOTH INSIDE AND OUTSIDE.
23. PROVIDE TAMPER SWITCHES ON ALL CONTROL VALVES.
24. SLOPE ALL PIPING TO THE SYSTEM MAIN DRAIN AS REQUIRED TO INSURE PROPER DRAINAGE. INSTALL ADDITIONAL DRAINS AND PLUGS WHERE REQUIRED TO COMPLY WITH THE ABOVE REFERENCED CODES.
25. PROVIDE ROLL GROOVED OR CUT GROOVED COUPLINGS AND FITTINGS FROM A SINGLE MANUFACTURER.
26. THIS BUILDINGS STRUCTURAL SYSTEM HAS BEEN DESIGNED TO SUPPORT THE ADDITIONAL WEIGHT ASSOCIATED WITH THE SPRINKLER SYSTEM.
27. PAINT ALL SPRINKLER PIPING INSTALLED BELOW THE CEILINGS AND IN EXPOSED LOCATIONS. CLEAN, PRIME AND PAINT ALL EXPOSED PIPING RED, UNLESS OTHERWISE NOTED. COORDINATE ALL COLORS WITH THE ARCHITECT.
28. COORDINATE HANGER LOCATIONS WITH THE BUILDING STRUCTURE. SUPPORT PIPING IN ACCORDANCE WITH NFPA 13. PROVIDE ALL MISCELLANEOUS STEEL FRAMING AS REQUIRED TO SUPPORT PIPING. PROVIDE GALVANIZED OR COATED HANGERS AND RODS.
29. PROVIDE A TEMPORARY STANDPIPE SYSTEM WITH FIRE DEPARTMENT CONNECTIONS DURING CONSTRUCTION.

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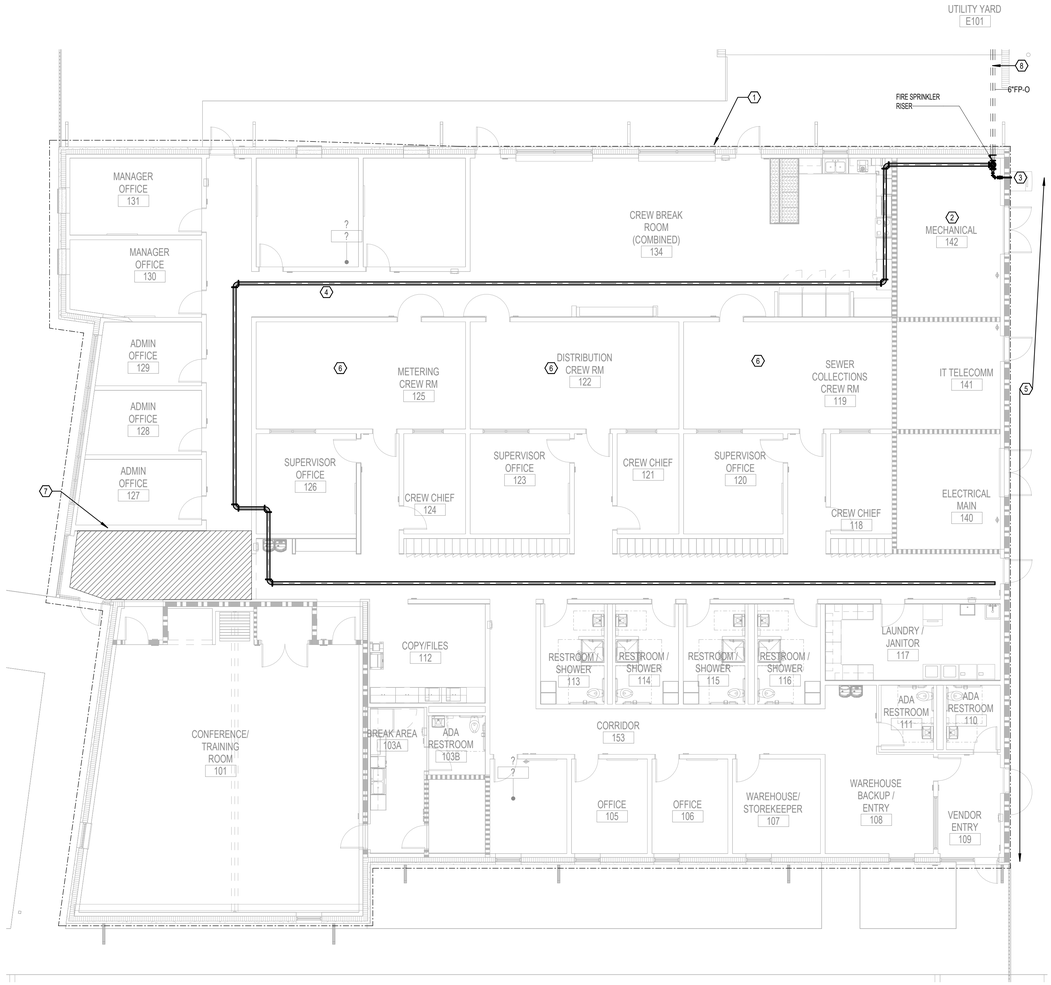
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FIRE PROTECTION SYMBOLS, LEGEND, NOTES AND INDEX

FP001
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1. PROVIDE A HYDRAULICALLY DESIGNED AUTOMATIC SPRINKLER SYSTEM WITH A LIGHT HAZARD COVERAGE UON
2. PROVIDE A HYDRAULICALLY DESIGNED AUTOMATIC SPRINKLER SYSTEM WITH A ORDINARY HAZARD GROUP 1 COVERAGE
3. LOCATION OF INSPECTOR TEST DRAIN TO SPILL ON SPLASH BLOCK NEAR GRADE
4. HOODS ARE TO BE PROVIDED WITH A FIRE READY SELF-CONTAINED FIRE SUPPRESSION SYSTEM INTERLOCKING WITH THE BUILDING FIRE ALARM SYSTEM
5. PROVIDE SIDEWALL SPRINKLERS FOR BREEZEWAY
6. PROVIDE UPRIGHT HEADS IN AREAS WITH NO CEILINGS . LOCATE ONLY BRANCH PIPING IN THESE ROOMS AND COORDINATE WITH STRUCTURAL DRAWINGS.
7. HIGH CEILING, PROVIDE SIDE WALL SPRINKLER HEADS.
8. SEE CIVIL FOR CONNECTION TO SITE FIRE MAIN.

1 FIRE PROTECTION FIRST FLOOR PLAN ADMIN

1/8" = 1'-0"

0 8R 16R

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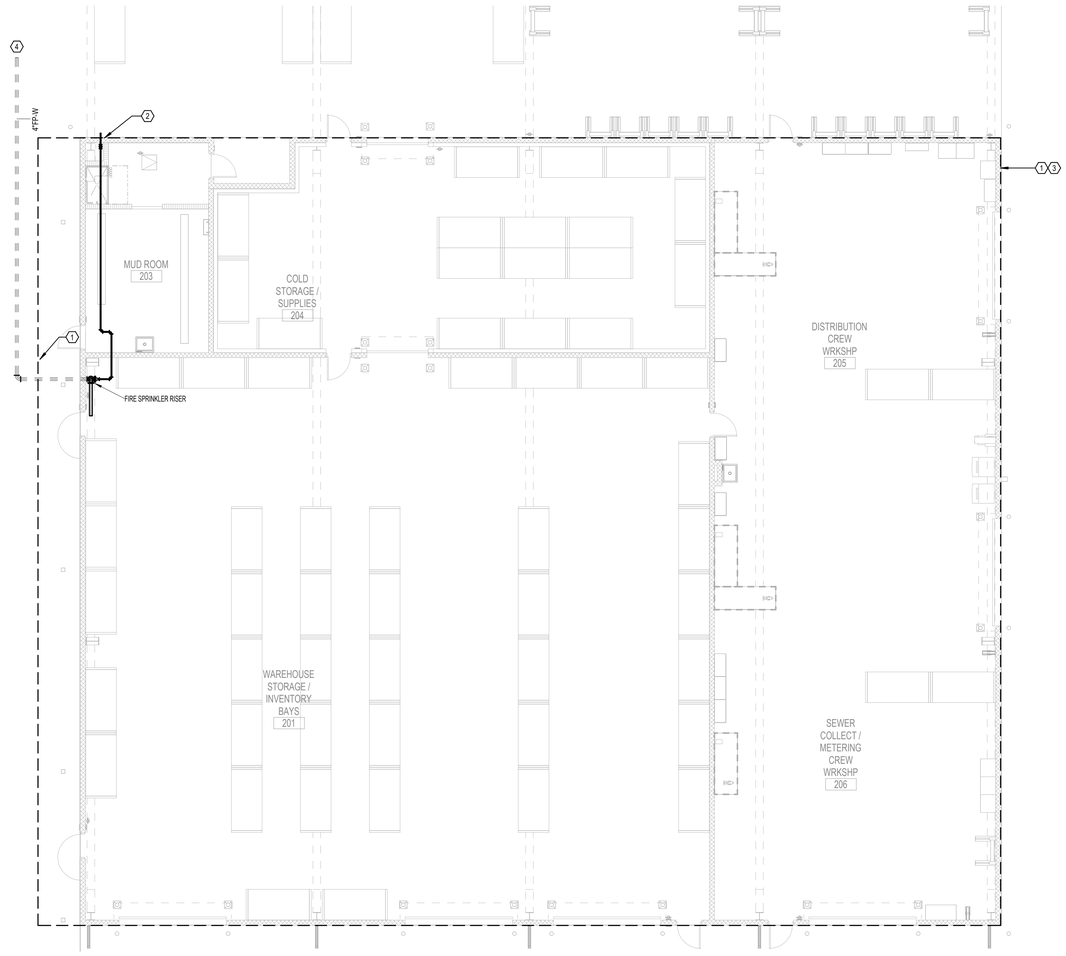
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FIRE PROTECTION ADMIN

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REFERENCED NOTES

1. PROVIDE A HYDRAULICALLY DESIGNED AUTOMATIC SPRINKLER SYSTEM WITH A ORDINARY HAZZARD GROUP 1 COVERAGE
2. LOCATION OF INSPECTOR TEST DRAIN TO SPILL ON SPLASH BLOCK NEAR GRADE
3. PROVIDE UPRIGHT HEADS IN AREAS WITH NO CEILINGS.
4. SEE CIVIL FOR CONNECTION TO SITE FIRE MAIN.

1 FIRE PROTECTION FIRST FLOOR PLAN WAREHOUSE

1/8" = 1'-0"

0 8ft 16ft

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FIRE PROTECTION FLOOR PLAN WAREHOUSE

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HVAC SYMBOL LEGEND

SYMBOL	DESCRIPTION
	-CEILING DIFFUSER, ROUND NECK (CEILING DIFFUSERS ARE 4-WAY THROW UNO)
	-ROUND DIFFUSER
	-CEILING RETURN
	-CEILING EXHAUST
	-CEILING DIFFUSER, RECTANGULAR OR SQUARE NECK (CEILING DIFFUSERS ARE 4-WAY THROW UNO)
	-SUPPLY REGISTER OR GRILLE (VERTICAL MOUNT, SIDEWALL)
	-RETURN/EXHAUST REGISTER OR GRILLE (VERTICAL MOUNT, SIDEWALL)
1	-REVISION REFERENCE
1 M-1	-DETAIL REFERENCE: TOP-DETAIL#, BOTTOM-DRAWING# SHOWN ON
T	-THERMOSTAT/TEMPERATURE SENSOR
H	-HUMIDISTAT/HUMIDITY SENSOR
	-DUCT SMOKE DETECTOR
	-CONNECT TO EXISTING
	-DEMOLISH TO POINT INDICATED
M	-MOTORIZED CONTROL DAMPER
TS	-TEMPERATURE SENSOR
PS	-PRESSURE SENSOR
BD	-BACKDRAFT DAMPER
	-NEUTRAL RELATIVE PRESSURE
	-POSITIVE RELATIVE PRESSURE
	-NEGATIVE RELATIVE PRESSURE
1	-SHEET NOTE CALLOUT
1	-SHEET NOTE CALLOUT
1	-SHEET NOTE CALLOUT
	-CEILING MOUNTED ACCESS DOOR
	-SQUARE THROAT ELBOW W/TURNING VANES
	-RADIUS ELBOW
	-RECTANGULAR/ROUND BRANCH TAKE-OFF OR ROUND/ROUND BRANCH TAKE-OFF
	-EXHAUST DUCT UP THROUGH SLAB W/ FAN ON ROOF ABOVE
	-EXHAUST FAN ON ROOF W/ DUCT DOWN THROUGH ROOF

SYMBOL	DESCRIPTION
	-FIRE DAMPER (WITH ACCESS PANEL)
	-FIRE & SMOKE DAMPER (WITH ACCESS PANEL)
	-EXISTING FIRE DAMPER TO REMAIN
	-EXISTING FIRE & SMOKE DAMPER TO REMAIN
SA-1	-SOUND ATTENUATOR
M	-MOTOR OPERATED CONTROL DAMPER (MOD)
FM	-AIR FLOW MEASURING STATION
	-MANUAL BALANCING DAMPER
	-DOOR GRILLE
1/2	-UNDERCUT DOOR
	-ACCESS DOORS, VERTICAL OR HORIZONTAL
	-STAINLESS STEEL DUCTWORK
	-FLEXIBLE CONNECTION
12x8Ø	-NEW FLAT OVAL DUCT
24x12	-NEW DUCTWORK, FIRST DIMENSION IS SIDE SHOWN
24x12	-EXISTING DUCTWORK TO REMAIN
24x12	-EXISTING DUCTWORK TO BE REMOVED
24x12 DOWN UP W/IN FLOOR	-DUCT ELBOW, POSITIVE PRESSURE (SUPPLY), FIRST DIMENSION INDICATES SIDE TO WHICH ARROW IS POINTING
	-DUCT ELBOW, EXHAUST
	-DUCT ELBOW, NEGATIVE PRESSURE, RETURN
	-DUCT ELBOW UP THROUGH ROOF OR SLAB ABOVE
	-RECTANGULAR DUCT SECTION UP, POSITIVE PRESSURE, SUPPLY OR OUTSIDE AIR
	-RECTANGULAR DUCT SECTION UP, NEGATIVE PRESSURE, RETURN
	-RECTANGULAR DUCT SECTION UP, EXHAUST
	-ROUND DUCT SECTION UP
	-FLAT OVAL DUCT SECTION UP

SYMBOL	DESCRIPTION
	-TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME WITH ELECTRIC HEAT
	-TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME WITH ELECTRIC HEAT
	-TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED
	-TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT
	-ELECTRIC DUCT HEATER (W/ PANEL CLEARANCE)
	-HYDRONIC REHEAT COIL
	-INLINE CENTRIFUGAL FAN
	-PACKAGED TERMINAL AIR CONDITIONER (PTAC)
UP DN	-CHANGE OF ELEVATION
	-FLEXIBLE DUCT
	-TRANSITION, CONCENTRIC
	-TRANSITION, ECCENTRIC
10x8 30°	-TRANSITION, SQUARE TO ROUND
	-SQUARE THROAT TEE
12x8	-RADIUS TEE
	-RECTANGLE-TO-ROUND TAKE-OFF
	-STANDARD BRANCH TAKE-OFF
	-SPIN-IN TAKE-OFF

NOTE: SOME SYMBOLS SHOWN ON THIS LEGEND MAY NOT PERTAIN TO THIS PROJECT

MECHANICAL SYSTEMS COMMISSIONING AND COMPLETION REQUIREMENTS

The contractor shall be responsible for the commissioning of the HVAC system to meet the requirements of the FCB Energy, 2020.

CX.1 – The Cx process shall encompass and coordinate the equipment and system documentation, equipment start up, control system calibration, test and balance, functional performance testing and user training. The Contractor shall perform Commissioning to achieve the following specific objectives according to the Contract Documents: • Verify and document that all components requiring service receive complete pre-functional checkout by the installing contractor and can be accessed, serviced, and replaced without disturbing nearby components, including other equipment, ducts, piping, etc. • Verify and document that equipment and systems are installed, started and receive adequate operational checkout in accordance with the contract documents, the manufacturer's recommendations and industry accepted standards. • Verify and document the proper functional performance and integration of equipment and systems based on the design criteria and contract documents. • Verify the completeness of Operations and Maintenance materials.

CX.1.1 – Commissioning Authority (CxA): The Contractor shall retain the services of a Commissioning Authority (CxA) acceptable to the Owner and Engineer of Record (EOR). The CxA, a registered design professional or approved agency independent from the design or construction of the project shall be the single point of contact for the Cx team management. Documentation of the Cx process and preparation and distribution of key management reports is the responsibility of CxA. The CxA shall also provide an advisory role to the Construction Team and shall ensure that Cx activities are executed in accordance with the accepted processes, plans and specifications.
CX.2 – Requirements: Prior to passing the final Mechanical Inspection by the AHJ, the EOR must provide evidence of mechanical systems commissioning and completion. Copies of all documentation shall be given by the CxA to the EOR and Owner, and shall be made available to the AHJ upon request.
CX.2.1 – Commissioning Plan (Cx Plan): The Contractor shall provide a Commissioning Plan developed by the CxA, a registered design professional or approved agency. The general Cx requirements shall be detailed in the Cx Plan. The Cx Plan shall provide guidance in the execution of the Cx process. The Contractor shall be familiar with all parts of the Cx Plan and shall execute all Cx responsibilities assigned to them in accordance with the Cx Plan. The Cx Plan shall include, as a minimum, the following items:
• A narrative description of the activities that will be accomplished during each phase of commissioning, including the personnel intended to accomplish each of the activities.
• A listing of the specific equipment, appliances or systems to be tested and a description of the tests to be performed.
• Functions to be tested, including, but not limited to calibrations and economizer controls.
• Conditions under which the test will be performed. At a minimum, testing shall affirm winter and summer design conditions and full outside air conditions.
• Measurable criteria for performance.

CX.2.4.1 – Acceptance of Report: Buildings, or portions thereof, shall not pass the final mechanical inspection until such time as the AHJ has received a letter of transmittal from the building owner acknowledging that the building owner has received the Preliminary Commissioning Report.
CX.2.4.2 – Copy of Report: A copy of the Preliminary Commissioning Report shall be made available for review by the AHJ.
CX.2.5 – Documentation Requirements: The documents described herein shall be provided to the building owner within 90 days of the date of receipt of the certificate of occupancy.
CX.2.5.1 – Drawings: Construction documents shall include the location and performance data on each piece of equipment. The Contractor or CxA shall contact the EOR should any information be unclear.
CX.2.5.2 – Manuals: The CxA shall facilitates and confirm that an operating and maintenance manual is developed, provided and includes all of the following:
• Submittal data stating equipment size and selected options for each piece of equipment requiring maintenance.
• Manufacturer's operation manuals and maintenance manuals for each piece of equipment requiring maintenance, except equipment not furnished as part of the project. Required routine maintenance actions shall be clearly identified.
• Name and address of at least one local service agency.
• HVAC controls system maintenance and calibration information, including wiring diagrams, schematics, and control sequence descriptions. Desired or field-determined setpoints shall be permanently recorded on control drawings at control devices or, for digital control systems, in system programming instructions.
• A narrative of how each system is intended to operate, including recommended setpoints.

CX.2.5.3 – System Balancing Report (TAB Report): A written report describing the activities and measurements completed as required above.
CX.2.5.4 – Final Commissioning Report: A report of test procedures and results identified as "Final Commissioning Report" shall be delivered to the building owner and shall include:
• Results of functional performance tests.
• Disposition of deficiencies found during testing, including details of corrective measures used or proposed.
• Functional performance test procedures used during the commissioning process including measurable criteria for test acceptance, provided herein for repeatability.
• Description of deferred tests which cannot be performed at the time of report preparation due to climatic conditions.

See specifications for more detail on commissioning requirements.

HVAC ABBREVIATIONS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
AFD	-ADJUSTABLE FREQUENCY DRIVE	LD	-LINEAR DIFFUSER
AFF	-ABOVE FINISHED FLOOR	MBH	-THOUSAND BTUs PER HOUR
AFR	-ABOVE FINISHED ROOF	MCA	-MINIMUM CIRCUIT AMPS
AHU	-AIR HANDLING UNIT	MOCP	-MAXIMUM OVER CURRENT PROTECTION
AP	-ACCESS PANEL	MOD	-MOTOR OPERATED CONTROL DAMPER (MOD)
BOP	-BOTTOM OF PIPE	NC	-NORMALLY CLOSED
BHP	-BRAKE HORSEPOWER	NO	-NORMALLY OPEN
BTU	-BRITISH THERMAL UNIT	NTS	-NOT TO SCALE
CL	-CENTER LINE	OA	-OUTSIDE AIR
CFM	-CFM (CUBIC FEET PER MINUTE)	OAL	-OUTSIDE AIR LOUVER
CD	-CEILING DIFFUSER	PRV	-PRESSURE REDUCING VALVE
CT	-COOLING TOWER	PRS	-PRESSURE REDUCING STATION
CV	-CONSTANT AIR VOLUME	PSI	-POUNDS PER SQUARE INCH
ΔP	-CHANGE IN PRESSURE	PSIG	-PSI GAUGE
Δt	-CHANGE IN TEMPERATURE	PTAC	-PACKAGED TERMINAL AIR CONDITIONER
CFM	-CUBIC FEET PER MINUTE	PVC	-POLYVINYL CHLORIDE PIPE
CU	-CONDENSING UNIT	RA	-RETURN AIR
DDC	-DIRECT DIGITAL CONTROLS	RHC	-REHEAT COIL
DN	-DOWN	RHP	-ROOFTOP HEAT PUMP
EAT	-ENTERING AIR TEMPERATURE	RPM	-REVOLUTIONS PER MINUTE
ESP	-EXTERNAL STATIC PRESSURE	RS/L	-REFRIGERANT SUCTION & LIQUID LINES
EWT	-ENTERING WATER TEMPERATURE	RTU	-ROOFTOP AIR HANDLING UNIT
FCU	-FAN COIL UNIT	SA	-SUPPLY AIR
FD	-FIRE DAMPER	SP	-STATIC PRESSURE
FF	-FINAL FILTERS	TSP	-TOTAL STATIC PRESSURE
FLA	-FULL LOAD AMPS	UNO	-UNLESS NOTED OTHERWISE
FPM	-FEET PER MINUTE	V/PH	-VOLTS/PHASE
GPM	-GALLONS PER MINUTE	VAV	-VARIABLE AIR VOLUME
KW	-KILOWATT	VFD	-VARIABLE FREQUENCY DRIVE
LAT	-LEAVING AIR TEMPERATURE		
LWT	-LEAVING WATER TEMPERATURE		

HVAC EQUIPMENT TAGS



-AIR DISTRIBUTION DEVICE



-AIR HANDLING UNIT

APPLICABLE CODES:

ALL WORK UNDER THIS DIVISION SHALL BE IN STRICT COMPLIANCE AND IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE FOLLOWING CODES AND STANDARDS INCLUDING THE REGULATIONS OF GOVERNING LOCAL, STATE, COUNTY AND OTHER APPLICABLE CODES. REFER TO SPECIFICATIONS FOR ADDITIONAL CODE REQUIREMENTS:

BUILDING CODES:
- FLORIDA BUILDING CODE, 8TH EDITION (2023)
- FLORIDA FIRE PREVENTION CODE, 7TH EDITION (2020)

ADDITIONAL CODES, STANDARDS, AND REQUIREMENTS
1. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).
2. INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE).
3. NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION (NEMA).
4. REQUIREMENTS OF LOCAL POWER COMPANY.
5. THE AMERICANS WITH DISABILITIES ACT (ADA).
6. OWNER'S PUBLISHED DESIGN STANDARDS.

ALL MATERIALS SHALL BE NEW AND FREE OF DEFECTS, AND SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LAB, AS DEFINED BY OSHA. WHERE NO LABELING OR LISTING SERVICE IS AVAILABLE FOR CERTAIN TYPES OF EQUIPMENT, TEST DATA SHALL BE SUBMITTED TO VALIDATE THAT EQUIPMENT MEETS OF EXCEEDS AVAILABLE STANDARDS.

NATIONAL FIRE PROTECTION (NFPA) STANDARDS:
- NFPA 10, 2018 EDITION, STANDARD FOR PORTABLE FIRE EXTINGUISHERS.
- NFPA 13, 2016 EDITION, STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS.
- NFPA 20, 2016 EDITION, STANDARD FOR THE INSTALLATION OF STATIONARY PUMPS FOR FIRE PROTECTION.
- NFPA 30, 2018 EDITION, FLAMMABLE AND COMBUSTIBLE LIQUIDS CODE.
- NFPA 37, 2018 EDITION, STANDARD FOR THE INSTALLATION AND USE OF STATIONARY COMBUSTION ENGINES AND GAS TURBINES.
- NFPA 45, 2015 EDITION, STANDARD ON FIRE PROTECTION FOR LABORATORIES USING CHEMICALS.
- NFPA 54, 2018 EDITION, NATIONAL FUEL GAS CODE.
- NFPA 70, 2017 EDITION, NATIONAL ELECTRICAL CODE®.
- NFPA 72, 2016 EDITION, NATIONAL FIRE ALARM AND SIGNALING CODE.
- NFPA 75, 2016 EDITION, STANDARD FOR THE PROTECTION OF INFORMATION TECHNOLOGY EQUIPMENT.
- NFPA 80, 2016 EDITION, STANDARD FOR FIRE DOORS AND OTHER OPENING PROTECTIVES.
- NFPA 85, 2013 EDITION, BOILER AND COMBUSTION SYSTEMS HAZARDS CODE.
- NFPA 88A, 2015 EDITION, STANDARD FOR PARKING STRUCTURES.
- NFPA 90A, 2018 EDITION, STANDARD FOR THE INSTALLATION OF AIR-CONDITIONING AND VENTILATING SYSTEMS.
- NFPA 90B, 2018 EDITION, STANDARD FOR THE INSTALLATION OF WARM AIR HEATING AND AIR-CONDITIONING SYSTEMS.
- NFPA 92, 2015 EDITION, STANDARD FOR SMOKE-CONTROL SYSTEMS.
- NFPA 99, 2018 EDITION, HEALTH CARE FACILITIES CODE.
- NFPA 101, 2018 EDITION, LIFE SAFETY CODE®.
- NFPA 110, 2016 EDITION, STANDARD FOR EMERGENCY AND STANDBY POWER SYSTEMS.
- NFPA 111, 2016 EDITION, STANDARD ON STORED ELECTRICAL ENERGY EMERGENCY AND STANDBY POWER SYSTEMS.
- NFPA 780, 2017 EDITION, INSTALLATION OF LIGHTNING PROTECTION SYSTEMS

HVAC GENERAL NOTES

1. CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.
2. DIMENSIONS SHALL BE FIELD-VERIFIED AND COORDINATED PRIOR TO PROCUREMENT OR FABRICATION. COORDINATE THE WORK WITH OTHER TRADES INVOLVED. FIELD MODIFICATIONS SUCH AS OFFSETS IN PIPING OR DUCTWORK (INCLUDING DIVIDED DUCTWORK) NEEDED DUE TO OBSTRUCTIONS OR INTERFERENCES SHALL BE PROVIDED AT NO ADDITIONAL COST. FOR PROJECTS INVOLVING RENOVATION, COORDINATE NEW WORK WITH EXISTING ELEMENTS SUCH AS THE BUILDING STRUCTURE AND ARCHITECTURAL FEATURES, SPRINKLER PIPING, LIGHTS, PLUMBING, AND ELECTRICAL CONDUIT.
3. DUCT CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE SMACNA HVAC DUCT CONSTRUCTION STANDARD.
4. SEE SPECIFICATIONS FOR GAUGES, THICKNESS, BRACING, REQUIREMENTS, ETC., OF DUCTWORK.
5. PROVIDE AIR TURNING VANES IN ALL 90 DEGREE RECTANGULAR DUCT ELBOWS.
6. DUCT SIZES AND ALL OPENINGS THROUGH BUILDING CONSTRUCTION SHALL SUIT EQUIPMENT FURNISHED.
7. COORDINATE DIFFUSER, GRILLE AND REGISTER LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS AND EQUIPMENT OF ALL TRADES.
8. LOCATE THERMOSTATS, TEMPERATURE SENSORS, HUMIDISTATS, AND HUMIDITY SENSORS AT 48" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE. COORDINATE LOCATIONS WITH OTHER EQUIPMENT, FURNITURE, AND DOOR SWINGS.
9. ALL EQUIPMENT, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED AND/OR SPECIFIED. PROVIDE ADDITIONAL SUPPORTS AS REQUIRED TO PROVIDE A VIBRATION-FREE, RIGID INSTALLATION.
10. ALL DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS.
11. DAMPERS AND INSIDES OF DUCTS VISIBLE THROUGH GRILLES, REGISTERS AND DIFFUSERS SHALL BE PAINTED FLAT BLACK.
12. REFER TO TYPICAL DETAILS FOR PIPING AND INSTALLATION OF EQUIPMENT.
13. TRAPPED CONDENSATE DRAINS FROM ALL MECHANICAL EQUIPMENT SHALL BE PROVIDED FOR PROPER DRAINAGE TO SUIT EQUIPMENT FURNISHED.
14. ACCESS PANELS IN DUCTWORK AND CEILINGS SHALL BE PROVIDED WHERE REQUIRED FOR OPERATION, BALANCING OR MAINTENANCE OF ALL MECHANICAL EQUIPMENT.
15. ALL DUCTWORK AND PIPING IS SHOWN SCHEMATICALLY. PROVIDE ALL TRANSITIONS, TURNING VANES, ELBOWS, FITTINGS, ETC., TO ALLOW SMOOTH FLOWS. ALL SPLIT DUCT FITTINGS SHALL TRANSITION TO FULL SIZE OF THE SUM OF BOTH BRANCHES, UPSTREAM OF SPLIT.
16. PROVIDE CONCRETE HOUSEKEEPING PAD UNDER ALL FLOOR-MOUNTED EQUIPMENT. REFER TO SPECIFICATIONS FOR DETAILED REQUIREMENTS.
17. VERIFY FINISH WITH ARCHITECT PRIOR TO PURCHASING GRILLES, REGISTERS, DIFFUSERS, LOUVERS AND OTHER AIR DISTRIBUTION DEVICES.
18. PROVIDE FLEXIBLE DUCT CONNECTIONS ON ALL DUCTWORK CONNECTING TO EACH FAN, AIR HANDLING UNITS, AND FAN COIL UNITS.
19. PROVIDE TRANSITIONS AT DIFFUSER NECKS AS REQUIRED TO MATCH SIZES OF FLEX DUCTS TO BE CONNECTED.
20. INTERRUPTIONS TO EXISTING SERVICES SHALL BE SCHEDULED FOR TIMES OTHER THAN NORMAL OPERATING HOURS (SUCH AS NIGHTS AND WEEKENDS). SUCH INTERRUPTIONS TO SERVICES SHALL NOT BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF THE OWNER'S REPRESENTATIVE AND PROPER COORDINATION WITH OTHER TRADES. PRE-WORK SHALL BE PERFORMED TO MAKE THE SHUTDOWN PERIOD AS BRIEF AS POSSIBLE.
21. ALL EQUIPMENT, DUCTWORK, ETC., TO BE REMOVED SHALL REMAIN PROPERTY OF THE OWNER OR DISPOSED OF LEGALLY, AS DIRECTED BY OWNER.
22. MAINTAIN CLEARANCE OF A MINIMUM OF 6" BETWEEN DUCTWORK, PIPING, EQUIPMENT, ETC., AND ALL FIRE RATED AND FIRE/SMOKE RATED PARTITIONS, TO ALLOW FOR INSPECTIONS OF RATED WALLS.
23. LOCATE ALL OUTSIDE AIR INTAKES A MINIMUM OF 10' CLEAR FROM ALL PLUMBING VENTS AND EXHAUST AIR DISCHARGE LOCATIONS.
24. DUCT RUNOUTS TO DIFFUSERS SHALL MATCH THE SIZE OF THE DIFFUSER NECK.
26. UNLESS OTHERWISE NOTED, ALL EQUIPMENT AND VALVE DRAINS SHALL BE INDEPENDENTLY PIPED FULL SIZE TO THE NEAREST PLUMBING DRAIN.
27. SLEEVE AND SEAL ALL PIPING PENETRATIONS THROUGH BUILDING PARTITIONS. PROVIDE MANUAL AIR VENTS AT ALL HIGH POINTS IN CHILLED WATER AND HOT WATER PIPING.
28. PIPING, DUCTWORK, LEAK PROTECTION APPARATUS, OR OTHER EQUIPMENT FOREIGN TO ELECTRICAL SWITCHBOARDS, PANELBOARDS, DISTRIBUTION BOARDS, OR MOTOR CONTROL CENTERS SHALL NOT BE INSTALLED WITHIN THE REQUIRED SPACE FOR WORKING CLEARANCES OR DEDICATED SPACES OF THE ELECTRICAL EQUIPMENT, EXTENDING IN FRONT OF AND FROM FLOOR TO STRUCTURAL CEILING WITH A WIDTH AND DEPTH OF THE ELECTRICAL EQUIPMENT IN ACCORDANCE WITH NEC-110.26.

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE
PUBLIC UTILITIES FIELD OPERATIONS FACILITY

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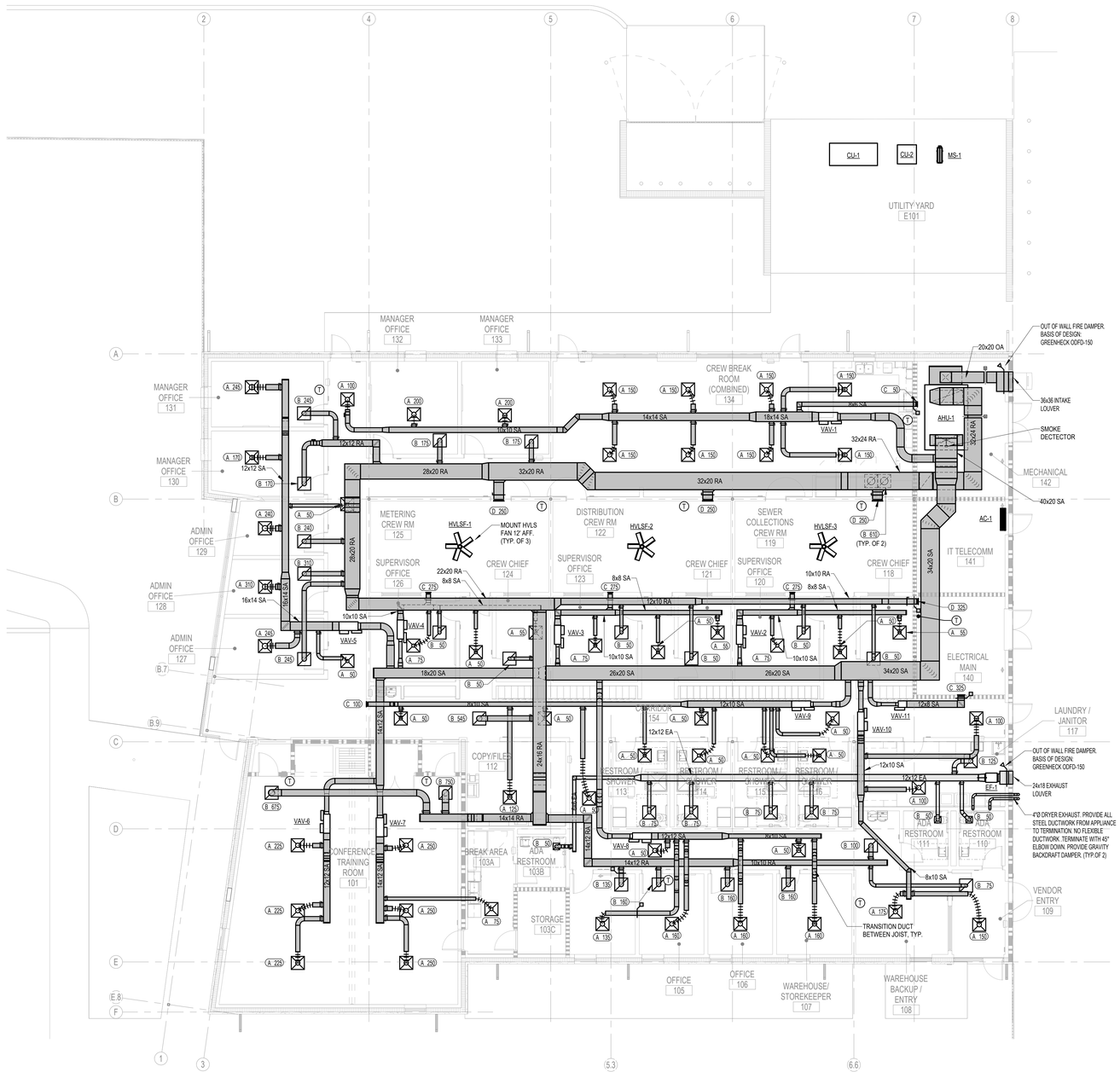
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MECHANICAL LEGEND

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1 MECHANICAL - ADMINISTRATION

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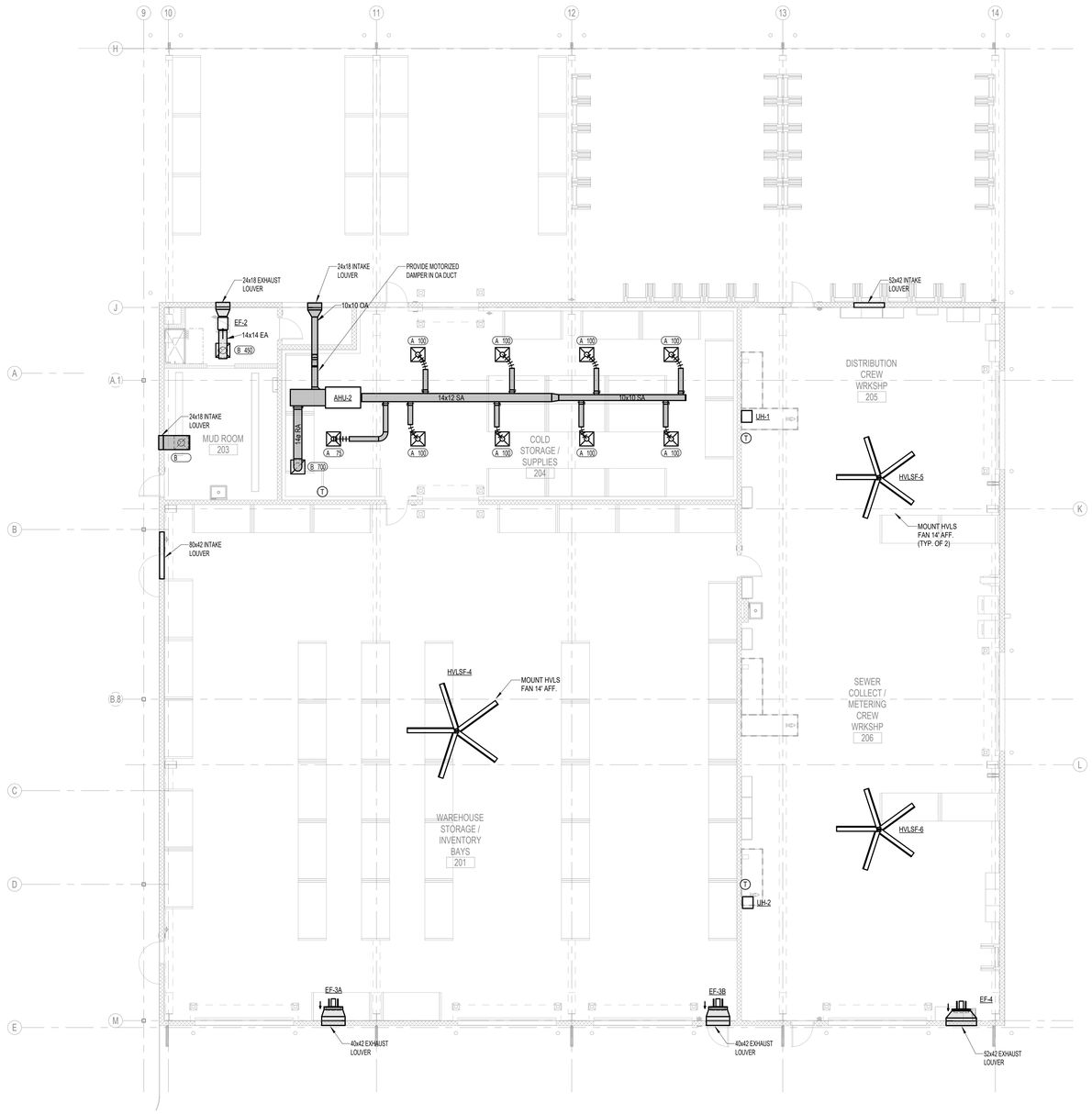
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MECHANICAL PLAN - ADMINISTRATION

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1 MECHANICAL PLAN - WAREHOUSE

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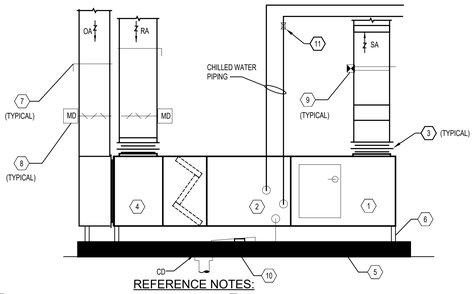
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MECHANICAL PLAN - WAREHOUSE

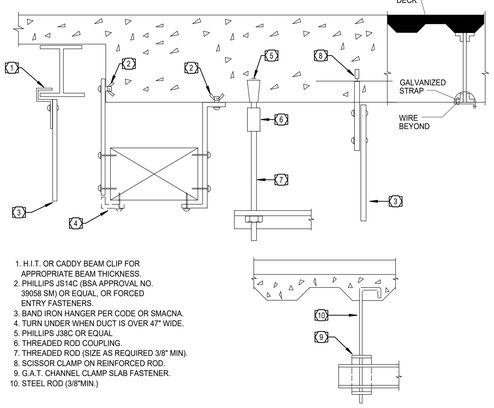
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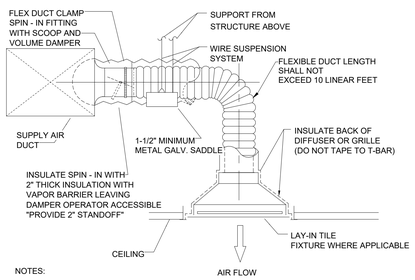
1. FAN SECTION
2. MEDIUM COIL SECTION
3. FLEXIBLE CONNECTION
4. FILTER/MIXING BOX SECTION
5. 6" CONCRETE PAD, EXTEND 4" PAST UNIT ON ALL SIDES
6. 6" BASE RAIL
7. MANUAL BALANCING DAMPER
8. MOTORIZED DAMPER
9. DUCT SMOKE DETECTOR
10. MOUNT CONDENSATE DRAIN ON UNISTRUT SUPPORT AND ANCHOR TO FLOOR
11. MAXIMUM DISTANCE FROM FLOOR TO VALVES SHALL BE 6'-0" AFF.

1 FLOOR MOUNTED AIR HANDLING UNIT
N.T.S.



1. H.I.T. OR CADDY BEAM CLIP FOR APPROPRIATE BEAM THICKNESS.
2. PHILLIPS JS14C (BSA APPROVAL NO. 39058 SM) OR EQUAL, OR FORCED ENTRY FASTENERS.
3. BAND IRON HANGER PER CODE OR SMACNA.
4. TURN UNDER WHEN DUCT IS OVER 47" WIDE.
5. PHILLIPS J38C OR EQUAL
6. THREADED ROD COUPLING.
7. THREADED ROD (SIZE AS REQUIRED 3/8" MIN).
8. SCISSOR CLAMP ON REINFORCED ROD.
9. G.A.T. CHANNEL CLAMP SLAB FASTENER.
10. STEEL ROD (3/8"MIN.)

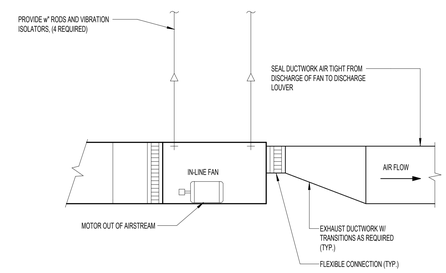
2 METHOD OF HANGING DUCTWORK
N.T.S.



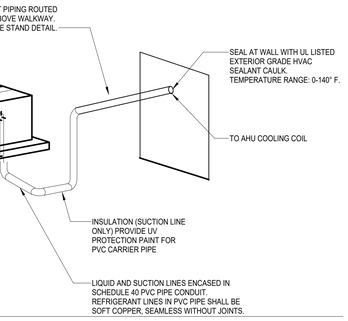
NOTES:

1. IF DUCT DOES NOT SUPPORT THE SPIN IN FITTING SIZE, IF SPACE ALLOWS FOR FLEX TO BE KINK FREE TAKE OFF FROM THE BOTTOM OF DUCT, IF NOT TAKE OFF FROM DUCT WITH BEVELED TAP WITH VOLUME DAMPER IN DUCT AND TRANSITION TO FLEX DUCT.
2. SEAL ALL NECK CONNECTIONS AT THE DIFFUSER.

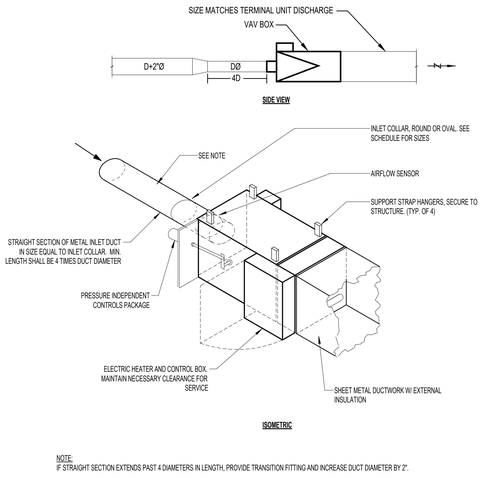
3 DIFFUSER CONNECTION
N.T.S.



4 INLINE FAN
N.T.S.

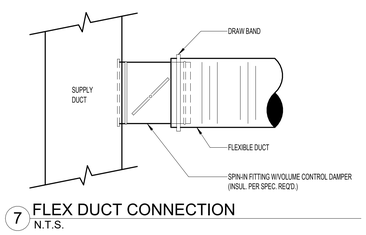


5 WALL LOUVER
N.T.S.



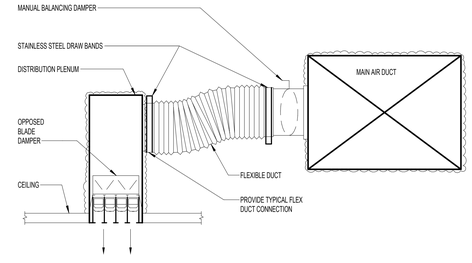
NOTE:
IF STRAIGHT SECTION EXTENDS PAST 4 DIAMETERS IN LENGTH, PROVIDE TRANSITION FITTING AND INCREASE DUCT DIAMETER BY 2".

6 VARIABLE VOLUME TERMINAL WITH ELECTRIC HEAT
N.T.S.

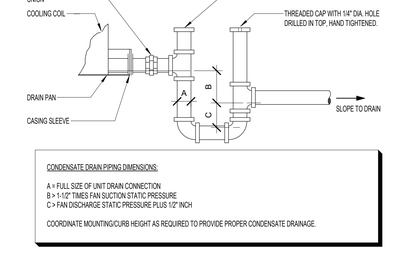


7 FLEX DUCT CONNECTION
N.T.S.

8 REFRIGERANT PIPING
N.T.S.



9 LINEAR DIFFUSER - VERTICAL CONFIGURATION
N.T.S.

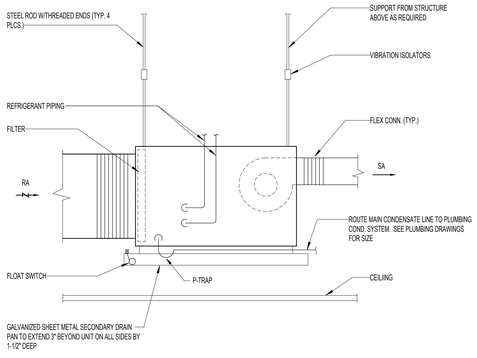


CONDENSATE DRAIN PIPING DIMENSIONS:

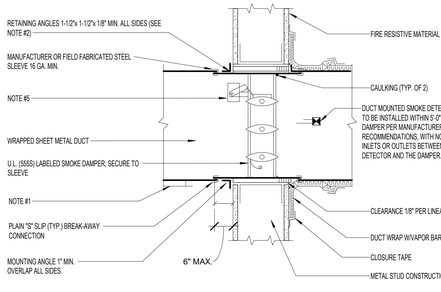
A = FULL SIZE OF UNIT DRAIN CONNECTION
B > 1-1/2" TIMES FAN SUCTION STATIC PRESSURE
C > FAN DISCHARGE STATIC PRESSURE PLUS 1/2" INCH

COORDINATE MOUNTING/CURB HEIGHT AS REQUIRED TO PROVIDE PROPER CONDENSATE DRAINAGE.

10 AHU CONDENSATE DRAIN TRAP
N.T.S.



11 SUSPENDED AIR HANDLING UNIT INSTALLATION
N.T.S.



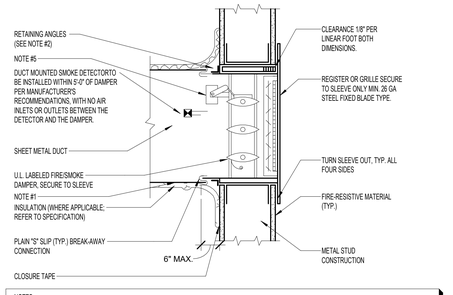
NOTES:

1. PROVIDE ACCESS DOOR & LABEL ON SIDE OR BOTTOM OF DUCT AS FOLLOWS:

DUCT WIDTH	DOOR SIZE
10" THRU 12"	8"X8"
14" THRU 20"	12"X12"
22" AND ABOVE	18"X18"

2. 1-1/2" x 1-1/2" x 1/8" RETAINING ANGLES SHALL LAP STRUCTURAL OPENING 1" MIN. & COVER CORNERS OF OPENINGS. ANGLES ATTACH TO SLEEVE ONLY AND MUST NOT BE ATTACHED TO EACH OTHER AT CORNERS OR TO WALL.
3. ALL ATTACHMENTS PER MANUFACTURER'S APPROVED INSTALLATION INSTRUCTION.
4. VERTICAL POSITION SHOWN. HORIZONTAL INSTALLATION SIMILAR.
5. ACTUATOR TO BE MOUNTED ON OUTSIDE OF DAMPER SLEEVE ON ACCESIBLE SIDE. ACTUATOR SHALL NOT INTERFERE WITH "S" JOINT. ACTUATOR ASSEMBLY TO BE U.L. LABELED.
6. VERIFY THAT ACCESS IS PROVIDED ON THE ACTUATOR SIDE OF THE WALL/FLOOR SO THAT THE LINK MAY BE SERVICED WITH THE DAMPER IN CLOSED POSITION.

12 SMOKE DAMPER INSTALLATION
N.T.S.



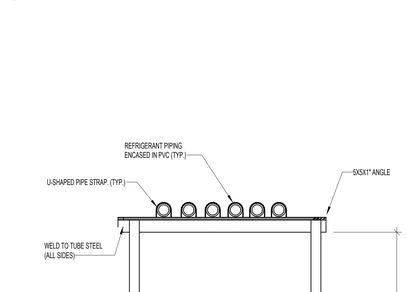
NOTES:

1. PROVIDE ACCESS DOOR & LABEL ON SIDE OR BOTTOM OF DUCT AS FOLLOWS:

DUCT WIDTH	DOOR SIZE
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2. 1-1/2" x 1-1/2" x 1/8" RETAINING ANGLES SHALL LAP STRUCTURAL OPENING 1" MIN. & COVER CORNERS OF OPENINGS. ANGLES ATTACH TO SLEEVE ONLY AND MUST NOT BE ATTACHED TO EACH OTHER AT CORNERS OR TO WALL.
3. ALL ATTACHMENTS PER MANUFACTURER'S APPROVED INSTALLATION INSTRUCTION.
4. VERTICAL POSITION SHOWN. HORIZONTAL INSTALLATION SIMILAR.
5. ACTUATOR TO BE MOUNTED ON OUTSIDE OF DAMPER SLEEVE ON ACCESSIBLE SIDE. ACTUATOR SHALL NOT INTERFERE WITH "S" JOINT. ACTUATOR ASSEMBLY TO BE U.L. LABELED.
6. VERIFY THAT ACCESS IS PROVIDED ON THE ACTUATOR SIDE OF THE WALL/FLOOR SO THAT THE LINK MAY BE SERVICED WITH THE DAMPER IN CLOSED POSITION.

13 SMOKE DAMPER INSTALLATION AT GRILLE
N.T.S.



14 PIPE STAND
N.T.S.

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
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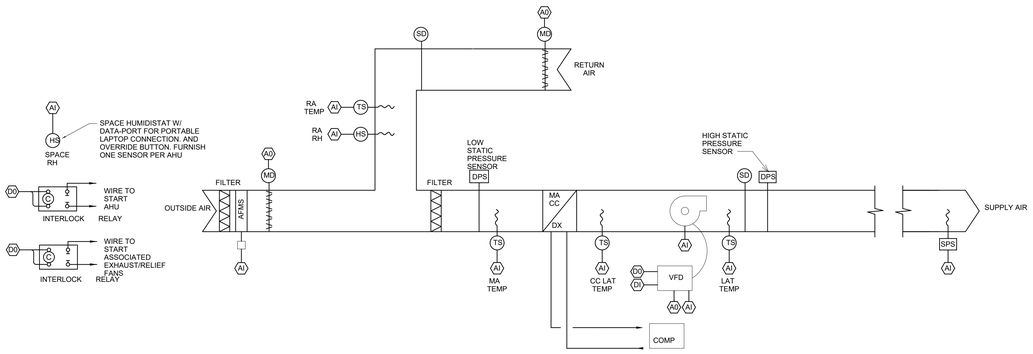
MECHANICAL DETAILS

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GENERAL NOTES:

1. THE FOLLOWING SEQUENCES OF OPERATION ARE INTENDED TO CONVEY THE NORMAL OPERATING SEQUENCE WHEN IN THE AUTOMATIC CONTROL MODE AS AFFECTED BY THE BUILDING CONTROL SYSTEM (BCS). ALL SET-POINTS INDICATED IN THE SEQUENCE ARE FOR REFERENCE ONLY AND SHALL BE COMPLETELY ADJUSTABLE.



MULTI ZONE - MIXED AIR - VAV AHU CONTROL SCHEMATIC

NO SCALE

SEQUENCE OF OPERATION - AIR HANDLING UNITS

VAV WITH AFD, 1 SAF, NO ELECTRIC HEAT, MIXED AIR (AHU- 1, AHU-2):

1. UNOCCUPIED: WHEN THE BUILDING IS INDEXED FOR UNOCCUPIED OPERATION, THE UNIT SUPPLY FAN SHALL BE STOPPED, THE CONDESER OFF, THE OUTSIDE AIR DAMPER SHALL BE POSITIONED CLOSED AND THE RETURN AIR DAMPER SHALL BE POSITIONED OPEN. ALL THE ASSOCIATED INTERLOCKED EXHAUST FANS SHALL BE STOPPED.
2. NIGHT SET-BACK: THE SPACE TEMPERATURE SENSOR SHALL SIGNAL THE AIR HANDLING UNIT TO START WHEN ANY SPACE TEMPERATURE DROPS TO 64F. THE UNIT SHALL OPERATE AS DESCRIBED IN THE WARM-UP MODE.
3. NIGHT SET-UP: THE SPACE TEMPERATURE SENSOR SHALL SIGNAL THE AIR HANDLING UNIT TO START WHEN ANY SPACE TEMPERATURE RISES TO 85F. THE UNIT SHALL STOP WHEN ALL TEMPERATURES DROP TO 80F. THE UNIT SHALL OPERATE AS DESCRIBED UNDER COOL-DOWN MODE.
4. UNOCCUPIED OVERRIDE : AN OVERRIDE MODE SHALL BE PROVIDED THAT WILL PERMIT OPERATION OF THE AIR HANDLING UNIT TO FEED THE ZONE IN OVERRIDE. WHEN IN OVERRIDE, THE UNIT SHALL OPERATE AS DESCRIBED FOR OCCUPIED OPERATION EXCEPT THAT THE OUTDOOR AIR DAMPER SHALL REMAIN CLOSED. THE ASSOCIATED EXHAUST FANS SHALL REMAIN OFF. OVERRIDE MAY BE ACCOMPLISHED BY USE OF THE OVERRIDE BUTTON ON THE ROOM TEMPERATURE SENSOR OR BY MANUAL INPUT TO THE COMPUTER.
5. OCCUPIED: WHEN THE BUILDING IS INDEXED FOR OCCUPIED OPERATION, IF THE UNIT IS NOT RUNNING, THE UNIT SHALL BE STARTED AND THE UNIT OUTDOOR AIR DAMPER SHALL BE MODULATED 100% OPEN OR UNTIL THE OA SET POINT IS MET. IF THE OA IS STILL LOW WHEN THE DAMPER IS 100% OPEN, THEN THE RETURN AIR DAMPER SHALL BE MODULATED TO MAINTAIN THE MINIMUM OUTSIDE AIR QUANTITY SCHEDULED. ALL ASSOCIATED EXHAUST FANS SHALL BE STARTED ONLY AFTER THE UNIT OA DAMPERS HAS BEEN PROVEN OPEN. THE ACTUAL TIME FOR OCCUPIED OPERATION SHALL BE ONE HOUR PRIOR TO THE NORMAL OCCUPANCY TIME TO PERMIT AN IAQ PRE-OPERATION PERIOD.
6. SPACE TEMPERATURE CONTROL :
   a. COOLING COIL CONTROL : THE COMPRESSOR SHALL CYCLE TO MAINTAIN SPACE TEMPERATURE
7. SUPPLY FAN AND DUCT PRESSURE CONTROL :
   a. THE BUILDING CONTROL SYSTEM (BCS) SHALL CONTINUOUSLY MONITOR THE DAMPER POSITION OF ALL VAV TERMINAL UNITS. THE DISCHARGE DUCT STATIC PRESSURE SHALL BE SENSED DIRECTLY AT THE DISCHARGE OF EACH AIR HANDLER. THE SENSOR MUST BE MOUNTED IN A NON-TURBULENT LOCATION.
   b. WHEN ANY VAV DAMPER IS MORE THAN 75% (ADJ.) OPEN, THE SUPPLY FAN DISCHARGE DUCT STATIC PRESSURE SETPOINT SHALL BE RESET UPWARD BY 0.1 IN W.C. (ADJ.). AT A FREQUENCY OF 15 MINUTES (ADJ.), UNTIL NO DAMPER IS MORE THAN 75% OPEN OR THE STATIC PRESSURE SETPOINT HAS RESET UPWARD TO THE SYSTEM MAXIMUM DUCT STATIC PRESSURE SETPOINT OR THE AHU VARIABLE-FREQUENCY DRIVE IS AT THE MAXIMUM SPEED SETTING.
   c. WHEN ALL VAV DAMPERS ARE LESS THAN 65% (ADJ.) OPEN, THE SUPPLY FAN DISCHARGE DUCT STATIC PRESSURE SETPOINT SHALL BE RESET DOWNWARD BY 0.1 IN W.C.(ADJ.). AT A FREQUENCY OF 15 MINUTES (ADJ.), UNTIL AT LEAST ONE DAMPER IS MORE THAN 65% OPEN OR THE STATIC PRESSURE SETPOINT HAS RESET DOWNWARD TO THE SYSTEM MINIMUM DUCT STATIC PRESSURE SETPOINT OR THE AHU VARIABLE-FREQUENCY DRIVE IS AT THE MINIMUM SPEED SETTING.
   d. THE CONTROL BANDS, SETPOINT INCREMENT VALUES, SETPOINT DECREMENT VALUES AND ADJUSTMENT FREQUENCIES SHALL BE ADJUSTED TO MAINTAIN MAXIMUM STATIC PRESSURE OPTIMIZATION WITH STABLE SYSTEM CONTROL AND MAXIMUM COMFORT CONTROL.
   e. THE BCS SHALL HAVE THE CAPABILITY TO ALLOW THE OPERATOR TO EXCLUDE"PROBLEM" ZONES THAT SHOULD NOT BE CONSIDERED WHEN DETERMINING THE OPTIMIZED SETPOINT.
   f. THE BCS SHALL ALSO READ THE STATUS OF THE SUPPLY AIR STATIC PRESSURE SENSOR AND DISPLAY THE ACTIVE DUCT STATIC PRESSURE READING ON THE STATUS SCREEN.
   g. THE BCS SHALL HAVE THE ABILITY TO IDENTIFY, AND DISPLAY TO THE USER, THE VAV BOX THAT SERVES THE CRITICAL ZONE (THAT IS, THE ZONE WITH THE MOST WIDE-OPEN VAV DAMPER). THIS INFORMATION SHALL UPDATE DYNAMICALLY AS THE LOCATION OF THE CRITICAL ZONE CHANGES BASED ON BUILDING LOAD, AND DUCT STATIC PRESSURE SETPOINT OPTIMIZATION CONTROL.
8. SMOKE CONTROL : SHOULD PRODUCTS OF COMBUSTION BE DETECTED BY THE SUPPLY OR RETURN AIR SMOKE DETECTORS, THE SUPPLY FAN SHALL BE STOPPED AND THE FAN DISCHARGE SMOKE DAMPER, OUTDOOR AND RETURN AIR DAMPERS SHALL BE CLOSED.
9. INDOOR AIR QUALITY CONTROL : (IF REQUIRED SHOWN ON DRAWINGS AND/OR AHU SCHEDULE): WHEN THE AIR HANDLING UNIT IS INDEXED FOR OCCUPIED OPERATION, THE INDOOR AIR QUALITY SHALL BE MONITORED BY A CO2 SENSOR LOCATED IN THE SPACE MOUNTED BETWEEN 3'-6' ABOVE FINISHED FLOOR (REFER TO THE DRAWINGS). THE MINIMUM OUTDOOR AIR INTRODUCED INTO THE BUILDING SHALL BE VARIED BETWEEN THE OA CFM LISTED ON THE SCHEDULE AND THE PARTIALLY OCCUPIED CO2 CFM LISTED ON THE SCHEDULE. THE OA DAMPER SHALL BE SET TO THE MINIMUM SETPOINT UNTIL THE SENSOR READS 800+ PPM. AFTER GOING ABOVE THIS SETTING THE OA DAMPER SHALL MODULATE OPEN TO THE FULL OA CFM UNTIL SENSOR READS BELOW 800 PPM FOR A DURATION OF 30 MINUTES. DURING THE PARTIALLY OCCUPIED MODE THE OA INTRODUCED INTO THE BUILDING IS ONLY ENOUGH TO SATISFY THE OCCUPANTS AND THE BUILDINGS MINIMUM PRESSURIZATION REQUIREMENTS. ALL INTERLOCKED ASSOCIATED EXHAUST AND RELIEF FANS SHALL BE OFF. WHEN THE BUILDING IS OCCUPIED AND THE OA SETPOINT IS PER THE MAXIMUM OA CFM ON THE SCHEDULE ALL EXHAUST AND RELIEF FANS SHALL BE ENERGIZED. THE CONTRACTOR SHALL DEMONSTRATE THIS TO THE OWNER AND ENGINEER DURING SUBSTANTIAL COMPLETION.

CONTROLS LEGEND

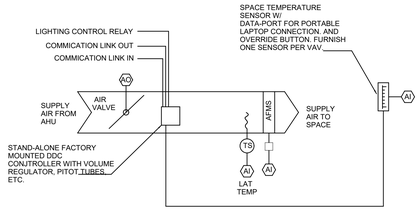
AFD ADJUSTABLE FREQUENCY DRIVE	LAT LEAVING AIR TEMPERATURE
AFMS AIR FLOW MEASURING STATION	M/S MOTOR STARTER/DISCONNECT
AI ANALOG INPUT	OA OUTSIDE AIR
AO ANALOG OUTPUT	PD DISCHARGE STATIC PRESSURE
BDD BACK DRAFT DAMPER	R RELAY
CC COOLING COIL	RA RETURN AIR
CHWS CHILLED WATER SUPPLY	RH RELATIVE HUMIDITY
CHWR CHILLED WATER RETURN	Sa SAFETY ALARM/SHUT-DOWN
CSR CURRENT SENSING RELAY	SA SUPPLY AIR
CV CONTROL VALVE	SD SMOKE DETECTOR
MD MOTORIZED DAMPER	SPS STATIC PRESSURE SENSOR
DI DIGITAL INPUT	S/S START-STOP
DO DIGITAL OUTPUT	TEMP TEMPERATURE
DP DIFFERENTIAL PRESSURE	TS TEMPERATURE SENSOR
DPS DIFFERENTIAL PRESSURE SWITCH	
EHC ELECTRIC HEATING COIL	
ES END SWITCH	
F AFD FAILURE ALARM	
Fa FAILURE ALARM	
FR FREEZESTAT	
FS FLOW SWITCH	
HS HUMIDITY SENSOR	
HC HEATING COIL	
HL HUMIDITY SENSOR (HIGH LIMIT)	
IAQ INDOOR AIR QUALITY SENSOR	

NOTE:

SEE SPECIFICATIONS - SECTION 23 09 93 FOR MORE INFORMATION

VAV PRIMARY AIR, NO ELECTRIC HEAT, NO FAN:

1. UNOCCUPIED: WHEN THE BUILDING IS INDEXED FOR UNOCCUPIED OPERATION, THE TERMINAL PRIMARY AIR DAMPER SHALL BE CLOSED.
2. NIGHT SETUP: THE TERMINAL CONTROLLER SHALL OPEN AND START THE AIR HANDLING UNIT FAN. THE PRIMARY AIR DAMPER SHALL OPEN WHEN THE SPACE TEMPERATURE RISES TO 90F. THE AHU SHALL STOP AND THE DAMPER SHALL CLOSE WHEN THE SPACE TEMPERATURE DROPS TO 85F. THE AIR HANDLING UNIT SHALL OPERATE AS DESCRIBED ABOVE.
3. OCCUPIED: WHEN THE UNIT IS INDEXED FOR OCCUPIED OPERATION, THE UNIT SHALL CONTROL AT THE COOLING SET POINT OF 75F BY VARYING THE PRIMARY AIR DAMPER FROM ITS MINIMUM TO ITS MAXIMUM VALUE.
4. THE CONTROLS SHALL BE ARRANGED FOR PRESSURE INDEPENDENT OPERATION, I.E., THE DAMPER POSITION SHALL BE SET BY THE FLOW SENSOR, AND THE SPACE TEMPERATURE WILL RESET THE FLOW SENSOR SO THAT PRIMARY AIR FLOW WILL BE CONSTANT AT ANY SETPOINT, REGARDLESS OF CHANGES IN PRIMARY DUCT PRESSURE.
5. CONTROL POINT DESCRIPTION (REFER TO THE DRAWINGS).

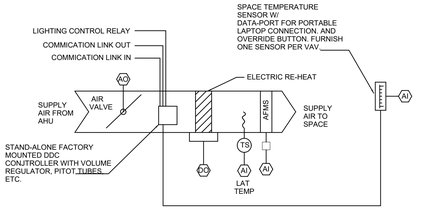


VARIABLE VOLUME TERMINAL NO HEAT

NO SCALE

VAV PRIMARY AIR, ELECTRIC HEAT, NO FAN:

1. UNOCCUPIED: WHEN THE BUILDING IS INDEXED FOR UNOCCUPIED OPERATION, THE TERMINAL PRIMARY AIR DAMPER SHALL BE CLOSED AND THE HEATER CYCLED OFF.
2. NIGHT SETUP: THE TERMINAL CONTROLLER SHALL OPEN AND START THE AIR HANDLING UNIT FAN. THE PRIMARY AIR DAMPER SHALL OPEN WHEN THE SPACE TEMPERATURE RISES TO 90F. THE AHU SHALL STOP AND THE DAMPER SHALL CLOSE WHEN THE SPACE TEMPERATURE DROPS TO 85F. THE AIR HANDLING UNIT SHALL OPERATE AS DESCRIBED ABOVE.
3. OCCUPIED: WHEN THE UNIT IS INDEXED FOR OCCUPIED OPERATION, THE UNIT SHALL CONTROL AT THE COOLING SET POINT OF 75F BY VARYING THE PRIMARY AIR DAMPER FROM ITS MINIMUM TO ITS MAXIMUM VALUE. ON A FALL IN SPACE TEMPERATURE BELOW A SETTING OF 72F, THE ELECTRIC HEATING COIL SHALL BE CYCLED ON.
4. THE CONTROLS SHALL BE ARRANGED FOR PRESSURE INDEPENDENT OPERATION, I.E., THE DAMPER POSITION SHALL BE SET BY THE FLOW SENSOR, AND THE SPACE TEMPERATURE WILL RESET THE FLOW SENSOR SO THAT PRIMARY AIR FLOW WILL BE CONSTANT AT ANY SETPOINT, REGARDLESS OF CHANGES IN PRIMARY DUCT PRESSURE.
5. CONTROL POINT DESCRIPTION (REFER TO THE DRAWINGS).



VARIABLE VOLUME TERMINAL W/ REHEAT

NO SCALE

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
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MARK	DESCRIPTION	DATE

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MECHANICAL CONTROLS SCHEMATICS

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SPLIT SYSTEM AIR HANDLER SCHEDULE

MARK	MANUFACTURER	MODEL	TOTAL CFM	OA CFM	COOLING COIL DATA					FAN DATA				ELECTRIC HEATER KW	VOLT / PHASE
					AIR DATA			TOT. MBH	SENS. MBH	QUANTITY	HP	VFD (YES/NO)	EXT. STATIC, IN WG		
					EAT (DB/WB)	LAT (DB/WB)	VELOCITY								
AHU-1	CARRIER	39MN SIZE 17	8115	1200	79.0/66.6	54.5/54.5	500	283.3	198.31	1	10	YES	2.5	-	208/3
AHU-2	CARRIER	FVAC	875	175	80.0/67.6	54.5/54.5	500	28.9	19.3	1	1/2	NO	0.65	5	208/1

NOTES:
1. PROVIDE 2" MERV 8 FILTERS
2. AHU-1 UNIT SECTIONS TO INCLUDE: MIXING BOX WITH FLAT FILTERS, COLING COIL, DIRECT DRIVE PLENUM FAN.
3. PROVIDE A SINGLE POINT OF CONNECTION, FUSED DISCONNECT
4. PROVIDE SMOKE DETECTOR

AIR COOLED CONDENSER SCHEDULE

MARK	MANUFACTURER	MODEL	NOMINAL COOLING CAPACITY	REFRIGERANT	V/PH/HZ	MCA	FAN F.L.A.	COMP RLA	M.O.C.P.	# OF COMP.
CU-1	CARRIER	38APD25	25 TONS	R-410A	208/3	121	(2) 6.6	(2) 48.1	150	2
CU-2	CARRIER	24SPA	2.5 TONS	R-410A	208/1	15.2	0.6	11.7	25	1

NOTES:
1. PROVIDE WITH ANTI-RECYCLE COMPRESSOR TIMER
2. PROVIDE CONDENSER GUARDS
3. PROVIDE A 5-YEAR COMPRESSOR WARRANTY
4. SIZE REFRIGERANT PER MANUFACTURER'S REQUIREMENTS
5. PROVIDE WITH DISCONNECT SWITCH
6. PROVIDE BRONZE-GLOW CONDENSER COIL COATING

VAV SCHEDULE

MARK	MANUFACTURER	MODEL	INLET SIZE	AIRFLOWS (CFM)			ELECTRIC HEATING COIL DATA			
				COOLING DESIGN	COOLING MINIMUM	HEATING DESIGN	TEMPERATURE		KW	VOLT / PHASE
							EAT	LAT		
VAV-1	Price Industries	SDV Series	12	1700	680	680	55 °F	85 °F	6.5	208/3
VAV-2	Price Industries	SDV Series	6	455	190	190	55 °F	85 °F	2.0	208/3
VAV-3	Price Industries	SDV Series	6	455	190	190	55 °F	85 °F	2.0	208/3
VAV-4	Price Industries	SDV Series	6	455	190	190	55 °F	85 °F	2.0	208/3
VAV-5	Price Industries	SDV Series	12	1310	570	570	55 °F	85 °F	5.5	208/3
VAV-6	Price Industries	SDV Series	8	675	270	270	55 °F	85 °F	3.0	208/3
VAV-7	Price Industries	SDV Series	10	825	330	330	55 °F	85 °F	3.5	208/3
VAV-8	Price Industries	SDV Series	8	715	290	290	55 °F	85 °F	3.0	208/3
VAV-9	Price Industries	SDV Series	8	675	230	230	55 °F	85 °F	2.5	208/3
VAV-10	Price Industries	SDV Series	8	525	210	210	55 °F	85 °F	2.5	208/3
VAV-11	Price Industries	SDV Series	6	325	130	130			-	-

NOTES:

1. PROVIDE DOUBLE WALL INTERNALLY INSULATED BOXES.
2. UNITS SHALL HAVE ELECTRICALLY POWERED OPERATORS.
3. UNITS SHALL BE PRESSURE INDEPENDENT, NORMALLY OPEN.
4. PROVIDE INTEGRAL FUSED DISCONNECT.

MINI SPLIT SYSTEM SCHEDULE (INDOOR UNIT)

PLAN MARK	MODEL NO.	NOMINAL TONS	FAN DATA		COOLING COIL DATA			FLA
			NOMINAL CFM	VOLT/PHASE	ENT. DB/WB	SEN. MBH	TOTAL MBH	
AC-1	40MAQ	1.0	380	208/1	75/62	10.2	12.0	0.2

MINI SPLIT SYSTEM SCHEDULE (OUTDOOR UNIT)

PLAN MARK	MODEL	TONS	REFRIGERANT DATA	VOLT/PHASE	COMP / FAN RLA	MCA	MOCP	MIN. SEER	WEIGHT (LBS)
			TYPE						
MS-1	38MAR	1.0	R-410A	208/1	5.7/0.4	9	15	23.0	92

NOTES:
1. PROVIDE WITH ANTI-RECYCLE COMPRESSOR TIMER
2. PROVIDE CONDENSER GUARDS
3. PROVIDE A 5-YEAR COMPRESSOR WARRANTY
4. SIZE REFRIGERANT PER MANUFACTURER'S REQUIREMENTS
5. PROVIDE WITH DISCONNECT SWITCH
6. PROVIDE BRONZE-GLOW CONDENSER COIL COATING
7. PROVIDE SIMPLE WALL MOUNTED REMOTE CONTROLLER
8. PROVIDE CONDENSATE PUMP

FAN SCHEDULE

MARK	MANUFACTURER	MODEL	FAN TYPE	AIRFLOW (CFM)	ESP	DRIVE TYPE	MOTOR (RPM)	VOLT / PHASE	HP	INTERLOCK/CONTROL
EF-1	GREENHECK	SQ	INLINE	575	0.5	DIRECT	1239	115/1	1/4	AHU-1
EF-2	GREENHECK	SQ	INLINE	450	0.3	DIRECT	1445	115/1	1/10	OCCUPANCY
EF-3A	GREENHECK	AER	PROPELLER	3000	0.2	DIRECT	953	115/1	1/2	OCCUPANCY
EF-3B	GREENHECK	AER	PROPELLER	3000	0.2	DIRECT	953	115/1	1/2	OCCUPANCY
EF-4	GREENHECK	AER	PROPELLER	3750	0.2	DIRECT	1154	115/1	1/2	OCCUPANCY
HVLSF-1	GREENHECK	DC-5-4	HVLS CEILING	3800	-	DIRECT	-	115/1	1/10	SWITCH
HVLSF-2	GREENHECK	DC-5-4	HVLS CEILING	3800	-	DIRECT	-	115/1	1/10	SWITCH
HVLSF-3	GREENHECK	DC-5-4	HVLS CEILING	3800	-	DIRECT	-	115/1	1/10	SWITCH
HVLSF-4	GREENHECK	DC-5-14	HVLS CEILING	55000	-	DIRECT	-	115/1	1/4	SWITCH
HVLSF-5	GREENHECK	DC-5-12	HVLS CEILING	20500	-	DIRECT	-	115/1	1/4	SWITCH
HVLSF-6	GREENHECK	DC-5-12	HVLS CEILING	20500	-	DIRECT	-	115/1	1/4	SWITCH

NOTES:

PROVIDE WITH THE FOLLOWING:
1. BACKDRAFT DAMPER
2. SPEED CONTROLLER
3. VIBRATION ISOLATOR
4. DISCONNECT SWITCH

UNIT HEATER SCHEDULE

PLAN MARK	MANUFACTURER	MODEL	KW	VOLT/PHASE
UH-1	REZNOR	EGHB	10	208/3
UH-2	REZNOR	EGHB	10	208/3

NOTES:

PROVIDE WITH THE FOLLOWING:
1. DISCONNECT SWITCH
2. THERMOSTAT

AIR DEVICE SCHEDULE

MARK	SYMBOL	CFM	NECK SIZE	FACE SIZE / LENGTH	DESCRIPTION
A		000-110	6Ø	24x24	BASIS OF DESIGN: METALAIRE 5800
		111-200	8Ø	24x24	SQUARE CONE DIFFUSER (3 CONES)
		201-330	10Ø	24x24	COLOR: WHITE
		331-470	12Ø	24x24	MATERIAL: ALUMINUM - SILICON
		471-640	14Ø	24x24	COATED STEEL
		641-1115*	16Ø	24x24	OPPOSED BLADE DAMPERS: NO
		000-110	6 Ø	12x12	
		111-200	8Ø	12x12	
		201-330	10Ø	12x12	
B		000-900	14x14	24x24	BASIS OF DESIGN: METALAIRE CCSF
		901-2250	22x22	24x24	EGGCRATE FOR RETURN OR EXHAUST
					COLOR: WHITE
					MATERIAL: ALUMINUM
					OPPOSED BLADE DAMPERS: NO
		000-600	12x12	12x12	
C		000-130		8x6	BASIS OF DESIGN: METALAIRE V4002-D1
		131-170		10x6	SIDEWALL SUPPLY GRILLE
		171-260		12X6	COLOR: WHITE
		261-360		12X8	MATERIAL: ALUMINUM
		361-3150*		36x14	OPPOSED BLADE DAMPERS: YES
					SURFACE MOUNT
					SINGLE DEFLECTION
					3/4" BLADE SPACING
D		000-160		8x8	BASIS OF DESIGN: METALAIRE - RH-1
		161-300		10x10	SIDEWALL RETURN OR EXHAUST
		301-460		12x12	COLOR: WHITE
		461-600		14x14	MATERIAL: ALUMINUM
		601-800		28x12	OPPOSED BLADE DAMPERS: NO
		801-1200		24x16	CONCEALED SURFACE MOUNT
		1201-2400		28x28	SINGLE 45° DEFLECTION
					3/4" SPACING
L4		000-180		8Ø	BASIS OF DESIGN: METAL AIRE 6675
		185-450		10Ø	LINEAR SLOT DIFFUSER
					COLOR: WHITE
					MATERIAL: ALUMINUM
					OPPOSED BLADE DAMPERS: YES
					SLOT: 2 SLOT, 3/4" WIDE x 4' LONG
					PROVIDE WITH PLENUM BOX

NOTES:

1. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR DETERMINATION OF APPROPRIATE BORDER TYPES FOR EACH AIR DEVICE.
2. AIR DEVICES LOCATED IN SMALL ROOMS WHERE FULL 24"x24" GRID ARE NOT AVAILABLE SHALL BE PROVIDED WITH SURFACE MOUNTING BORDERS IN LIEU OF LAY-IN. SECURE EACH DEVICE TO CEILING GRID WITH FIELD-FABRICATED SUPPORTS.
3. MAXIMUM NC RATING OF 25.
4. AS TYPE: TYPICAL PATTERN TO BE OPPOSED HORIZONTAL. FOR DIFFUSER AT WINDOW - SLOT CLOSEST TO WINDOW TO BE VERTICAL AND THE OTHER TO BE HORIZONTAL. FOR DIFFUSER NEXT TO WALL - BOTH SLOTS TO BE ONE WAY HORIZONTAL.

* NOT SIZED AT 25 NC. ONLY USED FOR EMERGENCY BACKUP.

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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REVISIONS

MARK	DESCRIPTION	DATE

COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
DRAWN BY: JMW

MECHANICAL SCHEDULES

M600
PERMIT/BID DOCUMENTS

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ELECTRICAL SYMBOL LEGEND

BASIC MATERIALS

SYMBOL	DESCRIPTION
DEVICE ABBREVIATION TAGS:	
6C	POKE-THRU WITH 6" CORE DRILL
8C	POKE-THRU WITH 8" CORE DRILL
4G	FOUR-GANG FLOOR BOX
6G	SIX-GANG FLOOR BOX
8G	EIGHT-GANG FLOOR BOX
AV	DOUBLE DUPLEX RECEPTACLE WITH DEDICATED CIRCUIT FOR AV RACK OR CART
ETR	EXISTING TO REMAIN
H	HOSPITAL GRADE
IG	ISOLATED GROUND (ORANGE DEVICE)
RL	RELOCATED
TR	TAMPER RESISTANT
TV	RECEPTACLE MOUNTED ADJACENT TO TV OUTLET, COORDINATE HEIGHT W/ ARCHITECT
U	DUPLEX RECEPTACLE WITH (2) USB PORTS
WP	WEATHERPROOF
S_a	SINGLE POLE SWITCH (SUBSCRIPT INDICATES ITEM CONTROLLED)
S_3	THREE-WAY SWITCH
S_4	FOUR-WAY SWITCH
S_K	SINGLE POLE KEY SWITCH
S_T	DIGITAL TIMER SWITCH W/ 5 MIN. WARNING FLASH
S_{OS}	WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR SWITCH
S_{LV}	LOW VOLTAGE SWITCH
S_F	FAN SWITCH
S_M	MOTOR RATED SWITCH
S_D	DIMMER SWITCH, 0-10V
OS	WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR
OS	CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR H = HIGH BAY OCCUPANCY SENSOR
DL	DAYLIGHT SENSOR CEILING MOUNTED
	NOTE: DIAGONAL MARKS INDICATED ON ANY DEVICE REPRESENTS DEVICE CONNECTED TO EMERGENCY CIRCUIT (RED DEVICE FOR RECEPTACLE); WHITE FOR ANY DEVICE IN LEGEND
	SINGLE RECEPTACLE
	DUPLEX RECEPTACLE
	TWO DUPLEX RECEPTACLES (QUAD) WITH COMMON COVERPLATE
	DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER
	TWO DUPLEX RECEPTACLES (QUAD) WITH COMMON COVER MOUNTED ABOVE COUNTER
	DUPLEX RECEPTACLE; EACH RECEPTACLE ON SEPARATE CIRCUIT (PROVIDE BREAKER WITH 2-POLE COMMON TRIP HANDLE)
	SPLIT-WIRED CONTROLLED DUPLEX RECEPTACLE
	GFCI RECEPTACLE; "WP" INDICATES CAST METAL "IN-USE" WEATHERPROOF COVER, WEATHER-RESISTANT LISTED
	TWO GFCI DUPLEX RECEPTACLES (QUAD) WITH COMMON COVERPLATE
	GFCI RECEPTACLE MOUNTED ABOVE COUNTER
	DUPLEX RECEPTACLE, CEILING MOUNTED
	TWO DUPLEX RECEPTACLES (QUAD) WITH COMMON COVERPLATE, CEILING MOUNTED
	PEDESTAL MOUNTED DUPLEX RECEPTACLE
	FLOOR BOX WITH DUPLEX RECEPTACLE WITH APPROPRIATE FLANGE
	FLOOR BOX, TWO DUPLEX RECEPTACLES (QUAD) WITH APPROPRIATE FLANGE
DK	MULTI-SERVICE FLOOR BOX WITH DUPLEX RECEPTACLE, VOICE/DATA/AV DEVICES (REFER TO TECHNOLOGY DRAWINGS OR OWNER'S VENDOR DRAWINGS FOR LOW VOLTAGE REQUIREMENTS)
DK	MULTI-SERVICE FLOOR BOX WITH TWO DUPLEX RECEPTACLES (QUAD) , VOICE/DATA/AV DEVICES (REFER TO TECHNOLOGY DRAWINGS OR OWNER'S VENDOR DRAWINGS FOR LOW VOLTAGE REQUIREMENTS)
DK	MULTI-SERVICE POWER & DATA FLOOR BOX WITH FURNITURE FEED CONNECTION (REFER TO TECHNOLOGY DRAWINGS OR OWNER'S VENDOR DRAWINGS FOR LOW VOLTAGE REQUIREMENTS)
	SPECIAL PURPOSE RECEPTACLE. NEMA CONFIGURATION AS NOTED
	JUNCTION BOX WALL MOUNTED
J	JUNCTION BOX MOUNTED IN OR ABOVE CEILING OR IN STRUCTURE
J	WALL MOUNTED FURNITURE FEED POWER CONNECTION
PP	POWER POLE WITH POWER & DATA FURNITURE FEED POWER CONNECTIONS
PP	POWER POLE WITH POWER & DATA OUTLETS
	MULTI-SERVICE RACEWAY WITH 5-20R RECEPTACLES, 18" O.C. UNLESS OTHERWISE NOTED
GND	GROUND BUS BAR, COPPER
SPD	SURGE PROTECTIVE DEVICE
ST	SHUNT-TRIP PUSHBUTTON; SEMI-FLUSH WALL MOUNTED UNLESS OTHERWISE NOTED; NEMA 3R FOR EXTERIOR LOCATIONS
	PUSHBUTTON STATION
VFD	VARIABLE FREQUENCY DRIVE

SYMBOL	DESCRIPTION
MH	MANHOLE
PB	PULLBOX
HH	HANDHOLE
T	TRANSFORMER
ATS	AUTOMATIC TRANSFER SWITCH
30AR 3R NF	NEMA RATING: NEMA 1 UNLESS OTHERWISE NOTED NON-FUSED DISCONNECT SWITCH, RATING AS NOTED NF = NON-FUSED AR = AMPERE RATING OF SWITCH 4X SS = NEMA 4X STAINLESS STEEL ENCLOSURE
30AR 20AF 3R	NEMA RATING: NEMA 1 UNLESS OTHERWISE NOTED FUSED DISCONNECT AF = AMPERE RATING OF FUSE AR = AMPERE RATING OF SWITCH 4X SS = NEMA 4X STAINLESS STEEL ENCLOSURE
MCP AMPERE RATING 3 6 30A 3R	# OF POLES NEMA RATING: NEMA 1 UNLESS OTHERWISE NOTED COMBINATION MAGNETIC MOTOR STARTER, SIZE AS NOTED, 3-POLE UNLESS OTHERWISE NOTED 4X SS = NEMA 4X STAINLESS STEEL ENCLOSURE NEMA STARTER SIZE
	SWITCHBOARD/ SWITCHGEAR/ DISTRIBUTION PANEL
	BRANCH CIRCUIT PANELBOARD, OVER 240 VOLTS, SURFACE MOUNTED
	BRANCH CIRCUIT PANELBOARD, OVER 240 VOLTS, FLUSH MOUNTED
	BRANCH CIRCUIT PANELBOARD, UNDER 240 VOLTS, SURFACE MOUNTED
	BRANCH CIRCUIT PANELBOARD, UNDER 240 VOLTS, FLUSH MOUNTED
	CONDUIT CONCEALED ABOVE CEILING OR IN WAL
	CONDUIT EXPOSED
	CONDUIT CONCEALED IN SLAB, UNDERGROUND OR UNDER FLOOR
	CONDUIT HOMERUN TO ELECTRICAL PANEL
UP	CONDUIT TURNING UP
DN	CONDUIT TURNING DOWN
	CONDUIT STUBBED OUT OR UP
	CONDUIT CONTINUED
	FLEXIBLE CONDUIT
	CONDUIT SEAL-OFF FITTING
	GROUND OR GROUND ROD AS NOTED
	EXISTING TO BE REMOVED (HEAVY, DASHED LINE)
	EXISTING TO REMAIN (LIGHT, SOLID LINE)
	NEW (HEAVY, SOLID LINE)

LIGHTING

	LED OR FLUORESCENT STRIP FIXTURE
A	FIXTURE TYPE
2 B ZX-X	LED OR FLUORESCENT FIXTURE, RECESSED, PENDANT OR SURFACE CEILING LOWER CASE LETTER INDICATES CONTROLLING SWITCH CIRCUIT NUMBER LIGHTING CONTROL ZONE NUMBER
	LED OR FLUORESCENT FIXTURE RECESSED, PENDANT OR SURFACE CEILING
	DIAGONAL HALF SHADING INDICATE FIXTURE CONNECTED TO EMERGENCY CIRCUIT OR PROVIDED WITH INTEGRAL EMERGENCY BATTERY PACK, "E" AFTER FIXTURE TYPE TAG INDICATES INTEGRAL BATTERY PACK UNLESS OTHERWISE NOTED ON LIGHT FIXTURE SCHEDULE (TYPICAL FOR ALL LIGHT FIXTURE SYMBOLS)
A	LED OR FLUORESCENT FIXTURE, WALL MOUNTED
	LED, FLUORESCENT, HID, RECESSED, PENDANT OR SURFACE CEILING
	LED, FLUORESCENT, HID, WALL MOUNTED
	LED, FLUORESCENT, HID - CEILING WALLWASHER, ACCENT LIGHT, LANDSCAPING TREE ACCENT LIGHT, FACADE LIGHT
	TRACK WITH TRACK LIGHT FIXTURE (TRIANGLES INDICATE QUANTITY OF TRACK HEADS)
	EMERGENCY TWIN-HEAD LIGHT WITH INTEGRAL BATTERY PACK, WALL MOUNTED
	LINEAR FLUORESCENT, LED, RECESSED, PENDANT OR SURFACE CEILING
	EXTERIOR POLE-MOUNTED AREA LIGHT FIXTURE, ARMS AS INDICATED ON DRAWINGS
	EXTERIOR PEDESTRIAN SIDEWALK BOLLARD OR POST-TOP LIGHT FIXTURE
	EXIT LIGHT, LED, CEILING OR PENDANT MOUNTED; DIRECTIONAL ARROWS AS INDICATED; SHADED QUADRANT INDICATES FACE(S) OF FIXTURE
	EXIT LIGHT, LED, WALL MOUNTED
R	UL 924 RELAY (ELCU)

ABBREVIATIONS

A/C	AIR CONDITIONING
AC	ALTERNATING CURRENT
ABV CLG	ABOVE CEILING
ADA	AMERICANS WITH DISABILITIES ACT
AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
AMP	AMPERE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ASA	AMERICAN STANDARDS ASSOCIATION
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
AWG	AMERICAN WIRE GUAGE
BC	BARE COPPER
BIL	BASIC IMPULSE LEVEL
BAS	BUILDING AUTOMATION SYSTEM
BMS	BUILDING MANAGEMENT SYSTEM
BRKR OR BKR	BREAKER
C	CONDUIT OR RACEWAY
CAB	CABINET
CKT	CIRCUIT
CB	CIRCUIT BREAKER
CBM	CERTIFIED BALLAST MANUFACTURERS
CATV	CABLE TELEVISION
CCTV	CLOSED CIRCUIT TELEVISION
CLEC	CLOCK EQUIPMENT CABINET
CLG	CEILING
CO	CONDUIT OR RACEWAY ONLY
COAX	COAXIAL CABLE
COND	CONDUCTOR
CONN	CONNECTION
CPU	CENTRAL PROCESSING UNIT
CRT	CATHODE RAY TERMINAL (VIDEO DISPLAY TERMINAL)
CT	CURRENT TRANSFORMER
CU	COPPER
CW	COLD WATER
DC	DIRECT CURRENT
DDC	DIRECT DIGITAL CONTROL
DEG	DEGREE
DF	DEMAND FACTOR
DISC	DISCONNECT
DISC SW	DISCONNECT SWITCH
DO	DRAW OUT
DN	DOWN
DPST	DOUBLE POLE SINGLE THROW
EDH	ELECTRIC DUCT HEATER
EMT	ELECTRIC METALLIC TUBING
EO	ELECTRICALLY OPERATED
EOL	END OF LINE
EOR	ENGINEER OF RECORD
ETR	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FATC	FIRE ALARM TERMINAL CABINET
FBC	FLORIDA BUILDING CODE
FCU	FAN COIL UNIT
FLA	FULL LOAD AMPERES
FM	FACTORY MUTUAL
FPU	FAN POWERED UNIT
FT	FEET
GF	GROUND FAULT
GFA	GROUND FAULT ALARM
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFR	GROUND FAULT RELAY
GND, G	GROUND
HP	HORSEPOWER
HOA	HAND-OFF-AUTOMATIC
HORIZ	HORIZONTAL
IBC	INTERNATIONAL BUILDING CODE
IC	INTERCOM
ICU	INTENSIVE CARE UNIT
IECC	INTERNATIONAL ENERGY CONSERVATION CODE
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS
IES	ILLUMINATING ENGINEERING SOCIETY
IMC	INTERMEDIATE METAL CONDUIT
IN	INCHES
IPCEA	INSULATED POWER CABLE ENGINEERS ASSOCIATION
IT	INSTANTANEOUS TRIP
JB OR J-BOX	JUNCTION BOX
KCMIL	ONE THOUSAND CIRCULAR MILS
KV	KILOVOLT
KVA	KILOVOLT AMPERES
KW	KILOWATT
KWH	KILOWATT HOURS

ABBREVIATIONS (CONT.)

LBS	POUNDS
LED	LIGHT EMITTING DIODE
LP	LIGHTNING PROTECTION
LT	LIGHT
LTG	LIGHTING
LSIG	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND
LSIA	LONG TIME, SHORT TIME, INSTANTANEOUS, ALARM
LSI	LONG TIME, SHORT TIME, INSTANTANEOUS
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPS
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN SERVICE DISTRIBUTION PANEL
MIC	MICROPHONE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MSB	MAIN SERVICE SWITCHBOARD
MTD	MOUNTED
MTG	MOUNTING
MTR	MOTOR
MTS	MANUAL TRANSFER SWITCH
MUX	MULTIPLEX (TRANSPONDER) PANEL
MVA	MEGA VOLT AMPS
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NF	NON-FUSED
NL	NON-LINEAR
NO	NORMALLY OPEN OR NUMBER
OL	OVERLOAD
OSHA	OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION
P	POLE
PB	PULLBOX
PF	POWER FACTOR
PIV	POST INDICATOR VALVE
PNL	PANEL
PR	PAIR
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYLCHLORIDE
PWR	POWER
REC, RECEPT	RECEPTACLE
REF	REFRIGERATOR
RGS, GRC	RIGID GALVANIZED STEEL CONDUIT
RLA	RUNNING LOAD AMPERES
RMS	ROOT-MEAN-SQUARE
RPM	REVOLUTIONS PER MINUTE
RTU	ROOF TOP UNIT
SCA	SHORT CIRCUIT AMPERES
SD	SMOKE DETECTOR
SEC	SECONDARY
SN	SOLID NEUTRAL
SPD	SURGE PROTECTIVE DEVICE
SPKR	SPEAKER
SPST	SINGLE POLE SINGLE THROW
SS	STAINLESS STEEL
SST	SOLID STATE TRIP
STD	SHORT TIME TRIP
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TEL	TELEPHONE
TTB	TELEPHONE TERMINAL BOARD
TTC	TELEPHONE TERMINAL CABINET
TVEC	TELEVISION EQUIPMENT CABINET
TYP	TYPICAL
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UL	UNDERWRITERS LABORATORIES
UTIL	UTILITY
V	VOLT
VA	VOLTAMPERE
VAR	VOLT AMPERE REACTIVE
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE
WP	WEATHER PROOF
XFMR	TRANSFORMER
XFR	TRANSFER

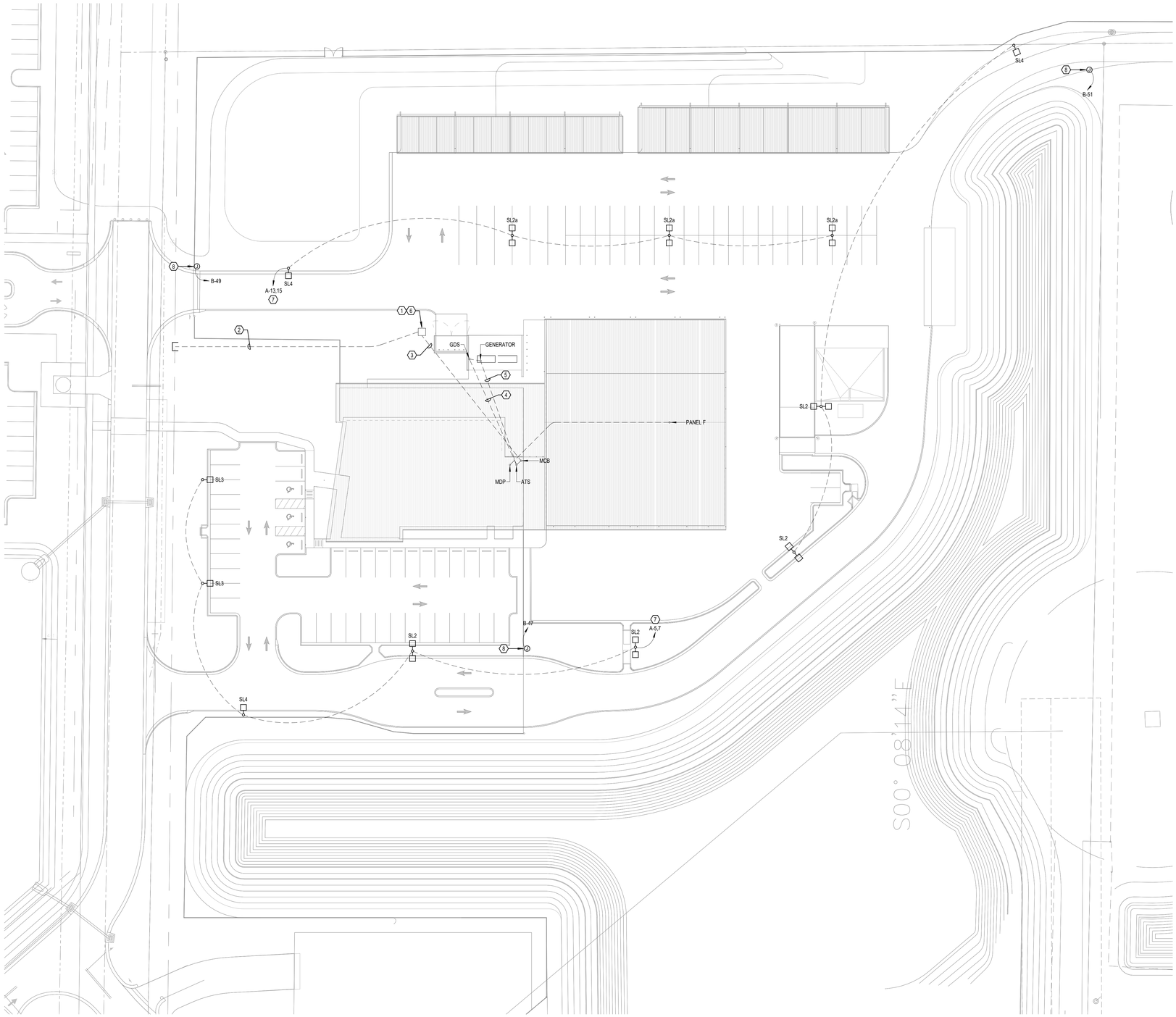
ELECTRICAL GENERAL NOTES

GENERAL REQUIREMENTS:

1. THE DRAWINGS AND APPLICABLE SPECIFICATIONS SHALL BE CONSIDERED SUPPLEMENTARY, ONE TO THE OTHER AND ARE CONSIDERED THE "CONTRACT DOCUMENTS". ALL WORKMANSHIP, METHODS AND/OR MATERIALS DESCRIBED OR IMPLIED BY ONE AND NOT DESCRIBED OR IMPLIED BY THE OTHER SHALL BE PROVIDED, FURNISHED OR PERFORMED AS IF IT HAD APPEARED IN BOTH SECTIONS. THE TERM "CONTRACT DOCUMENTS" DESCRIBED HEREIN IS NOT LIMITED SOLELY TO THE ELECTRICAL PORTION OF THE DRAWINGS AND SPECIFICATIONS, BUT ENCOMPASSES THE DRAWINGS AND SPECIFICATIONS OF ALL DIVISIONS AS A WHOLE.
2. THE DRAWINGS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO SHOW EVERY DETAIL OF CONSTRUCTION, METHODS, MATERIALS AND EQUIPMENT, OR EXACT LOCATIONS, ROUTING, ETC. THEY INDICATE THE RESULT TO BE ACHIEVED BY THE ASSEMBLAGE OF SEVERAL SYSTEMS FOR A COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM. DO NOT SCALE THE CONTRACT DOCUMENTS. COORDINATE EXACT EQUIPMENT LOCATIONS WITH THE ARCHITECTURAL, CIVIL AND STRUCTURAL CONTRACT DOCUMENTS, AS WELL AS FIELD CONDITIONS, APPROVED SHOP DRAWINGS AND WORK OF ALL OTHER DIVISIONS/TRADES.
3. THE TERM "PROVIDE" USED IN THE CONTRACT DOCUMENTS INDICATES TO FURNISH AND INSTALL MATERIALS REQUIRED FOR CORRECT INSTALLATION OF A COMPLETE SYSTEM, UNLESS SPECIFICALLY NOTED OTHERWISE
4. UNLESS NOTED AS EXISTING, ALL ELECTRICAL INDICATED ON THE CONTRACT DOCUMENTS SHALL BE NEW, SHALL BE U.L. LISTED, AND SHALL BEAR A U.L. LABEL WHERE NO U.L. LABEL OR LISTING IS AVAILABLE, THE MATERIAL SHALL BE LISTED WITH AN APPROVED, NATIONALLY RECOGNIZED ELECTRICAL TESTING AGENCY
5. PROVIDE EXPERIENCED, QUALIFIED AND RESPONSIBLE SUPERVISION FOR ALL WORK REQUIRED BY THE CONTRACT DOCUMENTS. ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER, TO THE SATISFACTION OF THE ARCHITECT/ENGINEER AND OWNER.
6. CARRY ALL INSURANCE REQUIRED TO PROTECT AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE DURATION OF THIS PROJECT
7. GUARANTEE ALL MATERIALS AND WORKMANSHIP ARE FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE BY THE ARCHITECT/ENGINEER AND OWNER, UNLESS NOTED OTHERWISE IN DIVISION 1. AT NO ADDITIONAL COSTS, PROVIDE THE CORRECTION OF ANY DEFECTS INCLUDING REPAIR OR REPLACEMENT.
8. INCLUDE ALL COSTS ASSOCIATED WITH PERMITS, LICENSES, FEES, INSPECTIONS, TESTING AND TEMPORARY POWER IN THE BID PRICE, UNLESS NOTED OTHERWISE.
9. IF HAZARDOUS MATERIALS ARE ENCOUNTERED, COMPLY WITH ALL APPLICABLE RULES, REGULATIONS AND GUIDELINES CONCERNING REMOVAL, HANDLING, DISPOSAL AND PROTECTION AGAINST ENVIRONMENTAL EXPOSURE OR POLLUTION. PROVIDE DOCUMENTATION OF SAID COMPLIANCE.
10. PROVIDE ELECTRONIC SUBMITTALS (PRODUCT DATA & SHOP DRAWINGS) FOR EACH MAJOR COMPONENT OF THE ELECTRICAL SYSTEM FOR REVIEW BY THE ARCHITECT/ENGINEER AND OWNER. MAJOR COMPONENTS INCLUDE, BUT ARE NOT LIMITED TO, RACEWAYS, BOXES, WIRE AND CABLE, EQUIPMENT, DEVICES, LIGHT FIXTURES, SWITCHGEAR, PANELBOARDS, CIRCUIT BREAKERS, SAFETY SWITCHES, FIRE ALARM SYSTEM, ETC. ALL SUBMITTALS ARE TO BE REVIEWED AND APPROVED BY THE CONTRACTOR FOR CONFORMANCE WITH THE PROJECT REQUIREMENTS PRIOR TO SUBMITTING TO THE ARCHITECT/ENGINEER. ALLOW A MINIMUM OF TEN (10) BUSINESS DAYS FOR REVIEW BY ARCHITECT/ENGINEER, UNLESS NOTED OTHERWISE IN DIVISION 1.
11. THE ELECTRICAL PORTION OF THE CONTRACT DOCUMENTS ARE COORDINATED WITH THE DESIGN BASIS EQUIPMENT SPECIFIED BY DIVISION 26 AND OTHER DIVISIONS. WHERE THE CONTRACTOR ELECTS TO SUBSTITUTE A PRODUCT IN LIEU OF PROVIDING THE DESIGN BASIS, AND SAID SUBSTITUTION IS ACCEPTED BY THE ARCHITECT/ENGINEER AND OWNER, THE CONTRACTOR SHALL MAKE ALL CORRECTIONS TO THE ELECTRICAL SYSTEM NECESSARY IN ORDER TO ENSURE A COMPLETE AND OPERATIONAL INSTALLATION OF THE EQUIPMENT AT NO ADDITIONAL COSTS. WHERE THE CONTRACTOR'S DESIGN SUBSTITUTION RESULTS IN THE NEED FOR THE ENGINEER TO REVISE THE CONTRACT DOCUMENTS, THE ENGINEER RESERVES THE RIGHT TO REQUEST COMPENSATION FROM THE CONTRACTOR FOR SAID SERVICES.
12. MAINTAIN A CURRENT AND ACCURATE SET OF PROJECT RECORD DOCUMENTS (AS-BUILTS) AT THE SITE THROUGHOUT THE DURATION OF THE PROJECT. RECORD DRAWINGS SHALL BE UPDATED EACH DAY TO REFLECT THE ACTUAL LOCATIONS, SIZES, ROUTING, ETC. OF EACH PORTION OF THE ELECTRICAL SYSTEM AFFECTED BY THIS WORK. A FINAL SET OF RECORD DOCUMENTS SHALL BE ISSUED TO THE ARCHITECT/ ENGINEER FOR REVIEW AND THEN SUBMITTED TO THE OWNER WITHIN 30 DAYS AFTER THE DATE OF FINAL ACCEPTANCE. PROVIDE RECORD DRAWINGS OF THE ACTUAL INSTALLATION INCLUDING ONE LINE DIAGRAM, POWER RISER DIAGRAM OF THE BUILDING ELECTRICAL DISTRIBUTION SYSTEM, SITE PLANS AND ALL ELECTRICAL FLOOR PLANS, DETAILS, PANEL SCHEDULES, ETC.
13. PROVIDE AN OPERATING AND MAINTENANCE MANUAL TO OWNER PRIOR TO THE FINAL ACCEPTANCE. THE MANUAL SHALL INCLUDE, AS A MINIMUM, (1) SUBMITTAL DATA STATING EQUIPMENT RATING AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE. ALSO PROVIDE TWO OPERATIONS AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE. REQUIRED ROUTINE MAINTENANCE ACTIONS AND METHOD OF OPERATION FOR EQUIPMENT SHALL BE CLEARLY IDENTIFIED, AND THE NAME, PHONE NUMBER AND ADDRESS OF AT LEAST ONE QUALIFIED SERVICE AGENCY.
14. INCLUDE ALL COSTS FOR EXCAVATION, SAW CUTTING, DIRECTIONAL BORING, CORE DRILLING, BACKFILLING, SURFACE RESTORATION, REPAIR OF FINISHES, ETC. THAT IS REQUIRED IN ORDER TO MEET THE PROJECT REQUIREMENTS.
15. INCLUDE IN BID ALL COSTS ASSOCIATED WITH TEMPORARY ELECTRICAL SERVICE AS REQUIRED FOR USE BY ALL TRADES DURING CONSTRUCTION. REMOVE TEMPORARY POWER AT THE COMPLETION OF THE PROJECT. OBTAIN AND PAY FOR ALL REQUIRED PERMITS FOR TEMPORARY POWER. ENGINEER OF RECORD SHALL BE PROVIDED WITH ADDITIONAL COMPENSATION FROM THE CONTRACTOR WHERE SIGNED & SEALED DRAWINGS ARE REQUESTED BY THE CONTRACTOR TO THE ENGINEER OF RECORD IF REQUIRED BY THE AHJ FOR THE TEMPORARY POWER.
16. LOCATE, IDENTIFY, PROTECT AND DOCUMENT ALL UTILITY LINES LOCATED WITHIN THE PROJECT BOUNDARY. FOR LOCATING SITE UTILITIES, CONTACT ALL LOCAL MUNICIPALITIES AND UTILITIES AT LEAST 48 HOURS PRIOR TO DIGGING.
17. INCLUDE IN BID THE TRANSPORT AND DISPOSAL OR RECYLING OF ALL WASTE MATERIALS GENERATED BY THIS PROJECT IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL RULES, REGULATIONS AND GUIDELINES APPLICABLE. COMPLY FULLY WITH ALL APPLICABLE STATUTES REGARDING MERCURY-CONTAINING DEVICES, AND WITH ALL LOCAL, STATE AND FEDERAL APPLICABLE GUIDELINES AT THE TIME OF DISPOSAL. PROVIDE OWNER WITH WRITTEN CERTIFICATION OF ACCEPTED DISPOSAL.
18. ALL WIRE SHALL BE SIZED AS SHOWN ON THE DRAWINGS. IF NO WIRE SIZE IS SHOWN, THEN WIRE SHALL BE #12 AWG.
19. ALL POWER CIRCUITS HAVE BEEN DESIGNED TO MEET 2% OR LESS VOLTAGE DROP FOR FEEDERS, AND 3% OR LESS VOLTAGE DROP FOR BRANCH CIRCUITS. BRANCH CIRCUITS SHALL BE INCREASED IN SIZE AS REQUIRED TO COMPENSATE FOR VOLTAGE DROP FROM LENGTH OF CIRCUIT DUE TO FIELD ROUTING. FINAL INSTALLATION SHALL NOT EXCEED A MAXIMUM OF 3% VOLTAGE DROP FOR BRANCH CIRCUITS. REFER TO VOLTAGE DROP TABLE BELOW FOR CONDUCTOR SIZES FOR BRANCH CIRCUITS AS FOLLOWS:
    - A. 120V, 20A CIRCUITS SHALL BE:
        - i. #12 FROM 0-70 FT
        - ii. #10 FROM 71-115FT
        - iii. #8 FROM 116-180FT
    - B. ANYTHING LONGER THAN THE ABOVE SHALL BE SUBMITTED TO THE ENGINEER WITH CALCULATIONS FOR APPROVAL.

COORDINATION:

1. VERIFY AND COORDINATE LOCATIONS OF ANY MISCELLANEOUS EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS (I.E., COPIERS, FAX MACHINES, PRINTERS, KITCHEN APPLIANCES, LAUNDRY APPLIANCES, PROJECTION SCREENS, SHOP TOOLS, MACHINE, ELEVATORS, ETC.) WITH APPROVED SHOP DRAWINGS, OWNER-PROVIDED CUT SHEETS, MANUFACTURER'S INSTRUCTIONS, AND EQUIPMENT NAMEPLATE INFORMATION, PRIOR TO ROUGH IN, AND PROVIDE ALL NECESSARY ELECTRICAL REQUIRED.
2. VERIFY AND COORDINATE LOCATIONS AND EXACT ELECTRICAL REQUIREMENTS FOR ALL MECHANICAL, PLUMBING AND FIRE PROTECTION EQUIPMENT PRIOR TO SUBMITTAL OF SHOP DRAWINGS OF ELECTRICAL EQUIPMENT. PROVIDE ALL NECESSARY RACEWAYS, CONDUCTORS, BOXES, EQUIPMENT, ACCESSORIES, ASSOCIATED DISCONNECT SWITCHES, CIRCUIT BREAKERS, CONTROL TRANSFORMERS, FIRE ALARM SHUTDOWN, ETC. REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. COORDINATE WITH APPROPRIATE TRADE'S APPROVED SHOP DRAWINGS, MANUFACTURER'S INSTRUCTIONS, AND EQUIPMENT NAMEPLATE INFORMATION. PRIOR TO ROUGH IN, AND PROVIDE ALL NECESSARY ELECTRICAL REQUIRED, UNLESS NOTED OTHERWISE.
3. THIS PROJECT REQUIRES COORDINATION DRAWINGS BY THE CONTRACTOR. PARTICIPATE IN THE COORDINATION DRAWING PREPARATION PROCESS AND PROVIDE ALL NECESSARY INFORMATION REQUIRED TO COORDINATE ALL TRADE INFORMATION.
4. ALL WORK ON THE ELECTRICAL SYSTEM REQUIRED BY THE CONTRACT DOCUMENTS SHALL BE COORDINATED WITH THE WORK OF ALL OTHER DIVISIONS/TRADES PRIOR TO COMMENCEMENT OF WORK. AVOID INTERFERENCES WITH THE PROGRESS OF OTHER DIVISIONS/TRADES.
5. WHERE WALLS ARE OF TILT-UP OR PRE-CAST CONSTRUCTION, PROVIDE COORDINATION FOR EXACT DIMENSIONS AND OPENINGS REQUIRED FOR ALL ELECTRICAL COMPONENTS INSTALLED WITHIN SUCH WALLS DURING THE SHOP DRAWING REVIEW PROCESS OF THE WALLS, PRIOR TO CONSTRUCTION OF THE WALLS.
6. LOCATIONS OF VFD'S, DISCONNECTS, MOTOR STARTERS, ETC. FOR HVAC EQUIPMENT ARE DIAGRAMMATIC ON THE PLAN DRAWINGS. EXACT LOCATIONS ARE TO BE COORDINATED WITH CONTRACTOR'S COORDINATION DRAWINGS PRIOR TO ROUGH-IN TO ENSURE PROPER NEC CLEARANCES AND APPROPRIATE MOUNTING SURFACE.
7. REFER TO ARCHITECTURAL, MECHANICAL, PLUMBING, FIRE PROTECTION, CIVIL, LANDSCAPE, INTERIOR DESIGN, TECHNOLOGY, STRUCTURAL, AND VENDOR EQUIPMENT DRAWINGS FOR RELATED INFORMATION AND ADDITIONAL INSTALLATION REQUIREMENTS TO BE PERFORMED AS PART OF THE WORK.
8. WHERE A DISCREPANCY OR CONFLICT IS FOUND BETWEEN ONE DRAWING AND ANOTHER, OR BETWEEN A DRAWING AND APPLICABLE SPECIFICATIONS, NOTIFY THE ARCHITECT/ENGINEER IMMEDIATELY IN WRITTEN FORM. IN GENERAL, THE MOST STRINGENT REQUIREMENT SHALL GOVERN UNLESS THE DISCREPANCY CONFLICTS WITH APPLICABLE CODES OR OWNER'S DESIGN STANDARDS, WHEREIN THE CODE OR OWNER'S DESIGN STANDARDS SHALL GOVERN.
9. CAREFULLY EXAMINE THOSE PORTIONS OF THE BUILDING AND/OR SITE AFFECTED BY THIS WORK PRIOR TO SUBMITTING BID PRICE, SO AS TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT MAY AFFECT EXECUTION OF THE WORK. SUBMISSION OF A BID PRICE SHALL BE CONSTRUED AS EVIDENCE THAT SUCH EXAMINATION HAS BEEN MADE. LATER CLAIMS FOR LABOR, EQUIPMENT AND/OR MATERIALS REQUIRED DUE TO DIFFICULTIES ENCOUNTERED THAT COULD HAVE BEEN REASONABLY OBSERVED WILL NOT BE RECOGNIZED.
10. COORDINATE ALL PROJECT SCHEDULING AND PHASING REQUIREMENTS WITH ARCHITECT/ENGINEER AND OWNER PRIOR TO SUBMITTING BID PRICE. THIS PROJECT MAY REQUIRE PHASING SEQUENCES AND POTENTIAL PREMIUM TIME WORK AND ALL COSTS FOR SUCH SHALL BE INCLUDED IN THE BID PRICE. PROVIDE ADEQUATE WORK FORCE AND EQUIPMENT, AND INCLUDE PREMIUM TIME AS MAY BE REQUIRED IN ORDER TO ADHERE TO THE PROJECT SCHEDULE. ADDITIONALLY, ENSURE THAT LONG LEAD ITEMS DO NOT IMPACT THE PROJECT'S SCHEDULE OR PHASING.
11. ANY TEMPORARY INTERRUPTION OF POWER REQUIRED FOR THE SYSTEM TIE-IN OR SWITCHOVER FOR ANY PORTION OF THE ELECTRICAL SYSTEM SHALL BE PRE-APPROVED IN WRITING BY THE OWNER AND SCHEDULED IN ADVANCE.
12. COORDINATE EXACT REQUIREMENTS WITH THE LOCAL UTILITY COMPANIES AND PROVIDERS (ELECTRIC, TELEPHONE, CABLE TV, ETC.) AND INCLUDE ALL COSTS FOR PROVIDING TEMPORARY AND PERMANENT SERVICES REQUIRED FOR THIS PROJECT IN THE BID PRICE. BID PRICE SHALL INCLUDE, BUT NOT BE LIMITED TO, EXCAVATION, RACEWAYS, BACKFILL EQUIPMENT, EQUIPMENT PADS, BACKBOARDS, METERS, GROUNDING, UTILITY ENGINEERING AND IMPACT FEES.
13. CONDUCT WORK OPERATIONS AND DEBRIS REMOVAL IN A MANNER THAT ENSURES MINIMUM INTERFERENCE WITH NORMAL BUSINESS OPERATIONS, TRAFFIC, PARKING, ETC. ONGOING IN ADJACENT OCCUPIED SPACES OR FACILITIES. PROVIDE ALL THAT IS REQUIRED TO EFFECTIVELY PROTECT SURROUNDING OCCUPANTS, EQUIPMENT, FINISHES, FURNITURE, ETC. FROM DAMAGE O



GENERAL NOTES:

1. UNLESS OTHERWISE NOTED, ALL CONDUITS ROUTED UNDERGROUND ON SITE SHALL BE 1" MINIMUM.
2. ALL WORK AND FEES ASSOCIATED WITH UTILITIES SHALL BE VERIFIED AND FULLY COORDINATED WITH LOCAL SERVICE PROVIDER PRIOR TO BID.
3. CONTRACTOR SHALL REFERENCE ALL RELATED CONTRACT DOCUMENTS, SITE SURVEY, AND OTHER RESOURCES FOR POSSIBLE CONFLICTS WITH OTHER UNDERGROUND UTILITIES AND AT ALL NEW AND EXISTING UTILITY CROSSINGS. CONTRACTOR SHALL VERIFY UTILITY DEPTHS AND FULLY COORDINATE ROUTING WITH ALL TRADES AS NECESSARY.
4. CONTRACTOR SHALL VERIFY AND COORDINATE EXISTING SITE CONDITIONS OF PROJECT SITE AND AFFECTED SURROUNDING AREA PRIOR TO BID.
5. CONTINUOUS LENGTHS OF MAGNETIC IDENTIFICATION TAPE NOTING PARTICULAR SYSTEM IS TO BE PROVIDED ABOVE ALL UNDERGROUND RACEWAYS AND TAPE TO BE LOCATED 12" BELOW FINAL GRADE.

CODED NOTES:

1. APPROXIMATE LOCATION OF PAD MOUNTED UTILITY TRANSFORMER. FIELD COORDINATE EXACT LOCATION WITH UTILITY PRIOR TO CONSTRUCTION. PROVIDE CONCRETE EQUIPMENT PAD PER UTILITY REQUIREMENTS.
2. U.G. PRIMARY SERVICE ENTRANCE. PROVIDE (3) 2-1/2" U.G. CONDUITS WITH PULL WIRE. UTILIZE LONG RADIUS ELBOWS. COORDINATE TERMINATION POINT WITH UTILITY. CAP CONDUIT AND MARK.
3. SERVICE LATERAL. FIELD VERIFY EXACT LENGTH AND LOCATION. SEE ELECTRICAL ONE-LINE DIAGRAM.
4. GENERATOR POWER TO ATS. FIELD VERIFY EXACT LENGTH AND LOCATION. SEE ELECTRICAL ONE-LINE DIAGRAM.
5. GENERATOR CONTROLS TO ATS. (1) 2" U.G. CONDUIT.
6. PROVIDE RACK MOUNTED CT METER PER UTILITY STANDARDS WITH 1-1/2" C TO TRANSFORMER PAD. LOCATION OF METER IS PER UTILITY.
7. (2) #10 AWG, #10 AWG G, 1" C. ROUTE CIRCUIT THROUGH LIGHTING RELAY PANEL "LRP".
8. PROVIDE CONNECTION TO GATE OPERATOR. (2) #10 AWG, #10 AWG G, 1" C.

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SITE ELECTRICAL PLAN

1 SITE ELECTRICAL PLAN
1" = 30'-0"

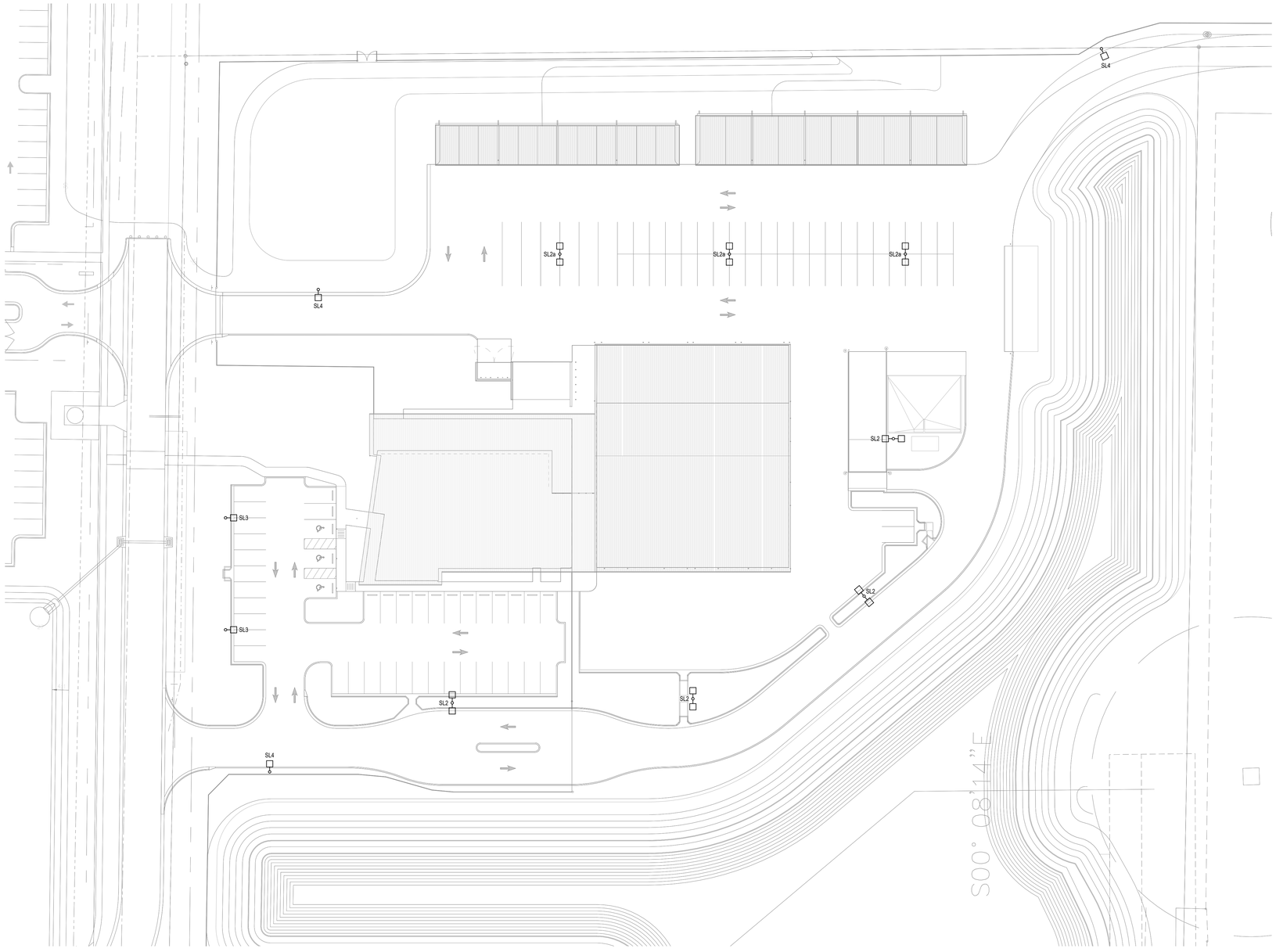
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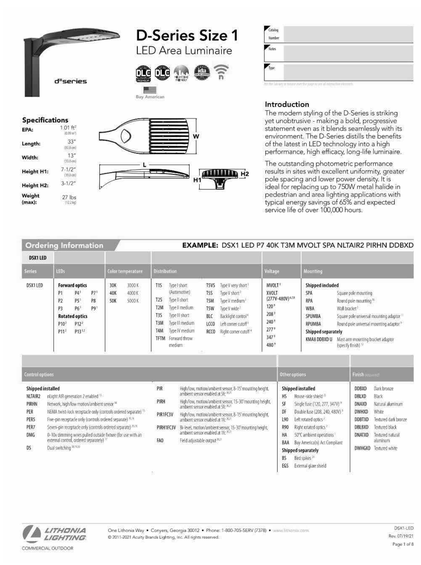
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SITE LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER / MODEL	VOLTAGE	LAMP SOURCE	WATTAGE	COMMENTS
SL2	SITE LIGHTING, 2 HEAD, MOUNTED AT 25'-0" AFG ON ROUND TAPERED ALUMINUM DIRECT BURIED POLE. LED, 4000K, FULL CUTOFF, TYPE V DISTRIBUTION, NATURAL ALUMINUM HOUSING, ELECTRONIC DRIVER, UL WET LOCATION LISTED.	LITHONIA / DSXY1-LED-P3-40K-T5W-MVOLT-RPA-DNAXD	208 V	LED	204 W	CALCULATE MAXIMUM EPA FOR POLES BASED ON ASCE 7-16 AND 2020 FBC, RISK CATEGORY II, NOMINAL DESIGN WIND SPEED (Vasd) = 106 MPH, EXPOSURE B. PROVIDE SIGNED AND SEALED POLE EMBED DRAWINGS.
SL2a	SITE LIGHTING, 2 HEAD, MOUNTED AT 25'-0" AFG ON 22'-6" ROUND TAPERED ALUMINUM POLE ON 30" CONCRETE BASE. LED, 4000K, FULL CUTOFF, TYPE V DISTRIBUTION, NATURAL ALUMINUM HOUSING, ELECTRONIC DRIVER, UL WET LOCATION LISTED.	LITHONIA / DSXY1-LED-P3-40K-T5W-MVOLT-RPA-DNAXD	208 V	LED	204 W	CALCULATE MAXIMUM EPA FOR POLES BASED ON ASCE 7-16 AND 2020 FBC, RISK CATEGORY II, NOMINAL DESIGN WIND SPEED (Vasd) = 106 MPH, EXPOSURE B. PROVIDE SIGNED AND SEALED POLE EMBED DRAWINGS.
SL3	SITE LIGHTING, 1 HEAD, MOUNTED AT 25'-0" AFG ON ROUND ALUMINUM DIRECT BURIED POLE. LED, 4000K, FULL CUTOFF, TYPE IV DISTRIBUTION, NATURAL ALUMINUM HOUSING, ELECTRONIC DRIVER, UL WET LOCATION LISTED.	LITHONIA / DSXY1-LED-P3-40K-T4M-MVOLT-RPA-DNAXD	208 V	LED	102 W	CALCULATE MAXIMUM EPA FOR POLES BASED ON ASCE 7-16 AND 2020 FBC, RISK CATEGORY II, NOMINAL DESIGN WIND SPEED (Vasd) = 106 MPH, EXPOSURE B. PROVIDE SIGNED AND SEALED POLE EMBED DRAWINGS.
SL4	SITE LIGHTING, 1 HEAD, MOUNTED AT 25'-0" AFG ON ROUND TAPERED ALUMINUM DIRECT BURIED POLE. LED, 4000K, FULL CUTOFF, TYPE II DISTRIBUTION, NATURAL ALUMINUM HOUSING, ELECTRONIC DRIVER, UL WET LOCATION LISTED.	LITHONIA / DSXY1-LED-P3-40K-T2M-MVOLT-RPA-DNAXD	208 V	LED	102 W	CALCULATE MAXIMUM EPA FOR POLES BASED ON ASCE 7-16 AND 2020 FBC, RISK CATEGORY II, NOMINAL DESIGN WIND SPEED (Vasd) = 106 MPH, EXPOSURE B. PROVIDE SIGNED AND SEALED POLE EMBED DRAWINGS.

Description	Avg	Max	Min	Max/Min	Avg/Min
PROPERTY LINE	N/A	0.4 fc	0.0 fc	N/A	N/A
SITE	1.5 fc	8.8 fc	0.6 fc	14.7:1	2.6:1





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PHOTOMETRICS SITE PLAN

1 PHOTOMETRICS SITE PLAN
1" = 30'-0"

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CODED NOTES:

1. POWER SUPPLY FOR "LT1" LIGHTING FIXTURES. LOCATE ABOVE ACCESSIBLE CEILING OR PROVIDE ACCESS PANEL WHERE REQUIRED.
2. ROUTE CIRCUIT THROUGH LIGHTING RELAY PANEL "LRP".

LIGHTING CONTROLS - ADMINISTRATION

ROOM NUMBER	ROOM NAME	LIGHTING CONTROLS
101	CONFERENCE/ TRAINING ROOM	VACANCY SENSOR (MANUAL ON/AUTO OFF), MANUAL ON/OFF WALL SWITCH
102	STORAGE	VACANCY SENSOR (MANUAL ON/AUTO OFF) WALL SWITCH
103A	BREAK AREA	VACANCY SENSOR (MANUAL ON/AUTO OFF), MANUAL ON/OFF WALL SWITCH
103B	ADA RESTROOM	OCCUPANCY SENSOR (AUTO ON/AUTO OFF) WALL SWITCH
103C	STORAGE	VACANCY SENSOR (MANUAL ON/AUTO OFF) WALL SWITCH
104	OFFICE	VACANCY SENSOR (MANUAL ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
105	OFFICE	VACANCY SENSOR (MANUAL ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
106	OFFICE	VACANCY SENSOR (MANUAL ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
107	WAREHOUSE/ STOREKEEPER	VACANCY SENSOR (MANUAL ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
108	WAREHOUSE BACKUP / ENTRY	OCCUPANCY SENSOR (AUTO ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
109	VENDOR ENTRY	OCCUPANCY SENSOR (AUTO ON/AUTO OFF) MANUAL ON/OFF WALL SWITCH
110	ADA RESTROOM	OCCUPANCY SENSOR (AUTO ON/AUTO OFF) WALL SWITCH
111	ADA RESTROOM	OCCUPANCY SENSOR (AUTO ON/AUTO OFF) WALL SWITCH
112	COPY/FILES	VACANCY SENSOR (MANUAL ON/AUTO OFF), MANUAL ON/OFF WALL SWITCH
113	RESTROOM / SHOWER	OCCUPANCY SENSOR (AUTO ON/AUTO OFF) MANUAL ON/OFF WALL SWITCH
114	RESTROOM / SHOWER	OCCUPANCY SENSOR (AUTO ON/AUTO OFF) MANUAL ON/OFF WALL SWITCH
115	RESTROOM / SHOWER	OCCUPANCY SENSOR (AUTO ON/AUTO OFF) MANUAL ON/OFF WALL SWITCH
116	RESTROOM / SHOWER	OCCUPANCY SENSOR (AUTO ON/AUTO OFF) MANUAL ON/OFF WALL SWITCH
117	LAUNDRY / JANITOR	VACANCY SENSOR (MANUAL ON/AUTO OFF), MANUAL ON/OFF WALL SWITCH
118	CREW CHIEF	VACANCY SENSOR (MANUAL ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
119	SEWER COLLECTIONS CREW RM	VACANCY SENSOR (MANUAL ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
120	SUPERVISOR OFFICE	VACANCY SENSOR (MANUAL ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
121	CREW CHIEF	VACANCY SENSOR (MANUAL ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
122	DISTRIBUTION CREW RM	VACANCY SENSOR (MANUAL ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
123	SUPERVISOR OFFICE	VACANCY SENSOR (MANUAL ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
124	CREW CHIEF	VACANCY SENSOR (MANUAL ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
125	METERING CREW RM	VACANCY SENSOR (MANUAL ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
126	SUPERVISOR OFFICE	VACANCY SENSOR (MANUAL ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
127	ADMIN OFFICE	VACANCY SENSOR (MANUAL ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
128	ADMIN OFFICE	VACANCY SENSOR (MANUAL ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
129	ADMIN OFFICE	VACANCY SENSOR (MANUAL ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
130	MANAGER OFFICE	VACANCY SENSOR (MANUAL ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
131	MANAGER OFFICE	VACANCY SENSOR (MANUAL ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
132	MANAGER OFFICE	VACANCY SENSOR (MANUAL ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
133	MANAGER OFFICE	VACANCY SENSOR (MANUAL ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
134	CREW BREAK ROOM (COMBINED)	OCCUPANCY SENSOR (AUTO ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
135	BREAK AREA	OCCUPANCY SENSOR (AUTO ON/AUTO OFF) MANUAL DIMMING WALL SWITCH
140	ELECTRICAL MAIN	MANUAL ON/OFF WALL SWITCH
141	IT TELECOMM	MANUAL ON/OFF WALL SWITCH
142	MECHANICAL	MANUAL ON/OFF WALL SWITCH
151	CORRIDOR	OCCUPANCY SENSOR (AUTO ON/AUTO OFF) MANUAL ON/OFF WALL SWITCH
152	CORRIDOR	OCCUPANCY SENSOR (AUTO ON/AUTO OFF) MANUAL ON/OFF WALL SWITCH
153	CORRIDOR	OCCUPANCY SENSOR (AUTO ON/AUTO OFF) MANUAL ON/OFF WALL SWITCH
154	CORRIDOR	OCCUPANCY SENSOR (AUTO ON/AUTO OFF) MANUAL ON/OFF WALL SWITCH
155	CORRIDOR	OCCUPANCY SENSOR (AUTO ON/AUTO OFF) MANUAL ON/OFF WALL SWITCH
156	CORRIDOR	OCCUPANCY SENSOR (AUTO ON/AUTO OFF) MANUAL ON/OFF WALL SWITCH
157	CORRIDOR	OCCUPANCY SENSOR (AUTO ON/AUTO OFF) MANUAL ON/OFF WALL SWITCH
158	CORRIDOR	OCCUPANCY SENSOR (AUTO ON/AUTO OFF) MANUAL ON/OFF WALL SWITCH



KEYPLAN

1 LIGHTING PLAN - ADMINISTRATION

1/8" = 1'-0"

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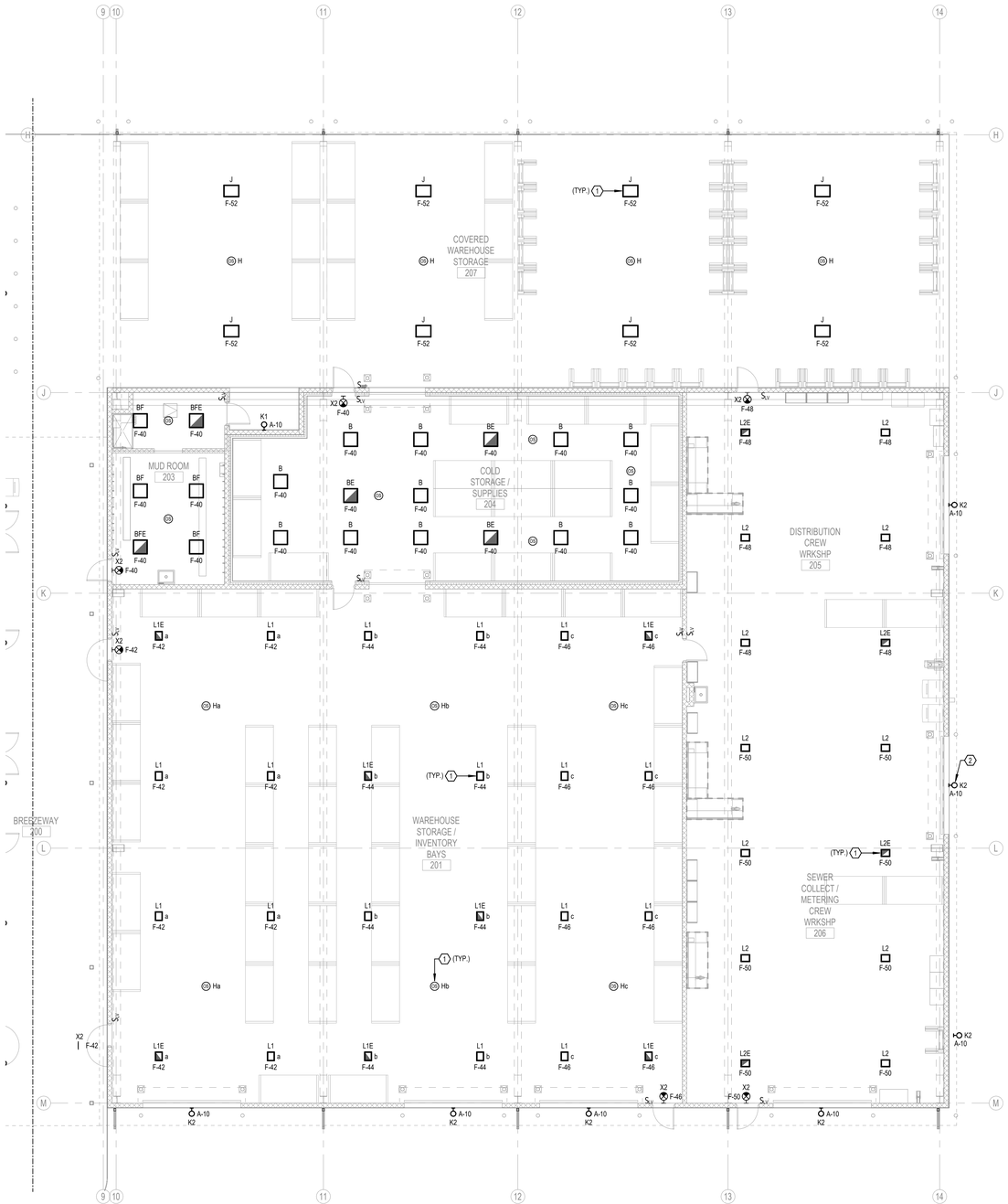
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LIGHTING PLAN - ADMINISTRATION

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CODED NOTES:

1. MOUNT LEVEL WITH BOTTOM OF STRUCTURAL BEAMS.
2. ROUTE CIRCUIT THROUGH LIGHTING RELAY PANEL "LRP".

LIGHTING CONTROLS - WAREHOUSE

ROOM NUMBER	ROOM NAME	LIGHTING CONTROLS
201	WAREHOUSE STORAGE / INVENTORY BAYS	VACANCY SENSOR (MANUAL ON/AUTO OFF), MANUAL ON/OFF WALL SWITCH
203	MUD ROOM	VACANCY SENSOR (MANUAL ON/AUTO OFF), MANUAL ON/OFF WALL SWITCH
204	COLD STORAGE / SUPPLIES	VACANCY SENSOR (MANUAL ON/AUTO OFF), MANUAL ON/OFF WALL SWITCH
205	DISTRIBUTION CREW WRKSHP	MANUAL ON/OFF WALL SWITCH
206	SEWER COLLECT / METERING CREW WRKSHP	MANUAL ON/OFF WALL SWITCH



KEYPLAN

1 LIGHTING PLAN - WAREHOUSE

1/8" = 1'-0"

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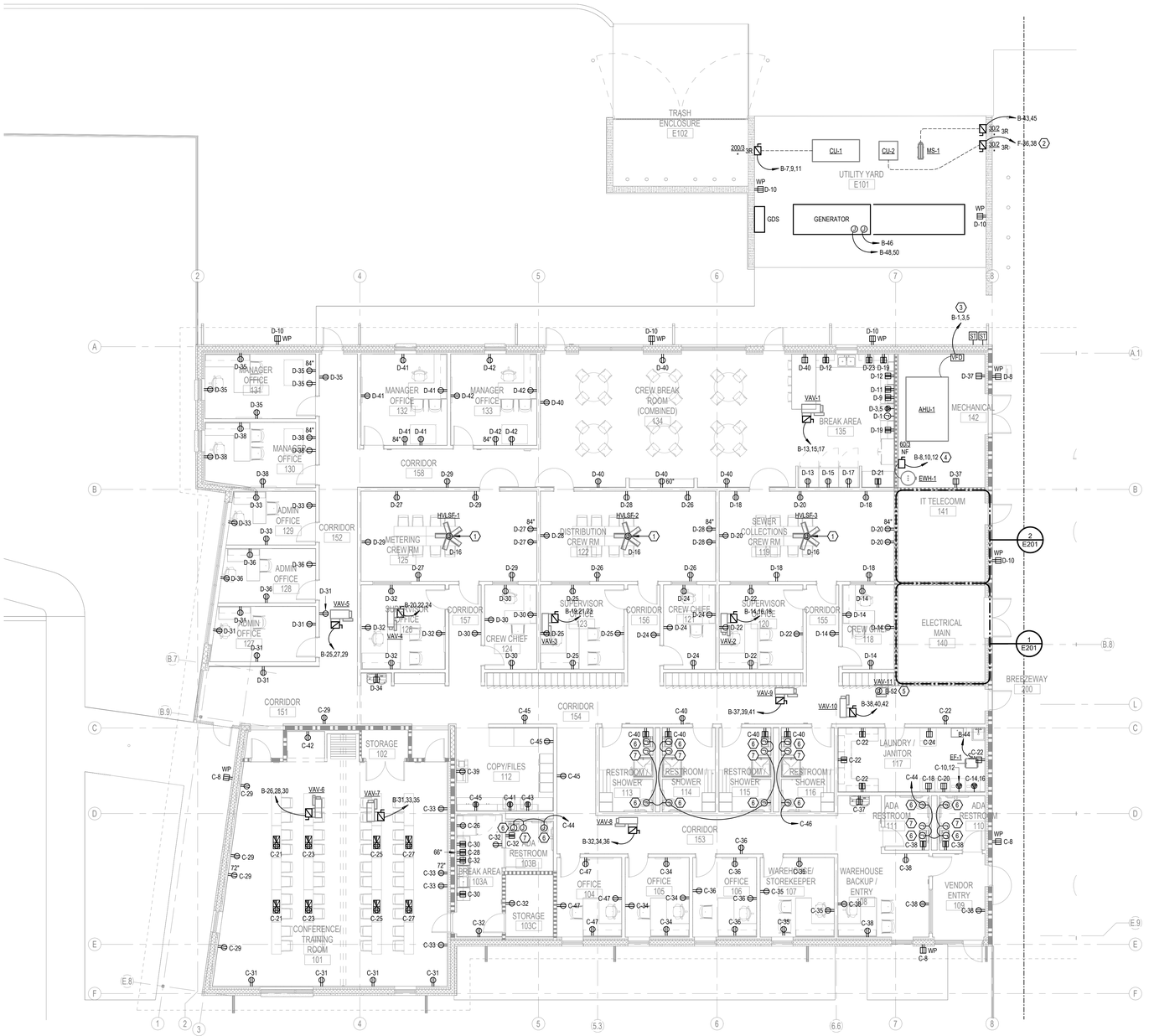
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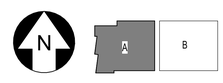
LIGHTING PLAN - WAREHOUSE

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CODED NOTES:

1. PROVIDE CONNECTION TO CEILING FAN.
2. (2) #10 AWG, #10 AWG G, 1" C.
3. (3) #4 AWG, #10 AWG G, 1-1/4" C.
4. (3) #6 AWG, #10 AWG G, 1" C.
5. PROVIDE 120:24V CONTROLS TRANSFORMER. COORDINATE EXACT REQUIREMENTS WITH MECHANICAL EQUIPMENT PROVIDER.
6. JUNCTION BOX FOR FAUCET/FLUSH SENSOR POWER SUPPLY. FIELD VERIFY EXACT LOCATION. PROVIDE LOW VOLTAGE CONNECTION FROM POWER SUPPLY TO VALVES AND SENSORS. COORDINATE WITH PLUMBING FIXTURE MANUFACTURER'S INSTRUCTIONS FOR REQUIRED JUNCTION BOX LOCATIONS.
7. JUNCTION BOX FOR PAPER TOWEL DISPENSER POWER SUPPLY. FIELD VERIFY EXACT LOCATION. PROVIDE LOW VOLTAGE CONNECTION FROM POWER SUPPLY TO PAPER TOWEL DISPENSER. COORDINATE WITH PAPER TOWEL DISPENSER MANUFACTURER'S INSTRUCTIONS FOR REQUIRED JUNCTION BOX LOCATIONS.



KEYPLAN

1 POWER PLAN - ADMINISTRATION

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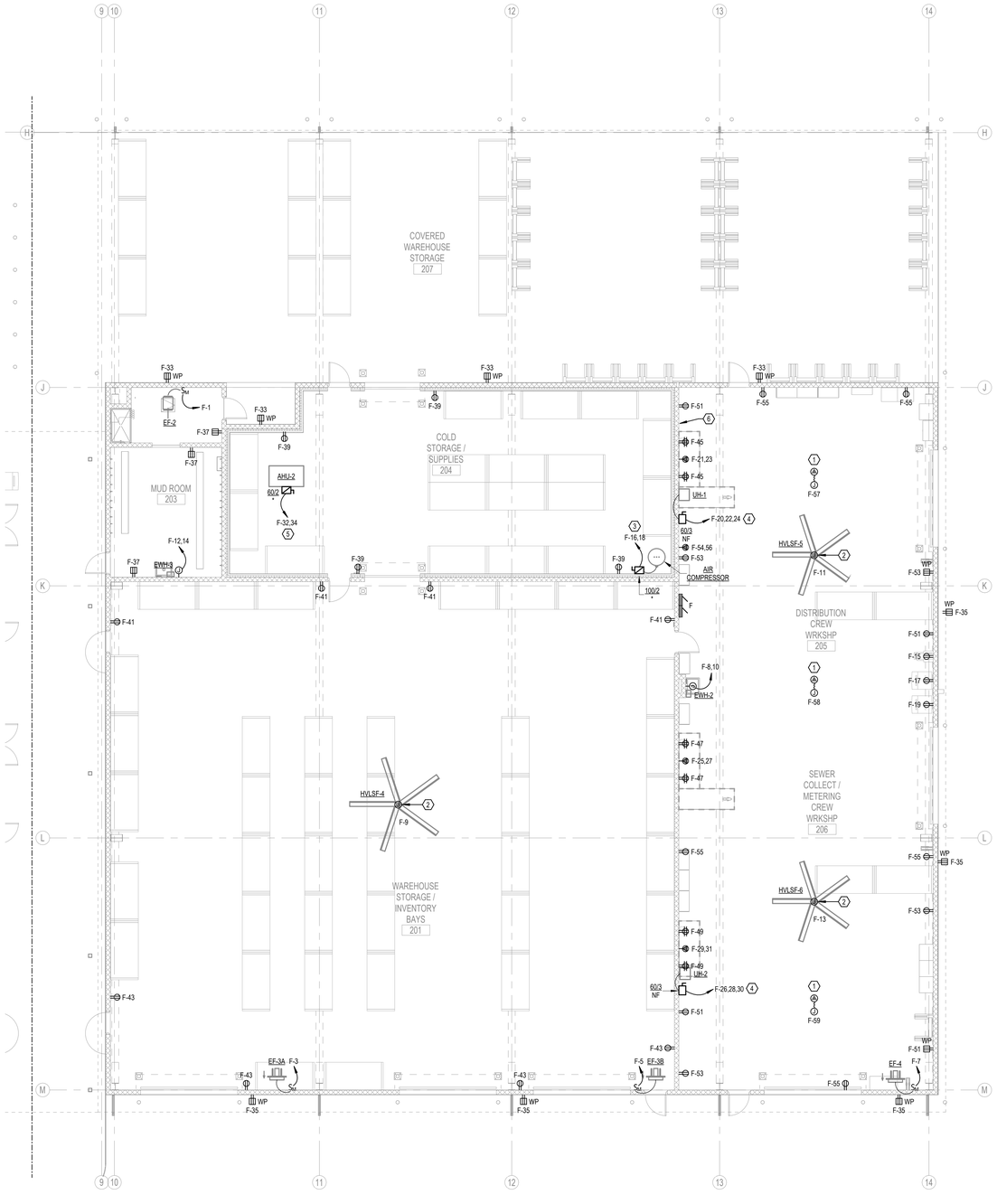
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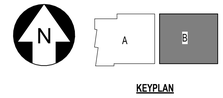
POWER PLAN - ADMINISTRATION

E111A
PERMIT/BID DOCUMENTS



CODED NOTES:

1. PROVIDE 120V, 20A, OVERHEAD STAINLESS STEEL CORD REEL WITH (2) DUPLEX RECEPTACLE END. HUBBELL #HBLSS45123 OR APPROVED EQUAL.
2. PROVIDE CONNECTION TO CEILING FAN.
3. (2) #3 AWG, #8 AWG G, 1-1/4" C.
4. (3) #8 AWG, #10 AWG G, 1" C.
5. (2) #8 AWG, #10 AWG G, 1" C.
6. PROVIDE 3/4" BY 48" BY 96" A-C GRADE PLYWOOD BACKBOARD MOUNTED FROM 6" AFF TO 102" AFF ALONG WALL AS SHOWN. MOUNT BACKBOARD SUCH THAT "A" SIDE IS EXPOSED TO ROOM. PAINT ALL SIX (6) SIDE OF BACKBOARD WITH TWO (2) COATS OF FIRE-RESISTANT GRAY PAINT, LEAVING THE "A" STAMP EXPOSED FOR INSPECTION.



KEYPLAN

1 POWER PLAN - WAREHOUSE

1/8" = 1'-0"

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CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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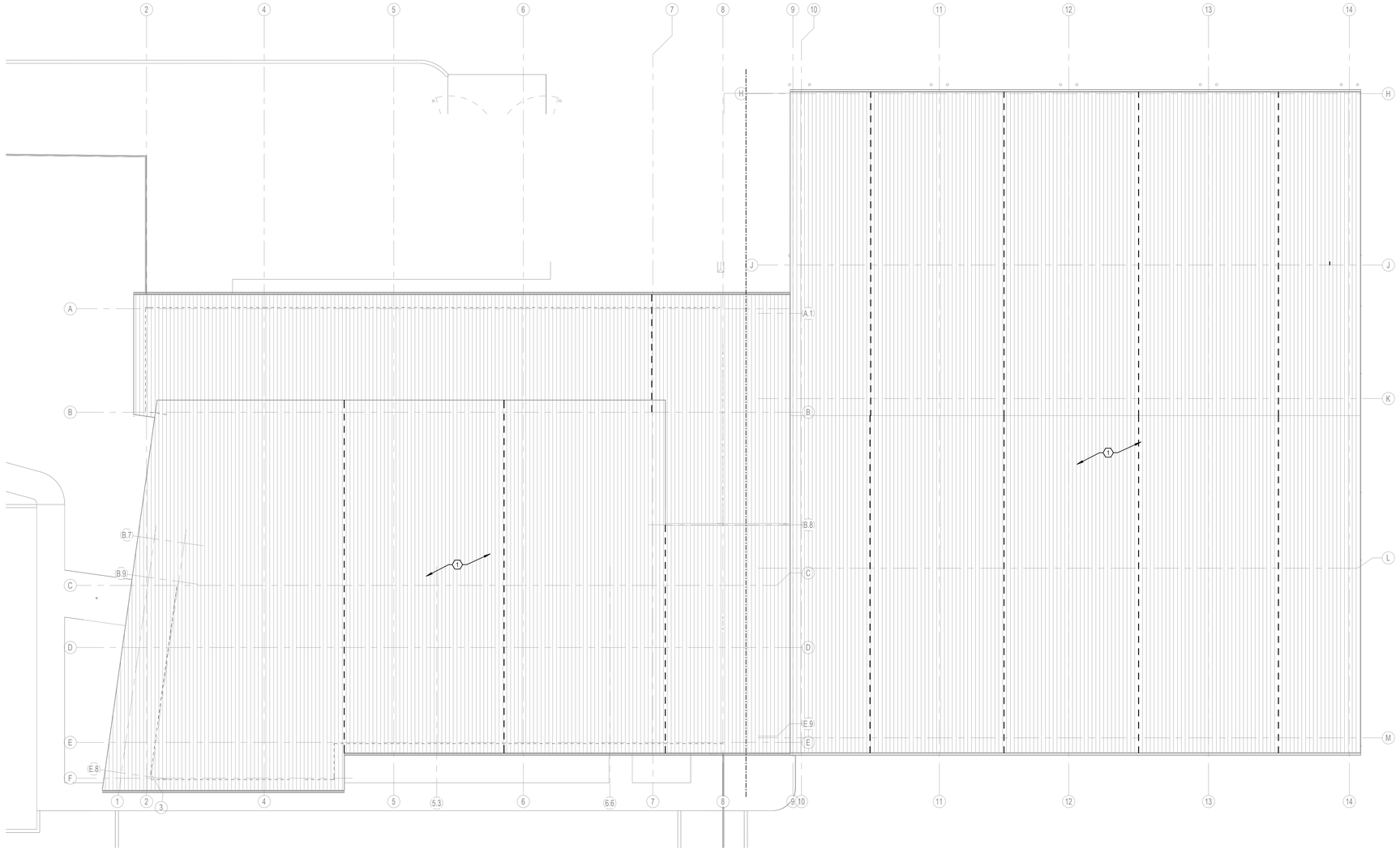
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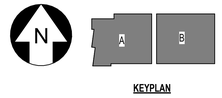
POWER PLAN - WAREHOUSE

E111B
PERMIT/BID DOCUMENTS

CODED NOTES:

1. PROVIDE A COMPLETE UL LISTED LIGHTNING PROTECTION SYSTEM WITH A MASTER LABEL FOR THE ENTIRE FACILITY PER THE REQUIREMENTS OF NFPA 780 AND THE DIVISION 26 SPECIFICATIONS. LIGHTNING PROTECTION SYSTEM SHALL INCLUDE A BURIED COUNTERPOISE.





KEYPLAN

1 ELECTRICAL PLAN - ROOF

3/32" = 1'-0"

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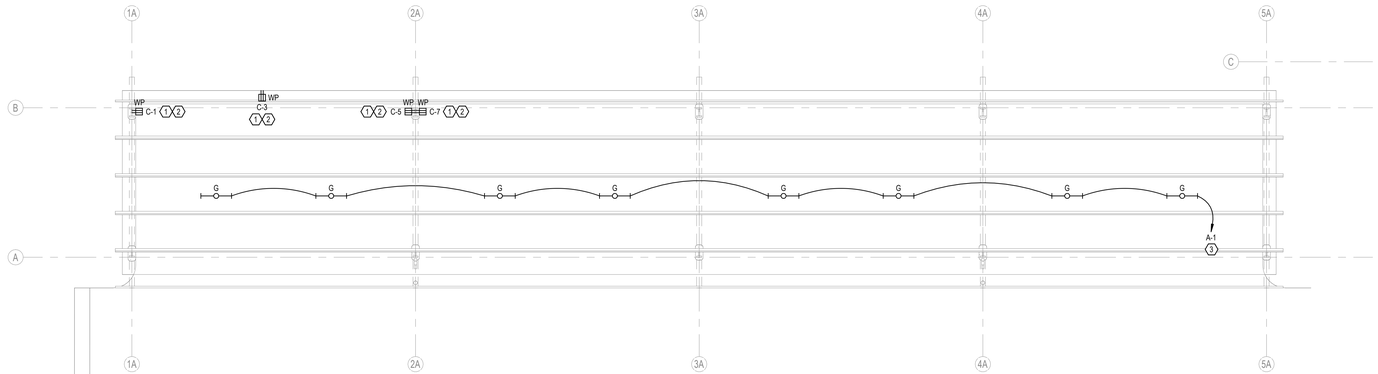
ELECTRICAL PLAN - ROOF

E121
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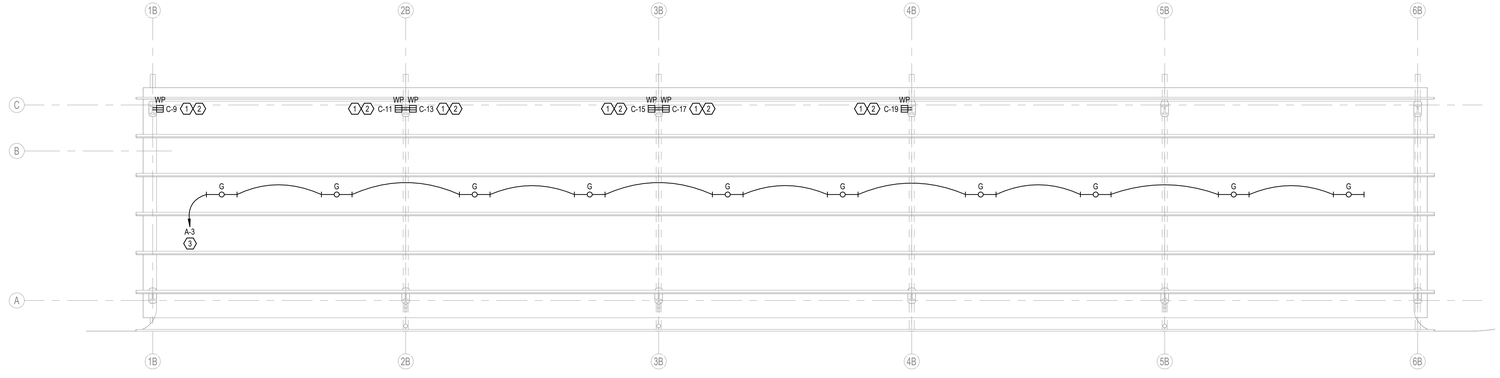
CODED NOTES:

1. PROVIDE RECEPTACLE FOR BATTERY CHARGER. COORDINATE EXACT LOCATION WITH OWNER.
2. (2) #8 AWG, #8 AWG G, 1" C.
3. (2) #10 AWG, #10 AWG G, 1" C. ROUTE CIRCUIT THROUGH LIGHTING RELAY PANEL "LRP".



1 ELECTRICAL PLAN - COVERED PARKING "A"

1/8" = 1'-0"



2 ELECTRICAL PLAN - COVERED PARKING "B"

1/8" = 1'-0"

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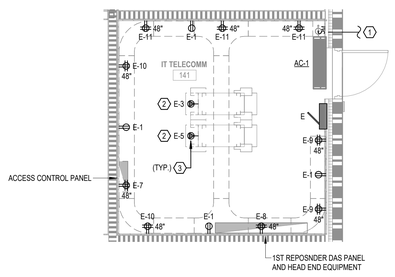
ELECTRICAL PLAN - COVERED PARKING

E131
PERMIT/BID DOCUMENTS

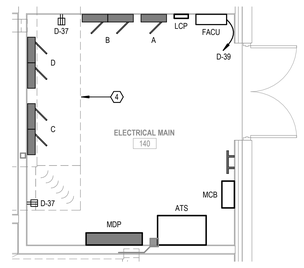
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CODED NOTES:

1. PROVIDE 1" C. FOR POWER AND CONTROLS TO ASSOCIATED OUTDOOR UNIT.
2. PROVIDE NEMA L5-30 RECEPTACLE. (2) #10 AWG, #10 AWG G, 3/4" C.
3. LOCATE RECEPTACLE 12"-14" ABOVE TOP OF RACK. PROVIDE CONDUIT SUPPORTS PER NEC.
4. DUCTWORK ABOVE. DO NOT LOCATE ELECTRICAL EQUIPMENT UNDER DUCTWORK.



2 ENLARGED IT TELECOM 141
1/4" = 1'-0"



1 ENLARGED ELECTRICAL MAIN 140
1/4" = 1'-0"

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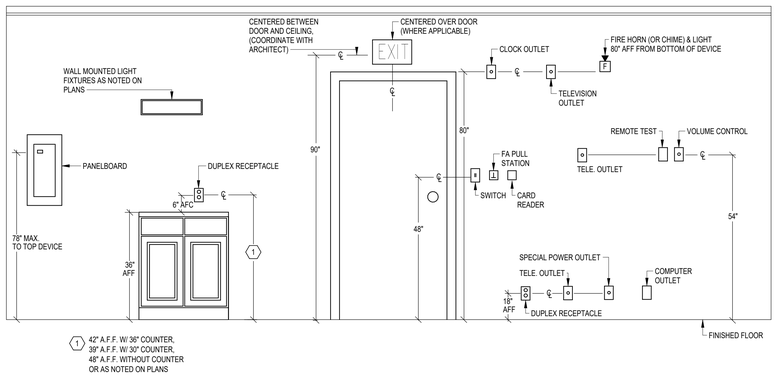
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ENLARGED PLANS

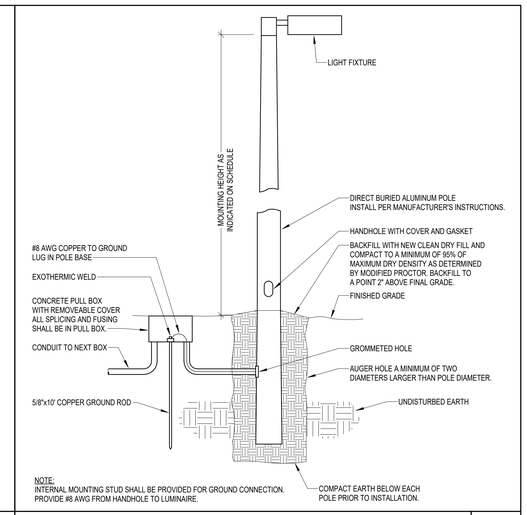
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MOUNTING HEIGHTS
No Scale

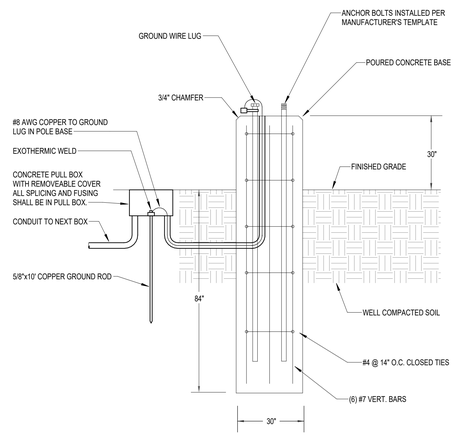
4



NOTE:
INTERNAL MOUNTING STUD SHALL BE PROVIDED FOR GROUND CONNECTION.
PROVIDE #8 AWG FROM HANDHOLE TO LUMINAIRE.

DIRECT BURIED POLE
No Scale

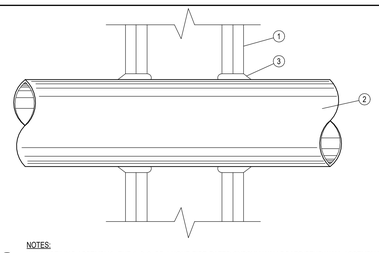
1



NOTE:
INTERNAL MOUNTING STUD SHALL BE PROVIDED FOR GROUND CONNECTION.
PROVIDE #8 AWG FROM HANDHOLE TO LUMINAIRE.

POLE BASE
No Scale

7



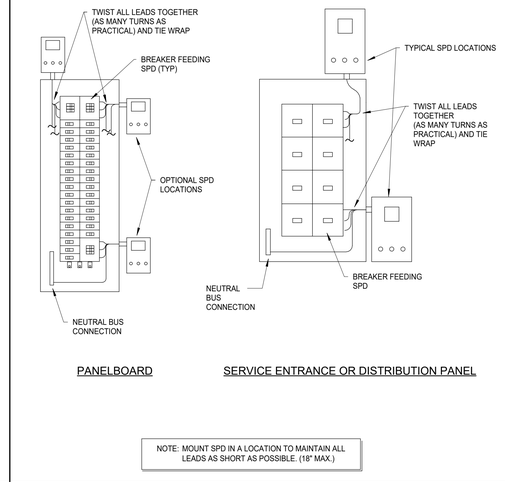
NOTES:

1. WALL / CEILING ASSEMBLY - THE 1, 2, 3, OR 4 HOUR FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY.
2. CONDUIT - NOM 4" DIA OR SMALLER STEEL ELECTRICAL METALLIC TUBING. A MAX OF ONE CONDUIT IS PERMITTED IN THE FIRESTOP SYSTEM. CONDUIT TO BE INSTALLED NEAR CENTER OF STUD CAVITY WIDTH AND TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY.
3. FILL VOID OR CAVITY MATERIAL - CAULK FILL MATERIAL BEARING THE UL CLASSIFICATION MARKING INSTALLED TO COMPLETELY FILL ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND GYPSUM WALLBOARD AND WITH A MIN 1/4" DIAM BEAD OF CAULK APPLIED TO PERIMETER OF CONDUIT AT ITS EGRESS FROM THE WALL. CAULK INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL ASSEMBLY. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS SHOWN IN THE FOLLOWING TABLE. THE HOURLY T RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE CONDUIT AND THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS TABULATED BELOW:

MAX CONDUIT DIAM, IN.	ANNULAR SPACE, IN:	F RATING, HR.	T RATING, HR.
1	0 TO 3/16	1 OR 2	0, 1 OR 2
1	1/4 TO 1/2	3 OR 4	3 OR 4
4	0 TO 1-1/2	1 OR 2	0
6	1/4 TO 1/2	3 OR 4	0
12	3/16 TO 3/8	1 OR 2	0

CONDUIT PENETRATION OF FIRE WALL / CEILING
UL SYSTEM NO. W-L-1001

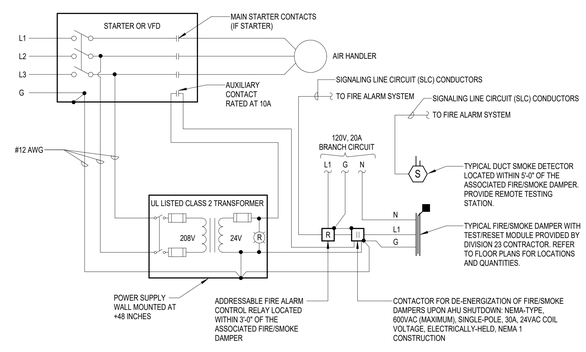
5



NOTE: MOUNT SPD IN A LOCATION TO MAINTAIN ALL LEADS AS SHORT AS POSSIBLE. (18" MAX.)

SPD EXTERIOR MOUNT INSTALLATION
No Scale

2

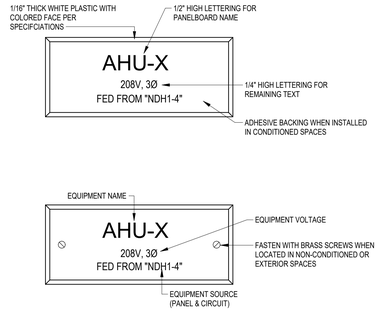


NOTES:

1. THE E.C. SHALL VERIFY EXACT FUSE AND TRANSFORMER SIZES WITH THE APPROVED DIV. 23 FIRE/SMOKE DAMPER SHOP DRAWINGS.
2. INSTALL THE POWER SUPPLY ENCLOSURE WITHIN 10 FT OF THE AIR HANDLER COMBINATION STARTER OR DISCONNECT.
3. PROVIDE A LOCAL DISCONNECT AND 120V, 1P ELECTRICAL CONNECTION TO EACH DIVISION 23 FIRE/SMOKE DAMPER.
4. COORDINATE LOCATIONS OF ALL FIRE/SMOKE DAMPERS WITH DIVISION 23.
5. PROVIDE CLASS 2 WIRING PER NEC TO SERVE INTERLOCKING CONTACTOR.

FIRE/SMOKE DAMPER WIRING DIAGRAM
No Scale

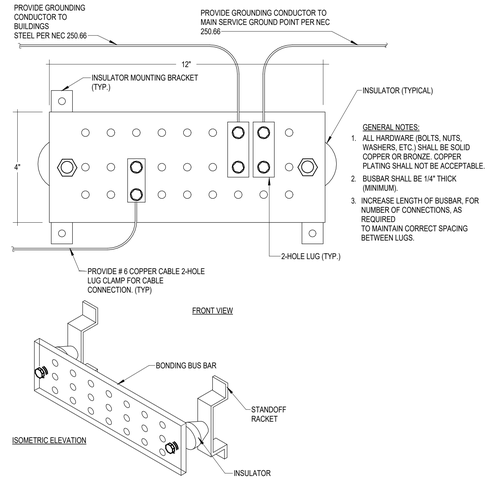
8



TYPICAL EQUIPMENT

EQUIPMENT NAMEPLATE
No Scale

6



GROUND BUSBAR
No Scale

3

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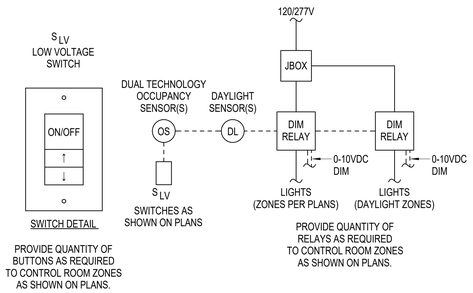
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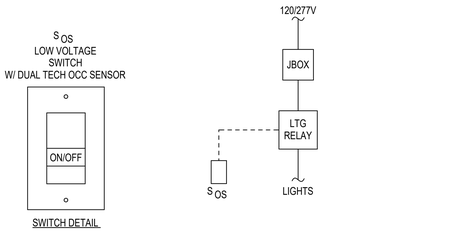
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SEQUENCE OF OPERATIONS:
LIGHTS ARE MANUAL ON.
LOW VOLTAGE SWITCH TURNS LIGHTS ON/OFF AND RAISES/LOWERS LIGHTS.
OCCUPANCY SENSOR TURNS LIGHTS OFF WITHIN 20 MINUTES OF OCCUPANT LEAVING ROOM.
DAYLIGHT SENSOR RAISES/LOWERS LIGHTS IN DAYLIGHT ZONE TO MAINTAIN LIGHT LEVEL.

WIRE LEGEND
LOW VOLTAGE
LINE VOLTAGE

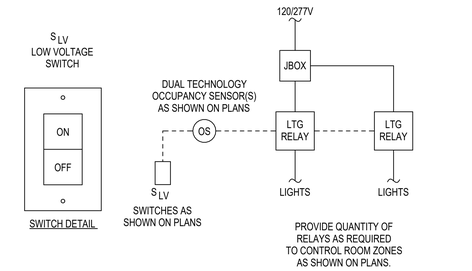
LIGHTING CONTROL - DIMMING/DAYLIGHT - MANUAL ON — 4
No Scale



SEQUENCE OF OPERATIONS:
LIGHTS ARE MANUAL ON.
LOW VOLTAGE SWITCH TURNS LIGHTS ON/OFF.
OCCUPANCY SENSOR TURNS LIGHTS OFF WITHIN 20 MINUTES OF OCCUPANT LEAVING ROOM.

WIRE LEGEND
LOW VOLTAGE
LINE VOLTAGE

LIGHTING CONTROL - OCC SENSOR WALL SWITCH — 1
No Scale



SEQUENCE OF OPERATIONS:
LIGHTS ARE MANUAL ON.
LOW VOLTAGE SWITCH TURNS LIGHTS ON/OFF AND RAISES/LOWERS LIGHTS.
OCCUPANCY SENSOR TURNS LIGHTS OFF WITHIN 20 MINUTES OF OCCUPANT LEAVING ROOM.

WIRE LEGEND
LOW VOLTAGE
LINE VOLTAGE

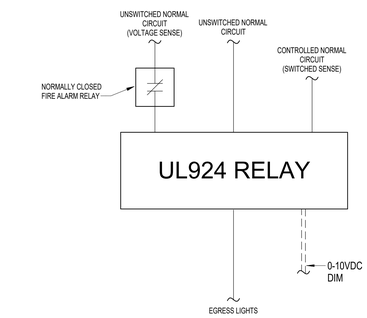
LIGHTING CONTROL - NO DIMMING - MANUAL ON — 5
No Scale



SEQUENCE OF OPERATIONS:
LIGHTS ARE AUTOMATIC ON.
LOW VOLTAGE SWITCH TURNS LIGHTS ON/OFF.
OCCUPANCY SENSOR TURNS LIGHTS OFF WITHIN 20 MINUTES OF OCCUPANT LEAVING ROOM.

WIRE LEGEND
LOW VOLTAGE
LINE VOLTAGE

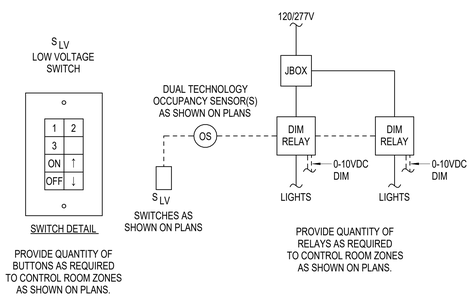
LIGHTING CONTROL - NO DIMMING - AUTO ON — 2
No Scale



SEQUENCE OF OPERATION:
LIGHT FIXTURE IS POWERED FROM NORMAL CIRCUIT. UPON LOSS OF NORMAL CIRCUIT OR FIRE ALARM, UL924 RELAY FORCES LIGHTS FULL ON, OVERRIDING NORMAL SWITCH POSITION.

EXAMPLE SCHEMATIC.
FOLLOW MANUFACTURER'S WIRING DIAGRAMS.

UL 924 RELAY (ELCU) DIAGRAM — 6
No Scale



SEQUENCE OF OPERATIONS:
LIGHTS ARE MANUAL ON.
LOW VOLTAGE SWITCH TURNS LIGHTS ON/OFF AND RAISES/LOWERS LIGHTS.
OCCUPANCY SENSOR TURNS LIGHTS OFF WITHIN 20 MINUTES OF OCCUPANT LEAVING ROOM.

WIRE LEGEND
LOW VOLTAGE
LINE VOLTAGE

LIGHTING CONTROL - DIMMING - MANUAL ON — 3
No Scale

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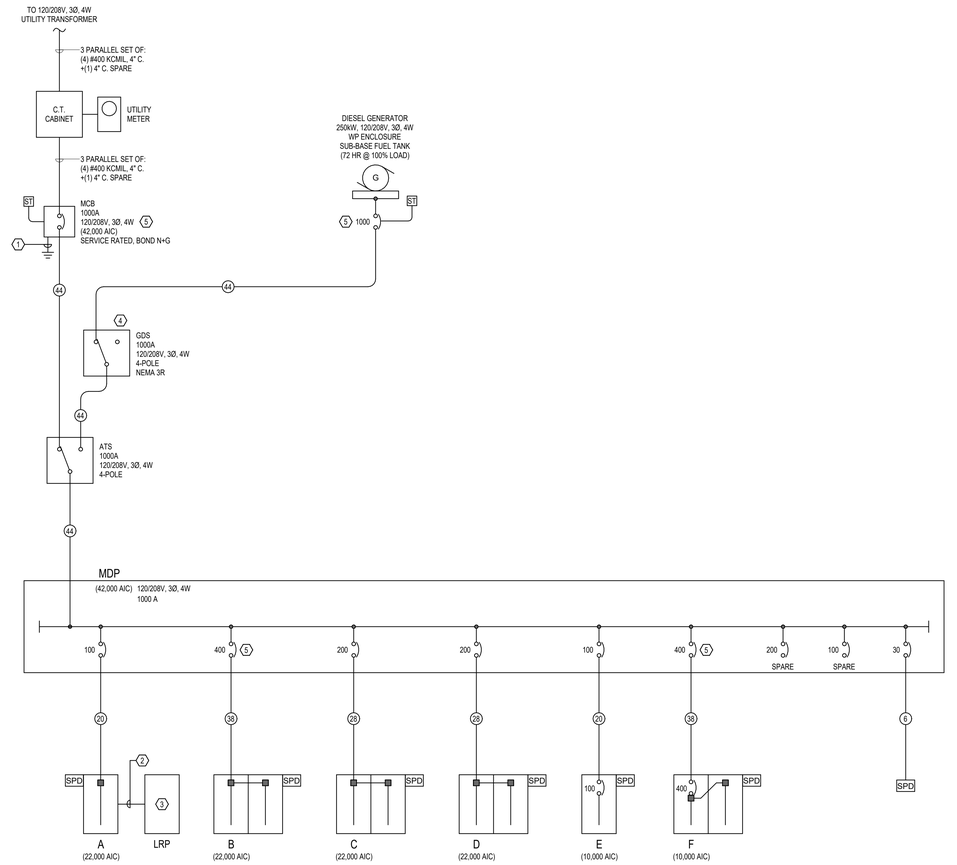
ELECTRICAL DETAILS

E302
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FEEDER SCHEDULE (CU)

DESIG.	FUSE OR CIRCUIT BREAKER AMP RATING/# POLES	NUMBER OF SETS	NUMBER OF CONDUCTORS	FEEDER SIZE		
				CONDUCTORS	EQUIP. GRD.	CONDUIT
(1)	15/3	1	3	#12 AWG	#12 AWG	3/4"
(2)			4			3/4"
(3)	20/3	1	3	#12 AWG	#12 AWG	3/4"
(4)			4			3/4"
(5)	30/3	1	3	#10 AWG	#10 AWG	3/4"
(6)			4			3/4"
(7)	40/3	1	3	#8 AWG	#10 AWG	1"
(8)			4			1"
(9)	50/3	1	3	#6 AWG	#10 AWG	1"
(10)			4			1"
(11)	60/3	1	3	#4 AWG	#10 AWG	1 1/4"
(12)			4			1-1/4"
(13)	70/3	1	3	#4 AWG	#8 AWG	1 1/4"
(14)			4			1-1/4"
(15)	80/3	1	3	#3 AWG	#8 AWG	1-1/4"
(16)			4			1-1/4"
(17)	90/3	1	3	#2 AWG	#8 AWG	1-1/2"
(18)			4			1-1/2"
(19)	100/3	1	3	#1 AWG	#8 AWG	1-1/2"
(20)			4			1-1/2"
(21)	125/3	1	3	#1 AWG	#6 AWG	1-1/2"
(22)			4			2"
(23)	150/3	1	3	#1/0 AWG	#6 AWG	1-1/2"
(24)			4			2"
(25)	175/3	1	3	#2/0 AWG	#6 AWG	2"
(26)			4			2"
(27)	200/3	1	3	#3/0 AWG	#6 AWG	2"
(28)			4			2"
(29)	225/3	1	3	#4/0 AWG	#4 AWG	2-1/2"
(30)			4			2-1/2"
(31)	250/3	1	3	#250 KCMIL	#4 AWG	3"
(32)			4			3"
(33)	300/3	1	3	#350 KCMIL	#4 AWG	3"
(34)			4			3"
(35)	350/3	1	3	#500 KCMIL	#3 AWG	3"
(36)			4			4"
(37)	400/3	1	3	#600 KCMIL	#3 AWG	4"
(38)			4			4"
(39)	600/3	2	3	#350 KCMIL	#1 AWG	3"
(40)			4			3"
(41)	800/3	3	3	#300 KCMIL	#1/0 AWG	3"
(42)			4			3"
(43)	1000/3	3	3	#400 KCMIL	#2/0 AWG	3"
(44)			4			3"
(45)	1200/3	4	3	#350 KCMIL	#3/0 AWG	3"
(46)			4			3"



1 ELECTRICAL ONE-LINE DIAGRAM
N.T.S.

CODED NOTES:

(1) #3/0 AWG TO 3/4"x20' CU CLAD GROUND ROD, BUILDING STEEL, CONCRETE ENCASED REBAR (MIN. 20' LENGTH), AND METALLIC WATER PIPE. BOND TO ALL AVAILABLE GROUNDING ELECTRODES PER NEC 250. PROVIDE N-G SYSTEM BONDING JUMPER PER NEC TABLE 250.102(C)(1).

(2) MULTIPLE LIGHTING CIRCUITS ROUTED THROUGH LIGHTING RELAY PANEL AS SHOWN ON PLANS AND SCHEDULES.

(3) 24 CIRCUIT PROGRAMMABLE LIGHTING RELAY PANEL WITH INTEGRAL TIMECLOCK AND PHOTOCELL.

(4) GENERATOR DOCKING STATION WITH CAMLOCKS FOR CONNECTION OF TEMPORARY GENERATOR OR LOAD BANK. BASIS OF DESIGN IS TRYSTAR OR APPROVED EQUAL.

(5) ELECTRONIC TRIP CIRCUIT BREAKER WITH THE FOLLOWING FIELD-ADJUSTABLE TRIP RESPONSE SETTINGS:
A. LONG TIME PICKKUP AND DELAY
B. SHORT TIME PICKUP AND DELAY OF I2T IN AND OUT.
C. INSTANTANEOUS PICKUP.

CITY OF PORT ORANGE
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CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

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ELECTRICAL ONE-LINE DIAGRAM

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LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER / MODEL	VOLTAGE	LAMP SOURCE	WATTAGE	COMMENTS
A	ARCHITECTURAL TROFFER, GRID MOUNTED, LED, 3500K, CURVED OPAL LENS, 0-10V ELECTRONIC DIMMING DRIVER, 2'x2'.	LITHONIA / STAK-2X2-5000LM-80CRI-35K-COL-MIN10-ZT-MVOLT	120 V	LED	38 W	
AE	ARCHITECTURAL TROFFER, GRID MOUNTED, LED, 3500K, CURVED OPAL LENS, 0-10V ELECTRONIC DIMMING DRIVER, EMERGENCY BATTERY PACK, 2'x2'.	LITHONIA / STAK-2X2-5000LM-80CRI-35K-COL-MIN10-ZT-MVOLT-E10WLCP	120 V	LED	38 W	
B	FLAT PANEL, GRID MOUNTED, LED, 3500K, WHITE ACRYLIC LENS, 0-10V ELECTRONIC DIMMING DRIVER, 2'x2'.	LITHONIA / CPX-2X2-4000LMHE-80CRI-35K-SWL-MIN10-ZT-MVOLT	120 V	LED	39 W	
BE	FLAT PANEL, GRID MOUNTED, LED, 3500K, WHITE, ACRYLIC LENS, 0-10V ELECTRONIC DIMMING DRIVER, EMERGENCY BATTERY PACK, 2'x2'.	LITHONIA / CPX-2X2-4000LMHE-80CRI-35K-SWL-MIN10-ZT-MVOLT-E10WLCP	120 V	LED	39 W	
BF	FLAT PANEL, DRYWALL FLANGE MOUNTED, LED, 3500K, WHITE ACRYLIC LENS, 0-10V ELECTRONIC DIMMING DRIVER, 2'x2'.	LITHONIA / CPX-2X2-5000LMHE-80CRI-35K-SWL-MIN10-ZT-MVOLT-DGA22	120 V	LED	39 W	
BFE	FLAT PANEL, DRYWALL FLANGE MOUNTED, LED, 3500K, WHITE ACRYLIC LENS, 0-10V ELECTRONIC DIMMING DRIVER, EMERGENCY BATTERY PACK, 2'x2'.	LITHONIA / CPX-2X2-5000LMHE-80CRI-35K-SWL-MIN10-ZT-MVOLT-E10WLCP-DGA22	120 V	LED	39 W	
C	DOWNLIGHT, RECESSED, LED, 3500K, OPEN CLEAR SEMI-SPECULAR REFLECTOR, 0-10V ELECTRONIC DIMMING DRIVER, 4" DIA.	LITHONIA / LBR4-NCH-10LM-35K-AR-TRW-LSS-MWD-MVOLT-UGZ	120 V	LED	13 W	
CE	DOWNLIGHT, RECESSED, LED, 3500K, OPEN CLEAR SEMI-SPECULAR REFLECTOR, 0-10V ELECTRONIC DIMMING DRIVER, EMERGENCY BATTERY PACK, 4" DIA.	LITHONIA / LBR4-NCH-10LM-35K-AR-TRW-LSS-MWD-MVOLT-UGZ-ELR	120 V	LED	13 W	
DBa	LINEAR DIRECT/INDIRECT, AIRCRAFT CABLE SUSPENDED, LED 3500K, RADIAL ANIDOLIC OPTIC, BLACK ALUMINUM HOUSING, 0-10V ELECTRONIC DIMMING DRIVER, 8'.	FLUXWERX / APS-F-D-C-35-B-08-G-F2-M-03	120 V	LED	52 W	MOUNT AT 9'-0" AFF.
DBaE	LINEAR DIRECT/INDIRECT, AIRCRAFT CABLE SUSPENDED, LED 3500K, RADIAL ANIDOLIC OPTIC, BLACK ALUMINUM HOUSING, 0-10V ELECTRONIC DIMMING DRIVER, EMERGENCY BATTERY PACK, 8'.	FLUXWERX / APS-F-D-C-35-B-08-G-F2-M-03-B	120 V	LED	52 W	MOUNT AT 9'-0" AFF.
DBb	LINEAR DIRECT/INDIRECT, AIRCRAFT CABLE SUSPENDED, LED 3500K, RADIAL ANIDOLIC OPTIC, BLACK ALUMINUM HOUSING, 0-10V ELECTRONIC DIMMING DRIVER, 8'.	FLUXWERX / APS-F-D-O-35-B-08-S-F2-M-12	120 V	LED	68 W	MOUNT AT 12'-0" AFF.
DBbE	LINEAR DIRECT/INDIRECT, AIRCRAFT CABLE SUSPENDED, LED 3500K, RADIAL ANIDOLIC OPTIC, BLACK ALUMINUM HOUSING, 0-10V ELECTRONIC DIMMING DRIVER, EMERGENCY BATTERY PACK, 8'.	FLUXWERX / APS-F-D-O-35-B-08-S-F2-M-12-B	120 V	LED	68 W	MOUNT AT 12'-0" AFF.
EM	EMERGENCY LIGHTING UNIT, SURFACE MOUNTED, 2 LAMP, LED, WHITE THERMOPLASTIC HOUSING, SEALED NI-CAD BATTERY.	LITHONIA / ELM4L	120 V	LED	5 W	MOUNT AT 7'-6" AFF.
F	STRIP, PENDANT MOUNTED, LED, 3500K, DIFFUSED ACRYLIC LENS, WHITE HOUSING, 0-10V ELECTRONIC DIMMING DRIVER, 4'.	LITHONIA / CLX-L48-5000LM-HEF-FDL-MVOLT-GZ10-35K-80CRI-WH	120 V	LED	35 W	HANG WITH THREADED ROD AT 9'-0" AFF.
FE	STRIP, PENDANT MOUNTED, LED, 3500K, DIFFUSED ACRYLIC LENS, WHITE HOUSING, 0-10V ELECTRONIC DIMMING DRIVER, EMERGENCY BATTERY PACK, 4'.	LITHONIA / CLX-L48-5000LM-HEF-FDL-MVOLT-GZ10-35K-80CRI-E10WLCP-WH	120 V	LED	35 W	HANG WITH THREADED ROD AT 9'-0" AFF.
G	ENCLOSED INDUSTRIAL, SURFACE MOUNTED, LED, 3500K, POLYCARBONATE LENS, POLYCARBONATE HOUSING, STAINLESS STEEL LATCHES, 0-10V ELECTRONIC DIMMING DRIVER, UL WET LOCATION LISTED.	LITHONIA / CSVT-L48-5000LM-MVOLT-35K-80CRI-ST5L	120 V	LED	42 W	
H	WALL LIGHT, SURFACE MOUNTED, LED, 3500K, WHITE ACRYLIC DIFFUSER, NICKEL FINISH HOUSING, ELECTRONIC DRIVER, 2'.	BROWNLEE / 5100-2E-NT-H16-35K	120 V	LED	16 W	MOUNT ABOVE MIRROR.
J	HIGH BAY, YOKE MOUNTED, LED, 3500K, FROSTED GLASS LENS, WHITE ALUMINUM HOUSING, STAINLESS STEEL HARDWARE, 0-10V ELECTRONIC DIMMING DRIVER, UL WET LOCATION LISTED.	LITHONIA / XIB-L24-18000LM-FRGL-MVOLT-GZ10-35K-80CRI-DWHXD-XIBYMB	120 V	LED	113 W	
K1	EXTERIOR WALL LIGHT, SURFACE MOUNTED, LED, 4000K, WIDE DISTRIBUTION, BLACK ALUMINUM HOUSING, ELECTRONIC DRIVER, UL WET LOCATION LISTED.	LITHONIA / WDGE2-LED-P2-40K-80CRI-VW-MVOLT-DBLXD	120 V	LED	15 W	MOUNT AT 10'-0" AFF.
K2	EXTERIOR WALL LIGHT, SURFACE MOUNTED, LED, 4000K, FORWARD DISTRIBUTION, BLACK ALUMINUM HOUSING, ELECTRONIC DRIVER, UL WET LOCATION LISTED.	LITHONIA / WDGE2-LED-P3-40K-80CRI-VF-MVOLT-DBLXD	120 V	LED	23 W	MOUNT AT 13'-0" AFF.
L1	HIGH BAY, SUSPENDED, LED, 3500K, ACRYLIC DIFFUSE LENS, WHITE ALUMINUM HOUSING, 0-10V ELECTRONIC DIMMING DRIVER.	LITHONIA / CPHB-12000LM-HEF-GCL-MD-MVOLT-GZ10-35K-80CRI-DWH-IBAC120M100	120 V	LED	75 W	
L1E	HIGH BAY, SUSPENDED, LED, 3500K, ACRYLIC DIFFUSE LENS, WHITE ALUMINUM HOUSING, 0-10V ELECTRONIC DIMMING DRIVER, EMERGENCY BATTERY PACK.	LITHONIA / CPHB-12000LM-HEF-GCL-MD-MVOLT-GZ10-35K-80CRI-E10WCP-DWH-IBAC120M100	120 V	LED	75 W	
L2	HIGH BAY, SUSPENDED, LED, 3500K, ACRYLIC DIFFUSE LENS, WHITE ALUMINUM HOUSING, 0-10V ELECTRONIC DIMMING DRIVER.	LITHONIA / CPHB-18000LM-HEF-GCL-MD-MVOLT-GZ10-35K-80CRI-DWH-IBAC120M100	120 V	LED	127 W	
L2E	HIGH BAY, SUSPENDED, LED, 3500K, ACRYLIC DIFFUSE LENS, WHITE ALUMINUM HOUSING, 0-10V ELECTRONIC DIMMING DRIVER, EMERGENCY BATTERY PACK.	LITHONIA / CPHB-18000LM-HEF-GCL-MD-MVOLT-GZ10-35K-80CRI-E10WCP-DWH-IBAC120M100	120 V	LED	127 W	
LT1	LINEAR, RECESSED FLANGELESS EXTRUSION, LED, 3500K, SEAMLESS SATINED LENS, REMOTE 0-10V ELECTRONIC DIMMING DRIVER, 8'.	BEULUX / JD01-SLS-O-L1000-IP20-CT35-EC-LC-DTR-320-IP67	120 V	LED	61 W	
M	DECORATIVE PENDANT, LED, 3000K, RUSTY FINISH, 14" DIA.	SYNERGY / BELR/14-OS-3KB-N/A	120 V	LED	8 W	
N	ADJUSTABLE DOWNLIGHT, RECESSED, LED, 3500K, CLEAR DIFFUSE REFLECTOR, 0-10V ELECTRONIC DIMMING DRIVER, 3" SQUARE.	ACULUX / AX3SQLPAG4-20LM-35K-80CRI-24D-GZT-MVOLT-3SQA-CD-FM-FMA3SQ	120 V	LED	20 W	
P	LINEAR WALL WASH, GRID MOUNTED, LED, 3500K, WHITE REFLECTOR, ACRYLIC DIFFUSE LENS, 0-10V ELECTRONIC DIMMING DRIVER, 16'.	PINNACLE / EV3WW-835-16-G1-U-FSD-1-0-W	120 V	LED	96 W	
SL2	SITE LIGHTING, 2 HEAD, MOUNTED AT 25'-0" AFG ON ROUND TAPERED ALUMINUM DIRECT BURIED POLE, LED, 4000K, FULL CUTOFF, TYPE V DISTRIBUTION, NATURAL ALUMINUM HOUSING, ELECTRONIC DRIVER, UL WET LOCATION LISTED.	LITHONIA / DSX1-LED-P3-40K-T5W-MVOLT-RPA-DNAXD	208 V	LED	204 W	CALCULATE MAXIMUM EPA FOR POLES BASED ON ASCE 7-16 AND 2020 FBC: RISK CATEGORY II, NOMINAL DESIGN WIND SPEED (Vasd) = 106 MPH, EXPOSURE B. PROVIDE SIGNED AND SEALED POLE EMBED DRAWINGS.
SL2a	SITE LIGHTING, 2 HEAD, MOUNTED AT 25'-0" AFG ON 22'-0" ROUND TAPERED ALUMINUM POLE ON 30" CONCRETE BASE, LED, 4000K, FULL CUTOFF, TYPE V DISTRIBUTION, NATURAL ALUMINUM HOUSING, ELECTRONIC DRIVER, UL WET LOCATION LISTED.	LITHONIA / DSX1-LED-P3-40K-T5W-MVOLT-RPA-DNAXD	208 V	LED	204 W	CALCULATE MAXIMUM EPA FOR POLES BASED ON ASCE 7-16 AND 2020 FBC: RISK CATEGORY II, NOMINAL DESIGN WIND SPEED (Vasd) = 106 MPH, EXPOSURE B. PROVIDE SIGNED AND SEALED POLE EMBED DRAWINGS.
SL3	SITE LIGHTING, 1 HEAD, MOUNTED AT 25'-0" AFG ON ROUND ALUMINUM DIRECT BURIED POLE, LED, 4000K, FULL CUTOFF, TYPE IV DISTRIBUTION, NATURAL ALUMINUM HOUSING, ELECTRONIC DRIVER, UL WET LOCATION LISTED.	LITHONIA / DSX1-LED-P3-40K-T4M-MVOLT-RPA-DNAXD	208 V	LED	102 W	CALCULATE MAXIMUM EPA FOR POLES BASED ON ASCE 7-16 AND 2020 FBC: RISK CATEGORY II, NOMINAL DESIGN WIND SPEED (Vasd) = 106 MPH, EXPOSURE B. PROVIDE SIGNED AND SEALED POLE EMBED DRAWINGS.
SL4	SITE LIGHTING, 1 HEAD, MOUNTED AT 25'-0" AFG ON ROUND TAPERED ALUMINUM DIRECT BURIED POLE, LED, 4000K, FULL CUTOFF, TYPE II DISTRIBUTION, NATURAL ALUMINUM HOUSING, ELECTRONIC DRIVER, UL WET LOCATION LISTED.	LITHONIA / DSX1-LED-P3-40K-T2M-MVOLT-RPA-DNAXD	208 V	LED	102 W	CALCULATE MAXIMUM EPA FOR POLES BASED ON ASCE 7-16 AND 2020 FBC: RISK CATEGORY II, NOMINAL DESIGN WIND SPEED (Vasd) = 106 MPH, EXPOSURE B. PROVIDE SIGNED AND SEALED POLE EMBED DRAWINGS.
X1	EXIT SIGN, CEILING MOUNTED, LED, RED STENCIL LETTERS ON WHITE THERMOPLASTIC HOUSING, NI-CAD BATTERY.	LITHONIA / EXR-LED-EL-M6	120 V	LED	5 W	PROVIDE NUMBER OF FACES AND DIRECTIONAL ARROWS AS INDICATED.
X2	EXIT SIGN, WALL MOUNTED, LED, RED STENCIL LETTERS ON WHITE THERMOPLASTIC HOUSING, NI-CAD BATTERY.	LITHONIA / EXR-LED-EL-M6	120 V	LED	5 W	PROVIDE NUMBER OF FACES AND DIRECTIONAL ARROWS AS INDICATED.

NOTES:

1. ALL LED FIXTURES SHALL BE MINIMUM 50,000 HOURS L70, CRI 80+.
2. PROVIDE APPROVED FIRE-RATED ENCLOSURES FOR ALL LIGHTS FIXTURES LOCATED IN FIRE-RATED CEILINGS.
3. PROVIDE ALL REQUIRED HARDWARE TO MOUNT FIXTURES PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
4. IF THERE IS A DISCREPANCY BETWEEN THE FIXTURE DESCRIPTION, THE LIGHTING GENERAL NOTES, THE LIGHTING SPECIFICATIONS, AND THE CATALOG NUMBER LISTED, THE FIXTURE DESCRIPTION SHALL TAKE PRECEDENCE.
5. WHERE A SINGLE MANUFACTURER IS LISTED WITH A CORRESPONDING CATALOG NUMBER, THIS MANUFACTURER SHALL BE CONSIDERED THE BASIS OF DESIGN SELECTION. OTHER MANUFACTURERS WILL BE CONSIDERED AS "APPROVED EQUAL" ONLY IF THEIR LIGHTING FIXTURE MEETS OR EXCEEDS THE BASIS OF DESIGN SELECTION IN TYPE AND QUALITY OF CONSTRUCTION, LOUVER FINISHES, LENSES, HOUSING FINISHES, PHOTOMETRICS, SELECTED OPTIONS AND ACCESSORIES. APPROVED EQUAL MANUFACTURERS MUST ALSO MATCH OVERALL APPEARANCE AND DIMENSIONS OF BASIS OF DESIGN SELECTION. WHERE ONLY A MANUFACTURER'S NAME IS LISTED, THE FIXTURE SHALL COMPLY WITH THE DESCRIPTION, VOLTAGE, LAMP TYPE AND WATTAGE, AND ANY NOTED REMARKS, THE LIGHTING FIXTURE SCHEDULE NOTES, AND THE LIGHTING SPECIFICATIONS.
6. LIGHT FIXTURES IN LAY-IN CEILING GRIDS SHALL BE SUPPORTED AS FOLLOWS: LIGHT FIXTURES WEIGHING LESS THAN 10 POUNDS SHALL HAVE (1) 12 GAUGE WIRE CONNECTED FROM THE LIGHT FIXTURE TO THE STRUCTURE ABOVE. LIGHT FIXTURES WEIGHING 10 POUNDS OR MORE SHALL HAVE (2) 12 GAUGE WIRES ATTACHED AT OPPOSITE CORNERS OF THE LIGHT FIXTURE TO THE STRUCTURE ABOVE.

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CITY OF PORT ORANGE
PUBLIC UTILITIES FIELD
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LIGHTING FIXTURE SCHEDULE

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SWITCHBOARD: MDP

Location: ELECTRICAL MAIN... **Mounting:** SURFACE **Distribution / Phase / Wires:** 120/208 Wye / 3 / 4 **K.A.I.C. Rating:** 42 **Bus Rating:** 1000 A
Supply From: **Enclosure:** NEMA 1 **Mains Type:** MLO **MCB Rating:** N/A

CKT	Circuit Description	# of Poles	Trip Rating (A)	Load (KVA)	Remarks
1	PANEL A	3	100 A	10.04	
2	PANEL B	3	400 A	102.91	
3	PANEL C	3	200 A	39.57	
4	PANEL D	3	200 A	37.23	
5	PANEL E	3	100 A	8.96	
6	PANEL F	3	400 A	83.99	
7	SPARE	3	200 A	0.00	
8	SPARE	3	100 A	0.00	
9	SPACE	3	--	--	
10	SPACE	3	--	--	
11	SPACE	3	--	--	
12	SPD	3	30 A	0.00	

Load Classification	Connected Load	Demand Factor	Demand Load
EQUIPMENT	25041 VA	100.00%	25041 VA
HVAC	137337 VA	100.00%	137337 VA
LIGHTING	15373 VA	125.00%	19216 VA
RECEPTACLE	105082 VA	54.76%	57541 VA

Panel Totals
Total Conn. Load: 282.67 kVA
Total Connected Demand (KVA): 238.98 KVA
Total Demand Current (A): 663 A

Switchboard Notes:

Panel: A

Location: ELECTRICAL MAIN 140 **Mounting:** SURFACE **Dist. / Phase / Wires:** 120/208 Wye / 3 / 4 **K.A.I.C. Rating:** 22 **BUS Rating:** 100 A
Supply From: MDP **Enclosure:** NEMA 1 **Mains Type:** MLO **MCB Rating:** N/A

KN	CKT	Circuit Description	Trip(A)	P	A (KVA)		B (KVA)		C (KVA)		P	Trip(A)	Circuit Description	CKT	KN
1	1	LIGHTING - COVERED PARKING A	20	1	0.336	0.000								2	
1	3	LIGHTING - COVERED PARKING B	20	1			0.420	0.000			3	30	SPD	4	
1	5	SITE LIGHTING	20	2					0.357	0.000				6	
	7				0.357	0.360					1	20	EXTERIOR LIGHTING	8	1
1	9	SITE LIGHTING	20	2			0.255	0.176			1	20	EXTERIOR LIGHTING	10	1
	11								0.255	0.733	1	20	LIGHTING - 101,103A,103B	12	
1	13	SITE LIGHTING	20	2							1	20	LIGHTING - 104,105,106,107,109,110,111	14	
	15				0.357	0.508					1	20	SPACE	16	
	17	LIGHTING - 132,133	20	1			0.357	0.545			1	20	LIGHTING - 113,114,115,116,117	16	
	19	LIGHTING - 121,122,123,124,125,126	20	1	1.010	0.836			0.492	0.890	1	20	LIGHTING - 118,119,120,140,141,142	18	
	21	LIGHTING - 151,152	20	1			0.821	0.972			1	20	LIGHTING - 127,128,129,130,131	20	
	23	SPARE	20	1					0.000	0.000	1	20	LIGHTING - 108,153,154	22	
	25	SPARE	20	1	0.000	0.000					1	20	SPARE	24	
	27	SPARE	20	1			0.000	0.000			1	20	SPARE	26	
	29	SPARE	20	1					0.000	0.000	1	20	SPARE	28	
	31	SPACE	--	1	--	--					1	--	SPARE	30	
	33	SPACE	--	1			--	--			1	--	SPACE	32	
	35	SPACE	--	1					--	--	1	--	SPACE	34	
	37	SPACE	--	1	--	--					1	--	SPACE	36	
	39	SPACE	--	1			--	--			1	--	SPACE	38	
	41	SPACE	--	1					--	--	1	--	SPACE	40	
		Connected Phase Load (KVA)			3.764		3.546		2.727					42	
		Connected Phase Amps (A)			32.417		30.600		22.725						

Load Classification	Connected Load	Demand Factor	Demand Load
LIGHTING	10037 VA	125.00%	12546 VA

Panel Totals
Total Connected Load (KVA): 10.037
Total Demand Load (KVA): 12.546
Total Demand Current (A): 35

Panel Keynotes (KN):
1. ROUTE CIRCUIT THROUGH LIGHTING REALY PANEL "LRP".

Panel: B

Location: ELECTRICAL MAIN 140 **Mounting:** SURFACE **Dist. / Phase / Wires:** 120/208 Wye / 3 / 4 **K.A.I.C. Rating:** 22 **BUS Rating:** 400 A
Supply From: MDP **Enclosure:** NEMA 1 **Mains Type:** MLO **MCB Rating:** N/A

KN	CKT	Circuit Description	Trip(A)	P	A		B		C		P	Trip(A)	Circuit Description	CKT	KN
	1				3.864	0.000								2	
	3	AHU-1	60	3			3.864	0.000			3	30	SPD	4	
	5								3.864	0.000				6	
	7				13.128	4.000								8	
	9	CU-1	150	3			13.128	4.000			3	45	EWH-1	10	
	11								13.128	4.000				12	
	13				2.167	0.667								14	
	15	VAV-1	25	3			2.167	0.667			3	20	VAV-2	16	
	17								2.167	0.667				18	
	19				0.667	0.667								20	
	21	VAV-3	20	3			0.667	0.667			3	20	VAV-4	22	
	23								0.667	0.667				24	
	25				1.833	1.000								26	
	27	VAV-5	20	3			1.833	1.000			3	20	VAV-6	28	
	29								1.833	1.000				30	
	31				1.167	1.000								32	
	33	VAV-7	20	3			1.167	1.000			3	20	VAV-8	34	
	35								1.167	1.000				36	
	37				0.833	0.833								38	
	39	VAV-9	20	3			0.833	0.833			3	20	VAV-10	40	
	41								0.833	0.833				42	
	43	AC-1/MS-1	15	2	0.750	0.667					1	20	EF-1	44	
	45						0.750	1.000			1	20	GENERATOR BATTERY CHARGER	46	
	47	GATE OPERATOR	20	1					1.127	0.750	2	20	GENERATOR BLOCK HEATER	48	
	49	GATE OPERATOR	20	1	1.127	0.750								50	
	51	GATE OPERATOR	20	1			1.127	0.250			1	20	VAV CONTROLS	52	
	53	SPARE	20	1					0.000	0.000	1	20	SPARE	54	
	55	SPARE	20	1	0.000	0.000					1	20	SPARE	56	
	57	SPARE	20	1			0.000	0.000			1	20	SPARE	58	
	59	SPARE	20	1					0.000	0.000	1	20	SPARE	60	
	61	SPACE	--	1	--	--					1	--	SPACE	62	
	63	SPACE	--	1			--	--			1	--	SPACE	64	
	65	SPACE	--	1					--	--	1	--	SPACE	66	
	67	SPACE	--	1	--	--					1	--	SPACE	68	
	69	SPACE	--	1			--	--			1	--	SPACE	70	
	71	SPACE	--	1	--	--					1	--	SPACE	72	
	73	SPACE	--	1			--	--			1	--	SPACE	74	
	75	SPACE	--	1					--	--	1	--	SPACE	76	
	77	SPACE	--	1			--	--			1	--	SPACE	78	
	79	SPACE	--	1	--	--					1	--	SPACE	80	
	81	SPACE	--	1			--	--			1	--	SPACE	82	
	83	SPACE	--	1					--	--	1	--	SPACE	84	
		Connected Phase Load (KVA)			34.852		34.618		33.435						
		Connected Phase Amps (A)			291.948		290.004		278.628						

Load Classification	Connected Load	Demand Factor	Demand Load
EQUIPMENT	5881 VA	100.00%	5881 VA
HVAC	97856 VA	100.00%	97856 VA

Panel Totals
Total Connected Load (KVA): 102.905
Total Demand Load (KVA): 102.905
Total Demand Current (A): 286

Panel Keynotes (KN):

Panel: C

Location: ELECTRICAL MAIN 140 **Mounting:** SURFACE **Dist. / Phase / Wires:** 120/208 Wye / 3 / 4 **K.A.I.C. Rating:** 22 **BUS Rating:** 225 A
Supply From: MDP **Enclosure:** NEMA 1 **Mains Type:** MLO **MCB Rating:** N/A

KN	CKT	Circuit Description	Trip(A)	P	A (KVA)		B (KVA)		C (KVA)		P	Trip(A)	Circuit Description	CKT	KN
	1	BATTERY CHARGER - COVERED PARKING A	20	1	0.500	0.000								2	
	3	BATTERY CHARGER - COVERED PARKING A	20	1			0.500	0.000			3	30	SPD	4	
	5	BATTERY CHARGER - COVERED PARKING A	20	1					0.500	0.000				6	
	7	BATTERY CHARGER - COVERED PARKING B	20	1	0.500	0.540					1	20	RECEPTACLES - EXTERIOR	8	
	9	BATTERY CHARGER - COVERED PARKING B	20	1			0.500	2.500			2	30	DRYER - 117	10	
	11	BATTERY CHARGER - COVERED PARKING B	20	1					0.500	2.500				12	
	13	BATTERY CHARGER - COVERED PARKING B	20	1	0.500	2.500					2	30	DRYER - 117	14	
	15	BATTERY CHARGER - COVERED PARKING B	20	1			0.500	2.500						16	
	17	BATTERY CHARGER - COVERED PARKING B	20	1					0.500	0.700	1	20	WASHER -117	18	
	19	BATTERY CHARGER - COVERED PARKING B	20	1	0.500	0.700					1	20	WASHER - 117	20	
	21	RECEPTACLES - 101	20	1			0.720	0.900			1	20	RECEPTACLES - 117	22	
	23	RECEPTACLES - 101	20	1					0.720	1.518	1	20	ICE MACHINE - 117	24	
	25	RECEPTACLES - 101	20	1	0.720	0.700					1	20	REFRIGERATOR - 103A (GFCI)	26	
	27	RECEPTACLES - 101	20	1			0.720	1.200			1	20	MICROWAVE - 103A	28	
	29	RECEPTACLES - 101	20	1					0.900	1.000	1	20	RECEPTACLES - 103A	30	
	31	RECEPTACLES - 101	20	1	0.720	1.220					1	20	RECEPTACLES - 103, 103B, 103C	32	
	33	RECEPTACLES - 101	20	1			0.720	0.720			1	20	RECEPTACLES - 105	34	
	35	RECEPTACLES - 107	20	1					0.720	0.900	1	20	RECEPTACLES - 106	36	
	37	EWC - 108	20	1	0.700	1.260					1	20	RECEPTACLES - 108,109,110,111	38	
	39	COPIER - 112	20	1			1.000	0.900			1	20	RECEPTACLES - 113,114,115,116	40	
	41	COPIER - 112	20	1					1.000	0.180	1	20	A/V CABINET - 101	42	
	43	COPIER - 112	20	1	1.000	0.450					1	20	SENSORS/VALVES - 103B,110,111	44	
	45	RECEPTACLES - 112	20	1			0.720	0.600			1	20	SENSORS/VALVES - 113,114,115,116	46	
	47	RECEPTACLES - 104	20	1					0.720	0.000	1	20	SPARE	48	
	49	SPARE	20	1	0.000	0.000					1	20	SPARE	50	
	51	SPARE	20	1			0.000	0.000			1	20	SPARE	52	
	53	SPARE	20	1					0.000	0.000	1	20	SPARE	54	
	55	SPARE	20	1	0.000	0.000					1	20	SPARE	56	
	57	SPACE	--	1			--	--			1	--	SPACE	58	
	59	SPACE	--	1					--	--	1	--	SPACE	60	
	61	SPACE	--	1	--	--					1	--	SPACE	62	
	63	SPACE	--	1			--	--			1	--	SPACE	64	
	65	SPACE	--	1					--	--	1	--	SPACE	66	
	67	SPACE	--	1	--	--					1	--	SPACE	68	
	69	SPACE	--	1			--	--			1	--	SPACE	70	
	71	SPACE	--	1					--	--	1	--	SPACE	72	
	73	SPACE	--	1	--	--					1	--	SPACE	74	
	75	SPACE	--	1			--	--			1	--	SPACE	76	
	77	SPACE	--	1					--	--	1	--	SPACE	78	
	79	SPACE	--	1	--	--					1	--	SPACE	80	
	81	SPACE	--	1			--	--			1	--	SPACE	82	
	83	SPACE	--	1					--	--	1	--	SPACE	84	
		Connected Phase Load (KVA)			12.510		14.700		12.358						
		Connected Phase Amps (A)			104.445		122.695		102.983						

Load Classification	Connected Load	Demand Factor	Demand Load
EQUIPMENT	1050 VA	100.00%	1050 VA
RECEPTACLE	36518 VA	62.98%	24259 VA

Panel Totals
Total Connected Load (KVA): 39.568
Total Demand Load (KVA): 25.309
Total Demand Current (A): 70

Panel Keynotes (KN):

Panel: D

Location: ELECTRICAL MAIN 140 **Mounting:** SURFACE **Dist. / Phase / Wires:** 120/208 Wye / 3 / 4 **K.A.I.C. Rating:** 22 **BUS Rating:** 225 A
Supply From: MDP **Enclosure:** NEMA 1 **Mains Type:** MLO **MCB Rating:** N/A

KN	CKT	Circuit Description	Trip(A)	P	A (KVA)		B (KVA)		C (KVA)		P	Trip(A)	Circuit Description	CKT	KN
	1	RANGE HOOD - 135	20	1	0.200	0.000								2	
	3	OVEN/RANGE - 135 (SHUNT TRIP)	50	2			4.000	0.000			3	30	SPD	4	
	5								4.000	0.000				6	
	7	NO SPACE	--	1	--	1.518					1	20	ICE MACHINE - 143	8	
	9	MICROWAVE - 135	20	1			1.200	1.080			1	20	RECEPTACLES - EXTERIOR	10	
	11	MICROWAVE - 135	20	1					1.200	1.000	1	20	RECEPTACLES - 135	12	
	13	REFRIGERATOR - 135 (GFCI)	20	1	0.700	0.900					1	20	RECEPTACLES - 118	14	
	15	REFRIGERATOR - 135 (GFCI)	20	1			0.700	0.300			1	20	CEILING FANS - 119,122,125	16	
	17	REFRIGERATOR - 135 (GFCI)	20	1					0.700	0.720	1	20	RECEPTACLES - 119	18	
	19	RECEPTACLES - 135	20	1	1.000	0.720					1	20	RECEPTACLES - 119	20	
	21	RECEPTACLES - 135	20	1			0.180	0.720			1	20	RECEPTACLES - 120	22	
	23	COFFEE MAKER - 135	20	1					1.500	0.900	1	20	RECEPTACLES - 121	24	
	25	RECEPTACLES - 123	20	1	0.720	0.540					1	20	RECEPTACLES - 122	26	
	27	RECEPTACLES - 125	20	1			0.720	0.720			1	20	RECEPTACLES - 122	28	
	29	RECEPTACLES - 125	20	1					0.720	0.900	1	20	RECEPTACLES - 124	30	
	31	RECEPTACLES - 127	20	1	1.080	0.720					1	20	RECEPTACLES - 126	32	
	33	RECEPTACLES - 129	20	1			0.720	0.700			1	20	EWC -154	34	
	35	RECEPTACLES - 131	20	1					1.080	0.720	1	20	RECEPTACLES - 128	36	
	37	RECEPTACLES - 142	20	1	0.720	0.900					1	20	RECEPTACLES - 130	38	
	39	FACU	20	1			0.200	1.080			1	20	RECEPTACLES - 134	40	
	41	RECEPTACLES - 132	20	1					0.900	0.900	1	20	RECEPTACLES - 133	42	
	43	SPARE	20	1	0.000	0.000					1	20	SPARE	44	
	45	SPARE	20	1			0.000	0.000			1	20	SPARE	46	
	47	SPARE	20	1					0.000	0.000	1	20	SPARE	48	
	49	SPARE	20	1	0.000	0.000					1	20	SPARE	50	
	51	SPACE	--	1			--	--			1	--	SPACE	52	
	53	SPACE	--	1					--	--	1	--	SPACE	54	
	55	SPACE	--	1	--	--					1	--	SPACE	56	
	57	SPACE	--	1			--	--			1	--	SPACE	58	
	59	SPACE	--	1					--	--	1	--	SPACE	60	
	61	SPACE	--	1	--	--					1	--	SPACE	62	
	63	SPACE	--	1			--	--			1	--	SPACE	64	
	65	SPACE	--	1					--	--	1	--	SPACE	66	
	67	SPACE	--	1	--	--					1	--	SPACE	68	
	69	SPACE	--	1			--	--			1	--	SPACE	70	
	71	SPACE	--	1					--	--	1	--	SPACE	72	
	73	SPACE	--	1	--	--					1	--	SPACE	74	
	75	SPACE	--	1			--	--			1	--	SPACE	76	
	77	SPACE	--	1					--	--	1	--	SPACE	78	
	79	SPACE	--	1	--	--					1	--	SPACE	80	
	81	SPACE	--	1			--	--			1	--	SPACE	82	
	83	SPACE	--	1					--	--	1	--	SPACE	84	
		Connected Phase Load (KVA)			9.718		12.276		15.240						
		Connected Phase Amps (A)			80.983		105.580		130.280						

Load Classification	Connected Load	Demand Factor	Demand Load
EQUIPMENT	200 VA	100.00%	200 VA
RECEPTACLE	36778 VA	63.60%	23389 VA
HVAC	300 VA	100.00%	300 VA

Panel Totals
Total Connected Load (KVA): 37.233
Total Demand Load (KVA): 23.845
Total Demand Current (A): 66

Panel Keynotes (KN):

Panel: E

Location: IT TELECOMM 141 **Mounting:** SURFACE **Dist. / Phase / Wires:** 120/208 Wye / 3 / 4 **K.A.I.C. Rating:** 10 **BUS Rating:** 100 A
Supply From: MDP **Enclosure:** NEMA 1 **Mains Type:** MCB **MCB Rating:** 100 A

KN	CKT	Circuit Description	Trip(A)	P	A (KVA)		B (KVA)		C (KVA)		P	Trip(A)	Circuit Description	CKT	KN
	1	RECEPTACLES - 141	20	1	0.720	0.000								2	
	3	EQUIPMENT RACK - 141	30	1			2.500	0.000			3	30	SPD	4	
	5	EQUIPMENT RACK - 141	30	1					2.500	0.000				6	
	7	ACCESS CONTROL PANEL - 141	20	1	0.360	0.360					1	20	DAS PANEL - 141	8	
	9	RECEPTACLES - 141	20	1			0.720	0.720			1	20	RECEPTACLES - 141	10	
	11	RECEPTACLES - 141	20	1					1.080	0.000	1	20	SPARE	12	
	13	SPARE	20	1	0.000	0.000					1	20	SPARE	14	
	15	SPARE	20	1			0.000	0.000			1	20	SPARE	16	
	17	SPACE	--	1					--	--	1	--	SPACE	18	
	19	SPACE	--	1	--	--					1	--	SPACE	20	
	21	SPACE	--	1			--	--			1	--	SPACE	22	
	23	SPACE	--	1					--	--	1	--	SPACE	24	
	25	SPACE	--	1	--	--					1	--	SPACE	26	
	27	SPACE	--	1			--	--			1	--	SPACE	28	
	29	SPACE	--	1					--	--	1	--	SPACE	30	
		Connected Phase Load (KVA)			1.440		3.940		3.580						
		Connected Phase Amps (A)			12.000		35.577		32.577						

Load Classification	Connected Load	Demand Factor	Demand Load
EQUIPMENT	5720 VA	100.00%	5720 VA
RECEPTACLE	3240 VA	100.00%	3240 VA

Panel Totals
Total Connected Load (KVA): 8.960
Total Demand Load (KVA): 8.960
Total Demand Current (A): 25

Panel Keynotes (KN):

Panel: F

Location: DISTRIBUTION CREW... **Mounting:** SURFACE **Dist. / Phase / Wires:** 120/208 Wye / 3 / 4 **K.A.I.C. Rating:** 10 **BUS Rating:** 400 A
Supply From: MDP **Enclosure:** NEMA 1 **Mains Type:** MCB **MCB Rating:** 400 A

KN	CKT	Circuit Description	Trip(A)	P	A (KVA)		B (KVA)		C (KVA)		P	Trip(A)	Circuit Description	CKT	KN
	1	EF-2	20	1	0.100	0.000								2	
	3	EF-3A	20	1			1.127	0.000			3	30	SPD	4	
	5	EF-3B	20	1					1.127	0.000				6	
	7	EF-4	20	1	1.127	1.500								8	
	9	HVLSF-4	20	1			0.667	1.500			2	20	EWH-2	10	
	11	HVLSF-5	20	1					0.667	1.500				12	
	13	HVLSF-6	20	1	0.667	1.500					2	20	EWH-3	14	
	15	DRILL PRESS	20	1			1.610	6.440						16	
	17	ICE MACHINE	20	1					1.518	6.440	2	80	AIR COMPRESSOR	18	
	19	ICE MACHINE	20	1	1.518	3.333								20	
	21	RECEPTACLES - 205	30	2			1.500	3.333			3	35	UH-1	22	
	23								1.500	3.333				24	
	25	RECEPTACLES - 206	30	2	1.500	3.333								26	
	27						1.500	3.333			3	35	UH-2	28	
	29								1.500	3.333				30	
	31	RECEPTACLES - 206	30	2	1.500	2.834								32	
	33	RECEPTACLES - EXTERIOR	20	1			0.720	2.834			2	35	AHU-2	34	
	35	RECEPTACLES - EXTERIOR	20	1					0.900	1.186				36	
	37	RECEPTACLES - 203	20	1	0.540	1.186					2	25	CU-2	38	
	39	RECEPTACLES - 204	20	1			0.720	0.829			1	20	LIGHTING - 203,204	40	
	41	RECEPTACLES - 201	20	1					0.720	0.610	1	20	LIGHTING - 201	42	
	43	RECEPTACLES - 201	20	1	0.720	0.600					1	20	LIGHTING - 201	44	
	45	RECEPTACLES - 205	20	1			0.720	0.605			1	20	LIGHTING - 201	46	
	47	RECEPTACLES - 206	20	1					0.720	0.767	1	20	LIGHTING - 205	48	
	49	RECEPTACLES - 206	20	1	0.720	1.021					1	20	LIGHTING - 206	50	
	51	RECEPTACLES - 205,206	20	1			0.720	0.904			1	20	LIGHTING - 207	52	
	53	RECEPTACLES - 205,206	20	1					0.720	1.500	2	30	RECEPTACLES - 205	54	
	55	RECEPTACLES - 205,206	20	1	0.900	1.500								56	
	57	RECEPTACLES - 205	20	1			0.360	0.360			1	20	RECEPTACLES - 206	58	
	59	RECEPTACLES - 205	20	1					0.360	0.000	1	20	SPARE	60	
	61	SPARE	20	1	0.000	0.000					1	20	SPARE	62	
	63	SPARE	20	1			0.000	0.000			1	20	SPARE	64	
	65	SPARE	20	1					0.000	0.000	1	20	SPARE	66	
	67	SPARE	20	1	0.000	--					1	--	SPACE	68	
	69	SPACE	--	1			--	--			1	--	SPACE	70	
	71	SPACE	--	1					--	--	1	--	SPACE	72	
	73	SPACE	--	1	--	--					1	--	SPACE	74	
	75	SPACE	--	1			--	--			1	--	SPACE	76	
	77	SPACE	--	1					--	--	1	--	SPACE	78	
	79	SPACE	--	1	--	--					1	--	SPACE	80	
	81	SPACE	--	1			--	--			1	--	SPACE	82	
	83	SPACE	--	1					--	--	1	--	SPACE	84	
		Connected Phase Load (KVA)			26.001		29.694		28.303						
		Connected Phase Amps (A)			216.675		250.320		238.812						

Load Classification	Connected Load	Demand Factor	Demand Load
EQUIPMENT	12880 VA	100.00%	12880 VA
LIGHTING	5336 VA	125.00%	6670 VA
RECEPTACLE	26546 VA	68.84%	18273 VA
HVAC	39234 VA	100.00%	39234 VA

Panel Totals
Total Connected Load (KVA): 83.988
Total Demand Load (KVA): 77.050
Total Demand Current (A): 214

Panel Keynotes (KN):

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE
PUBLIC UTILITIES FIELD
OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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REVISIONS		
MARK	DESCRIPTION	DATE

COMM. NO.: 2021815
ISSUE DATE: 09/30/2024
DRAWN BY: JNP

ELECTRICAL PANEL SCHEDULES

E502
PERMIT/BID DOCUMENTS

10/1/2024 10:17:45 AM
Autodesk Docs://2021815 Port Orange Field Operations/2021815_PORT ORANGE FIELD OPERATIONS_MEP_R2023.rvt

FIRE ALARM / DETECTION SYSTEM

SYMBOL	DESCRIPTION
F	MANUAL PULL STATION
Z	CEILING SMOKE DETECTOR, PHOTOELECTRIC TYPE UNLESS OTHERWISE NOTED E = ELEVATOR WITH RECALL CONTACTS CO = COMBINATION SMOKE/CARBON MONOXIDE DETECTOR
Z	DUCT SMOKE DETECTOR R = RETURN S = SUPPLY
I	HEAT DETECTOR 135°F FIXED TEMPERATURE, UNLESS OTHERWISE NOTED, CEILING MOUNTED
⊠	DUCT SMOKE DETECTOR REMOTE TEST SWITCH WITH INDICATING LAMP, WALL MOUNTED AT 48" AFF, UNLESS OTHERWISE NOTED
	COMBINATION HORN/STROBE, WALL MOUNTED, 75CD UNLESS OTHERWISE NOTED CD = CANDELA RATING
	COMBINATION HORN/STROBE, CEILING MOUNTED, 75CD UNLESS OTHERWISE NOTED CD = CANDELA RATING
	STROBE, WALL MOUNTED, 75 CD UNLESS OTHERWISE NOTED CD = CANDELA RATING
	STROBE, CEILING MOUNTED, 75 CD UNLESS OTHERWISE NOTED CD = CANDELA RATING
	INTERPOSING CONTROL RELAY
AIM	ADDRESSABLE INPUT MODULE
AIO	ADDRESSABLE INPUT/OUTPUT MODULE
FS	WATER FLOW SWITCH. PROVIDE INTERFACE MODULE
TS	TAMPER SWITCH. PROVIDE INTERFACE MODULE
DH	ELECTROMAGNETIC DOOR HOLD OPEN DEVICE
FACU	FIRE ALARM CONTROL UNIT
FATC	FIRE ALARM TERMINAL CABINET
FAA	FIRE ALARM ANNUNCIATOR PANEL - FLUSH MOUNTED
EVAC	VOICE EVACUATION PANEL
MNS	MASS NOTIFICATION SYSTEM PANEL
DACT	MASS NOTIFICATION SYSTEM PANEL

FIRE ALARM WIRE LEGEND:

INITIATING CIRCUIT: 14/2 FPLR
NOTIFICATION CIRCUIT: 14/2 THHN
SIGNALING LINE CIRCUIT: 16/2 FPLR

ALL CIRCUITS SHALL BE COPPER CONDUCTORS - NFPA 72 DESIGNATIONS.
WIRE SELECTION SHALL CONFORM TO NFPA 70 AND MANUFACTURER'S REQUIREMENTS.

* RESIZE CONDUCTORS AS NEEDED IN ORDER TO COMPLY WITH NEC VOLTAGE DROP REQUIREMENTS.

** SUBSTITUTE WET LOCATION RATED CABLES AS REQUIRED BY NFPA 70.

FIRE ALARM PATHWAY/CIRCUIT TYPE/STYLE LEGEND:

INITIATING CIRCUIT: CLASS B
NOTIFICATION CIRCUIT: CLASS B
SIGNALING LINE CIRCUIT: CLASS B

* PATHWAY SURVIVABILITY SHALL BE LEVEL 1 OR BETTER IN ACCORDANCE WITH NFPA 72.

FIRE ALARM SYSTEM NOTES

FIRE ALARM SYSTEM NOTES:

1. ALL FIRE ALARM EQUIPMENT IS TO BE NEW, UL LISTED FOR FIRE SERVICE, AND SHALL BE COMPATIBLE WITH THE SYSTEM BEING USED.
2. ALL WIRING AND CONDUIT IS TO CONFORM TO NEC ARTICLE 760. WIRING SHALL BE UL LISTED, MINIMUM 300V TYPE FPLP PLENUM RATED SOLID COPPER OR STRANDED COPPER WITH MAXIMUM 19 STRANDS.
3. LOW VOLTAGE CONDUCTORS: PROVIDE CONDUCTORS IN ACCORDANCE WITH NFPA 70 AND NFPA 72, AND AS RECOMMENDED BY THE FIRE ALARM SYSTEM MANUFACTURER. CONDUCTORS SHALL BE COPPER, MINIMUM NO. 14 AWG, TWISTED SHIELDED PAIR.
4. SURVIVABILITY: A 2-HOUR RATED CABLE ASSEMBLY SHALL BE PROVIDED FOR NOTIFICATION APPLIANCE CIRCUITS AND ANY OTHER CIRCUITS NECESSARY FOR THE OPERATION OF THE NOTIFICATION APPLIANCE CIRCUITS FROM THE POINT AT WHICH THEY EXIT THE CONTROL UNIT UNTIL THE POINT THAT THEY ENTER THE NOTIFICATION ZONE THAT THEY SERVE.
5. MANUAL PULL STATIONS ARE TO BE INSTALLED AT 42" TO BOTTOM OF DEVICE AND NO HIGHER THAN 48" TO HANDLE ABOVE FINISHED FLOOR.
6. PROVIDE MINIMUM 3/4" CONDUIT AND WIRING BETWEEN EACH FIRE ALARM DEVICE AND FROM LAST DEVICE TO FACP UNLESS OTHERWISE NOTED.
7. PROVIDE DUCT DETECTOR (AND FIRE ALARM RELAY WHERE APPLICABLE) CONNECTED TO FIRE ALARM SYSTEM, WITHIN 5' OF ALL DUCT PENETRATIONS THROUGH FIRE/SMOKE WALLS, WHETHER INDICATED ON ELECTRICAL OR MECHANICAL PLANS OR NOT.
8. FIRE ALARM CONTROL PANEL IS TO BE PROVIDED WITH DEDICATED 120V CIRCUIT WITH EQUIPMENT GROUND CONNECTION PER MANUFACTURER'S RECOMMENDATIONS AND ARTICLE 760 OF THE NEC. PROVIDE MINIMUM #12 AWG FOR GROUND CONNECTION. NOTE: PANEL NEUTRAL OR CONDUIT GROUND IS NOT ACCEPTABLE. 120V CIRCUIT SHALL BE FROM EMERGENCY/LIFE SAFETY BRANCH WHERE AVAILABLE.
9. SECONDARY BACK-UP POWER SHALL BE PROVIDED BY INTEGRAL BATTERIES WITHIN THE FIRE ALARM CONTROL PANEL TO SUPPLY POWER TO THE SYSTEM UNDER QUIESCENT LOAD FOR A MINIMUM OF 24 HOURS, AND THEN BE CAPABLE OF AN ADDITIONAL 15 MINUTES (5 MINUTES FOR NON VOICE SYSTEMS) ALARM OPERATION AT MAXIMUM CONNECTED LOAD.
10. ALL FIRE ALARM POWER CIRCUITS SHALL HAVE A DEDICATED 120V 20A BREAKER THAT SHALL BE RED IN COLOR AND MECHANICALLY PROTECTED (LOCKABLE IN THE "ON" POSITION), MARKED AS "FIRE ALARM CIRCUIT".
11. A SUPERVISORY SIGNAL SHALL BE ANNUNCIATED UPON ANY TAMPER SWITCH ACTIVATION. FAILURE OR REMOVAL OF ANY DETECTION OR MANUAL DEVICE SHALL ACTIVATE A TROUBLE SIGNAL.
12. A CERTIFICATION OF COMPLETION AND UL LISTING SHALL BE ISSUED AND INSTALLED ON THE FIRE ALARM CONTROL PANEL. SUBMIT NFPA RECORD OF COMPLETION FORM ALONG WITH SMOKE DETECTOR SENSITIVITY REPORT FOR ALL DETECTORS WITHIN THE PROJECT AREA TO ENGINEER AND MAKE AVAILABLE AT FINAL INSPECTION.
13. MINIMUM CANDELA RATING OF STROBES IS 75; "110" ADJACENT TO DEVICE INDICATES 110 CANDELA RATING. PROVIDE SYNCHRONIZATION OF STROBES IN ALL ADJACENT AREAS WHERE STROBES ARE VISIBLE TO EACH OTHER.
14. ALL STROBES SHALL ACTIVATE UPON INITIATION OF THE GENERAL ALARM.
15. ALL STROBES SHALL BE INSTALLED PER ADA MOUNTING HEIGHT REQUIREMENTS. WALL MOUNTED STROBES SHALL BE INSTALLED SO THAT THE BOTTOM OF THE STROBE LENS IS 80" AFF.
16. STROBES SHALL BE INSTALLED WITHIN 15' OF THE ENDS OF ALL CORRIDORS.
17. FIRE ALARM DEVICES INSTALLED OUTSIDE OR IN AREAS OPEN TO THE EXTERIOR SHALL BE WEATHERPROOF DEVICES IN APPROVED BACKBOXES.
18. SMOKE DETECTORS SHALL BE PHOTO-ELECTRIC ADDRESSABLE TYPE, UNLESS SPECIFICALLY NOTED OTHERWISE.
19. SMOKE DETECTORS ARE TO BE INSTALLED PER NFPA 72. WALL MOUNTED SMOKE DETECTORS SHALL BE MOUNTED 4"-12" BELOW THE CEILING AND AWAY FROM CORNERS.
20. SMOKE DETECTORS LOCATED IN ELEVATOR LOBBIES, ELEVATOR HOISTWAYS AND ELEVATOR MACHINE ROOMS SHALL INITIATE ELEVATOR RECALL. ACTIVATE ELEVATOR WARNING LIGHTS AND CAUSE SEPARATE AND DISTINCT VISIBLE ANNUNCIATION AT THE FIRE ALARM CONTROL PANEL AND FIRE ALARM ANNUNCIATORS.
21. DUCT DETECTORS SHALL BE PHOTO-ELECTRIC ADDRESSABLE TYPE, AND RATED FOR VELOCITIES UP TO 5000 FT/MIN.
22. HEAT DETECTORS SHALL BE ADDRESSABLE. FIXED TYPE @ 135 DEG F, UNLESS OTHERWISE NOTED.
23. FOR PROJECTS WITH AN ELEVATOR, THE ELEVATOR CONTROL PANEL SHALL HAVE TWO SIGNALS FROM THE FIRE ALARM CONTROL PANEL/ ASSOCIATED SMOKE DETECTORS - ONE FROM THE "DESIGNATED FLOOR" SMOKE DETECTOR AND ANOTHER COMBINED SIGNAL FROM THE SMOKE DETECTORS AT THE OTHER LOBBY LANDINGS AND IN THE ELEVATOR EQUIPMENT ROOM.
24. ACTIVATION OF ANY SMOKE DETECTOR IN THE ELEVATOR LOBBY OF THE DESIGNATED PRIMARY RECALL LEVEL OR ELEVATOR MACHINE ROOM SHALL ACTIVATE ALTERNATE LEVEL RECALL.
25. PRIOR TO INSTALLATION OF ELEVATOR HOISTWAY HEAT DETECTORS, VERIFY WITH LOCAL AUTHORITY HAVING JURISDICTION IF THEY ARE REQUIRED.
26. HEAT DETECTORS SHALL BE LOCATED WITHIN 24" OF SPRINKLER HEADS LOCATED IN THE ELEVATOR MACHINE ROOM AND ALL HOISTWAY SPRINKLER HEADS LOCATED 24" ABOVE THE ELEVATOR PIT FLOOR. THESE HEAT DETECTORS SHALL HAVE BOTH A LOWER TEMPERATURE RATING AND HIGHER SENSITIVITY THAN THE SPRINKLER HEADS. HEAT DETECTORS SHALL OPEN THE MAIN DISCONNECT/POWER SUPPLY TO THE ELEVATOR CONTROLLER. CONTROL CIRCUITS TO SHUT OFF ELEVATOR POWER SHALL BE MONITORED BY THE FIRE ALARM CONTROL PANEL. CONTROL MODULE SHALL BE WITHIN 3 FEET OF THE ELEVATOR CONTROLLER.
27. WHERE THERE IS A GENERATOR ON THE PROJECT, PROVIDE RELAYS AS REQUIRED FOR THE FIRE ALARM SYSTEM TO MONITOR THE FOLLOWING THREE CONDITIONS: GENERATOR RUNNING; GENERATOR FAULT; GENERATOR SWITCH NOT IN AUTO.
28. PROVIDE AN ADDRESSABLE FIRE ALARM SYSTEM PER NFPA AND ALL STATE AND LOCAL CODE REQUIREMENTS. COMPLY WITH NFPA 72 AND ADA REQUIREMENTS.
29. FIELD VERIFY LOCATION OF AREA SMOKE DETECTORS AND HEAT DETECTORS. DO NOT LOCATE WITHIN 36" OF AN HVAC DIFFUSER (SUPPLY OR RETURN), IN DIRECT AIR FLOW PATH, OR WITHIN 24" OF A SPRINKLER HEAD UNLESS NOTED OTHERWISE. SMOKE DETECTORS FOR DOOR RELEASE SHALL BE LOCATED ON THE CENTERLINE OF THE DOOR AND A MAXIMUM OF FIVE FEET FROM THE DOOR. THE MINIMUM DISTANCE FROM THE DOOR SHALL BE THE DEPTH OF THE WALL SECTION ABOVE THE DOOR, BUT NOT LESS THAN 12".
30. PROVIDE LABELS FOR REMOTE ALARM INDICATORS FOR DUCT MOUNTED SMOKE DETECTORS (I.E., AHU-1 SUPPLY, AHU-2 RETURN, FIRE/SMOKE DAMPER, ETC.). DUCT DETECTORS SHOULD BE LOCATED WITHIN 6 TO 10 EQUIVALENT DIAMETERS OF STRAIGHT, UNINTERRUPTED DUCTWORK. DUCT DETECTORS FOR FIRE/SMOKE DAMPERS SHOULD BE LOCATED BETWEEN THE LAST INLET OR OUTLET UPSTREAM OF THE DAMPER AND THE FIRE INLET OR OUTLET DOWNSTREAM OF THE DAMPER, AND WITHIN FIVE FEET OF THE FIRE/SMOKE WALL.
31. EQUIPMENT SHUT DOWN FIRE ALARM RELAYS SHALL BE LOCATED WITHIN THREE (3) FEET OF THE EQUIPMENT CONTROLS AND THE WIRING TO THE RELAY SHALL BE MONITORED BY THE FIRE ALARM SYSTEM.
32. ALL FIRE ALARM CABLE SHALL BE INSTALLED IN CONDUIT; NO FIRE ALARM CONDUIT SHALL BE INSTALLED UNDER SLAB. PROVIDE MANUFACTURED RED CONDUIT UNLESS OTHERWISE NOTED.
33. MINIMIZE EXPOSURE OF DETECTORS TO DIRT AND DUST FROM CONSTRUCTION. PROVIDE PLASTIC COVERS DURING CONSTRUCTION.
34. STATE CERTIFIED AND LICENSED FIRE ALARM CONTRACTOR SHALL PREPARE AND SUBMIT SIGNED AND SEALED DRAWINGS FOR THE LOCAL AUTHORITY HAVING JURISDICTION/ FIRE MARSHALL.
35. NOTIFICATION DEVICES SHALL BE ELECTRIC-VIBRATING-POLARIZED HORNS, SELECTABLE FOR HIGH OR LOW dBA OUTPUT. THEY SHALL HAVE A SOUND PRESSURE LEVEL OF 90dBA MEASURED 10 FEET FROM HORN, USING CODED SIGNAL PER NFPA 72.
36. FIRE ALARM CONTRACTOR/VENDOR SHALL PREPARE FLORIDA LICENSE P.E. WORKING DRAWINGS INCORPORATING THE FIRE ALARM CRITERIA DESIGN AND CONFIRMING TO AHJ REQUIREMENTS. CONTRACTOR SHALL PROVIDE ALL MATERIAL REQUIRED PER AHJ AND DESIGN CRITERIA FOR A FULLY FUNCTIONING AND PERMITTABLE FIRE ALARM SYSTEM. SUBMIT TO DESIGN PROFESSIONAL AS A SHOP DRAWING FOR REVIEW. SUBMIT COMPLETE SIGNED & SEALED DRAWINGS TO PERMITTING AGENCY AND FOR CERTIFICATE OF OCCUPANCY. COMPLETED FIRE ALARM CERTIFICATION SHALL BE PROVIDED TO OWNER AT COMPLETION OF CONSTRUCTION.
37. FIRE ALARM DESIGN IS IN ACCORDANCE WITH FLORIDA STATUTES CHAPTER 61G15-32. WHERE A FIRE ALARM RISER IS INDICATED, IT IS DIAGRAMMATIC IN NATURE AND NOT INTENDED TO REPRESENT A COMPLETE WIRING AND DEVICE DISPLAY. ALL WIRING AND DEVICES SHALL BE IN ACCORDANCE WITH SELECTED VENDOR'S POINT-BY-POINT WIRING DIAGRAM. REFER TO FLOOR PLAN FOR DESIGN INTENT AND PROPOSED QUANTITY OF FIRE ALARM SYSTEM COMPONENTS.

DISTRIBUTED ANTENNA SYSTEM NOTES

DISTRIBUTED ANTENNA SYSTEM (DAS) NOTES:

1. THE CONTRACTOR'S BID PRICE SHALL INCLUDE THE FOLLOWING:
   A. AN INITIAL 1ST RESPONDER RADIO COVERAGE SURVEY OF THE BUILDING, AFTER MAJORITY OF WALLS AND SYSTEMS ARE INSTALED. SURVEY SHALL BE SUBMITTED TO AHJ FOR REVIEW AND APPROVAL.
   B. IF AHJ DEEMS A BOOSTER SYSTEM IS REQUIRED FOR THE BUILDING, THE CONTRACTOR SHALL PROVIDE A DELEGATED DESIGN OF THE DAS IN ACCORDANCE WITH THESE DRAWINGS.
2. DISTRIBUTED ANTENNA SYSTEMS (DAS) SHALL BE A DELEGATED DESIGN AND INSTALLATION OF A PUBLIC SAFETY SYSTEMS BOOSTING THE LOCAL FIRST RESPONDERS FREQUENCY SIGNALS WHERE THEY ARE DEFICIENT IN THE BUILDING. THIS SHALL INCLUDE ALL COMMISSIONING AND TESTING OF SYSTEM IN ACCORDANCE WITH THESE PLANS AND THE APPLICABLE SPECIFICATION SECTIONS. SYSTEM SHALL SUPPORT FREQUENCIES REQUIRED FREQUENCIES PROVIDED BY THE AHJ.
3. DAS SYSTEMS SHALL MEET NFPA 1221 REQUIREMENTS, AS WELL AS LOCAL/STATE/NATIONAL CODES, INCLUDING LATEST EDITION OF THE FLORIDA BUILDING CODE, ADMINISTRATIVE CODE & STATUTES.
4. DAS SYSTEM ALARMS SHALL REPORT TO THE FIRE ALARM CONTROL PANEL AND BE PROVIDED WITH A DAS DEDICATED ANNUNCIATOR PANEL LOCATED AT A MONITORED LOCATION.
5. DAS SYSTEM VERTICAL RISER SHALL BE DESIGNED TO A LEVEL 2 SURVIVABILITY PATHWAY FOR CABLE AND ALL ROOMS OR SHAFTS CONTAINING DAS EQUIPMENT SHALL BE 2-HOUR RATED. ALL HORIZONTAL DAS CABLING LOCATED OUTSIDE OF THE 2-HOUR RATED CHASE/ROOMS SHALL BE IN METAL RACEWAY (MINIMUM IMC) WITH A MINIMM LEVEL 1 SURVIVABILITY. ALL DAS RACEWAYS SHALL HAVE A MINIMUM BEND RADIUS OF 12-INCHES. ALL DAS RELATED PULLBOXES SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR, WETHER INDICATED ON THE PLANS OR NOT, IN ORDER TO COMPLY WITH PULLING TENSION AND BEND RADIUS REQUIREMENTS ON CABLES, PER THE MANUFACTURER.
6. RADIO EQUIPMENT SHALL BE FCC COMPLIANT. REFER TO RELATED SPECIFICATIONS FOR ADDITIONAL INFORMATION OR REQUIREMENTS.
7. EXTERIOR ANTENNAS SHALL BE HIGH GAIN, VERTICALLY POLARIZED AND PERFORM IN THE AHJ REQUIRED OPERATING FREQUENCIES AS INDICATED ABOVE.

61G15-32 FAC FIRE ALARM DOCUMENT COMPLIANCE NOTES:

1. SCOPE OF WORK: NEW FIRE ALARM SYSTEM FOR A NEW FACILITY.
   a. REFER TO SHEET FA001 FOR THE SYMBOL LEGEND AND SHEET FAXXX FOR THE SYSTEM RISER DIAGRAM. REFER TO ARCHITECTURAL PLANS FOR OCCUPANCY CLASSIFICATIONS AND FIRE AND OR FIRE/SMOKE RATINGS.
   b. REFER TO PLAN SHEETS AND DETAILS FOR DEVICE LAYOUT AND CONENCTIONS.
   c. STROBE INTENSITY AND SPEAKER OUTPUT RATINGS ARE AS NOTED IN THE SYMBOL LEGEND OR ON THE FLOOR PLANS.
   d. CLASS OF FIRE ALARM CIRCUITS ARE AS NOTED ON THE SYMBOL LEGEND.
   e. REFER TO THE FIRE ALARM RESPONSE MATRIX ON SHEET FAXXX FOR SYSTEM PROGRAMMING.
   f. THE FIRE ALARM SYSTEM SHALL BE ADDRESSABLE.
   g. SURGE PROTECTIVE DEVICES ARE EXISTING.
   h. WHERE DEVICES ARE SUBJECT TO EXTERIOR CONDITIONS, CONDUIT SHALL NOT ENTER THE TOP OF ANY BACKBOXES OF DEVICES DESIGNATED AS WEATHERPROOF. REFER TO SYMBOL LEGEND FOR DESIGNATIONS THAT DEVICES ARE TO BE WEATHERPROOF CONSTRUCTION.
   i. REFER TO FIRE ALARM PLANS FOR FIRE ALARM DEVICES LOCATED ON THE EXTERIOR.
   j. IN INSTANCES WHERE OBSTRUCTIONS OCCUR REFER TO DETAILS FOR DETECTOR PLACEMENT TO MITIGATE OBSTRUCTIONS AND INTERFERENCES.
   k. SMOKE STRATIFICATION IS NOT ANTICIPATED.
   l. FIRE ALARM DESIGN SHALL MEET ALL REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION CONSISTENT WITH STANDARDS ADOPTED BY THE FLORIDA FIRE PREVENTION CODE AND FLORIDA BUILDING CODE.
   m. A GENERAL EVACUATION SIGNAL SHALL BE USED.
   n. WIRING SHALL MEET THE REQUIREMENTS SHOWN/LISTED IN THE SYMBOL LEGEND, NFPA 70 AND NFPA 72.
   o. PROVIDE SYSTEM TRAINING IN THE OPERATION AND MAINTENANCE OF THE SYSTEM AFTER CERTIFICATION OF OCCUPANCY PER THE SPECIFICATIONS.
2. SHOP DRAWINGS SHALL INCLUDE SYSTEM WIRING, BATTERY AND VOLTAGE DROP CALCULATIONS SPECIFIC TO MANUFACTURERS' PRODUCTS.
3. PERFORM COMPLETE SYSTEM TESTS PER NFPA 72 AND THE SPECIFICATIONS PRIOR TO CALLING FOR FIRE MARSHAL INSPECTION FOR CETRIFICATION OF OCCUPANCY. INFORM ARCHITECT AND OWNER SEVEN (7) DAYS PRIOR TO SCHEDULED SYSTEM TEST. COORDIANTE ALL TESTING WITH OTHER TRADES TO DEMONSTRATE INTEROPERABILITY WHERE SHOWN IN THE FIRE ALARM RESPONSE MATRIX AND PLANS.

APPLICABLE CODES

APPLICABLE CODES:
ALL WORK UNDER THIS DIVISION SHALL BE IN STRICT COMPLIANCE AND IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE FOLLOWING CODES AND STANDARDS INCLUDING THE REGULATIONS OF GOVERNING LOCAL, STATE, COUNTY AND OTHER APPLICABLE CODES. REFER TO SPECIFICATIONS FOR ADDITIONAL CODE REQUIREMENTS:

BUILDING CODES:
- FLORIDA BUILDING CODE, 8TH EDITION (2023)
- FLORIDA FIRE PREVENTION CODE, 8TH EDITION (2023)

ADDITIONAL CODES, STANDARDS, AND REQUIREMENTS
1. THE AMERICANS WITH DISABILITIES ACT (ADA).
2. OWNER'S PUBLISHED DESIGN STANDARDS.

ALL MATERIALS SHALL BE NEW AND FREE OF DEFECTS, AND SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LAB, AS DEFINED BY OSHA. WHERE NO LABELING OR LISTING SERVICE IS AVAILABLE FOR CERTAIN TYPES OF EQUIPMENT, TEST DATA SHALL BE SUBMITTED TO VALIDATE THAT EQUIPMENT MEETS OF EXCEEDS AVAILABLE STANDARDS.

NATIONAL FIRE PROTECTION (NFPA) STANDARDS:
- NFPA 13, 2019 EDITION, STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS.
- NFPA 70, 2020 EDITION, NATIONAL ELECTRICAL CODE®.
- NFPA 72, 2019 EDITION, NATIONAL FIRE ALARM AND SIGNALING CODE.
- NFPA 90A, 2021 EDITION, STANDARD FOR THE INSTALLATION OF AIR-CONDITIONING AND VENTILATING SYSTEMS.
- NFPA 90B, 2021 EDITION, STANDARD FOR THE INSTALLATION OF WARM AIR HEATING AND AIR-CONDITIONING SYSTEMS.
- NFPA 101, 2021 EDITION, LIFE SAFETY CODE®.
- NFPA 110, 2019 EDITION, STANDARD FOR EMERGENCY AND STANDBY POWER SYSTEMS.

SOME SYMBOLS SHOWN ON THIS LEGEND MAY NOT PERTAIN TO THIS PROJECT.

WHERE THERE IS A DISCREPANCY BETWEEN ABOVE GENERAL NOTES AND SPECIFICATIONS, WHERE APPLICABLE, SPECIFICATIONS SHALL BE FOLLOWED.

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CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

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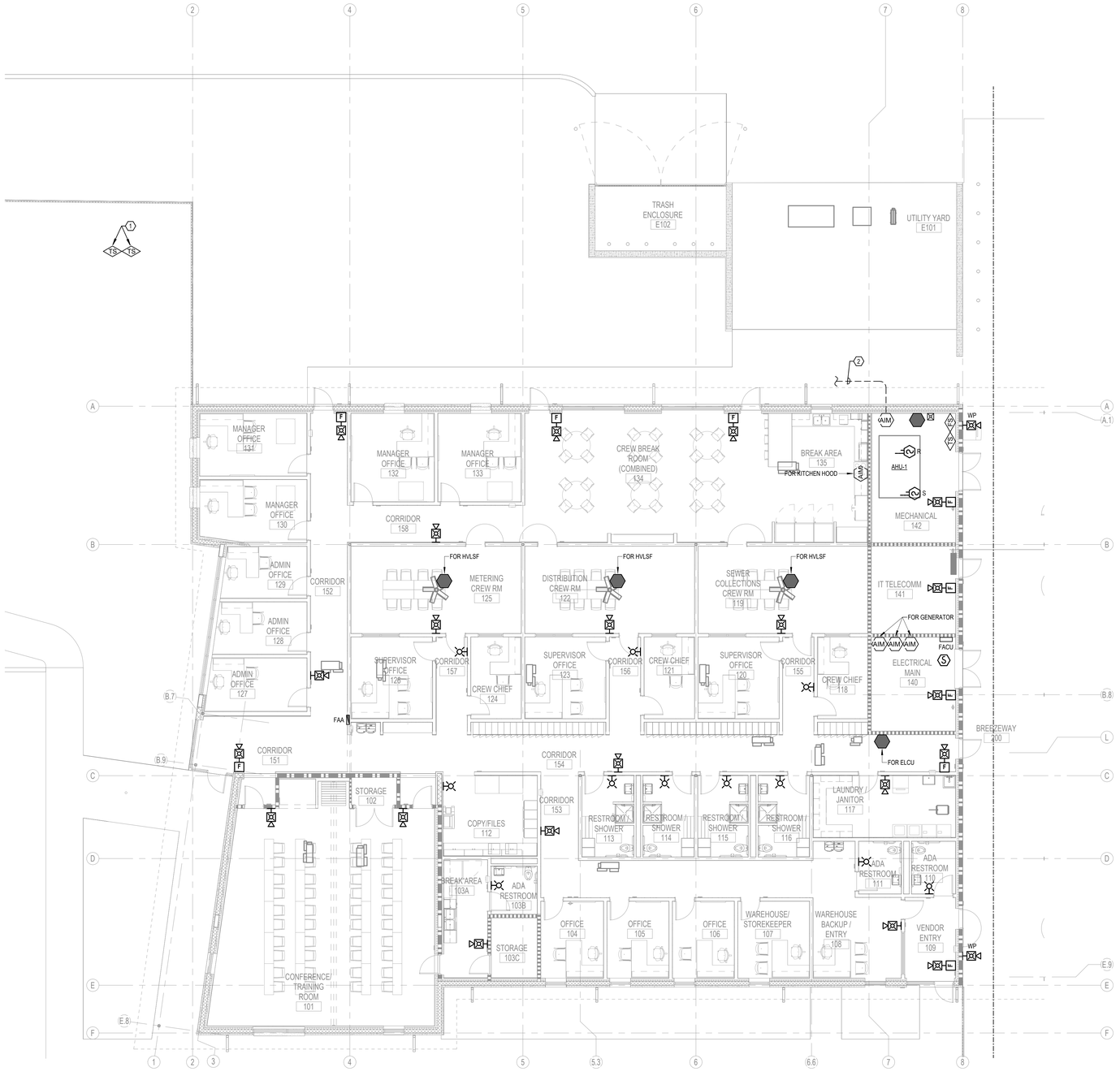
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FIRE ALARM LEGEND AND NOTES

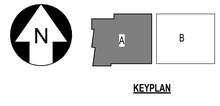
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CODED NOTES:

1. BACKFLOW PREVENTOR. FIELD VERIFY EXACT LOCATION.
2. TO BACKFLOW PREVENTOR. PROVIDE SURGE PROTECTION FOR CONDUCTORS ENTERING/LEAVING THE BUILDING.



KEYPLAN

1 FIRE ALARM PLAN - ADMINISTRATION

1/8" = 1'-0"

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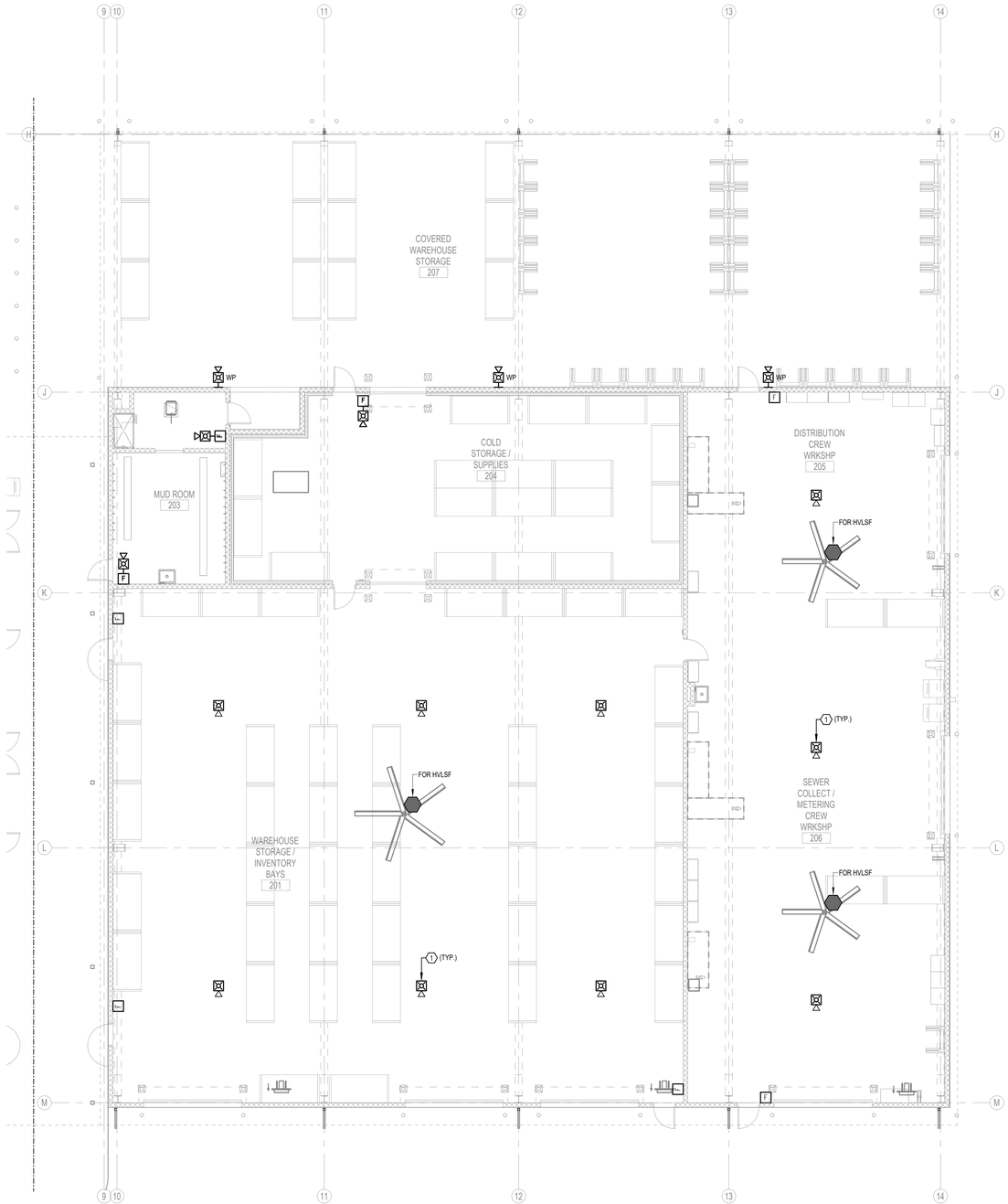
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FIRE ALARM PLAN - ADMINISTRATION

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CODED NOTES:

1. MOUNT DEVICE LEVEL WITH BOTTOM OF STRUCTURAL BEAMS.



KEYPLAN

1 FIRE ALARM PLAN - WAREHOUSE

1/8" = 1'-0"

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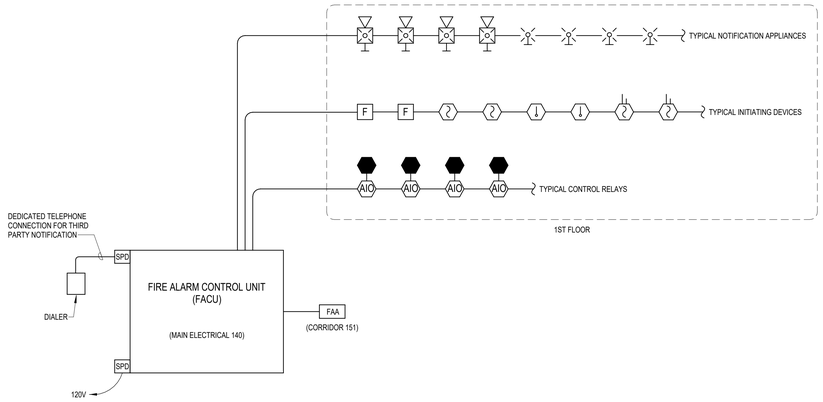
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FIRE ALARM PLAN - WAREHOUSE

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1 FIRE ALARM RISER DIAGRAM
N.T.S.

Fire Alarm Input / Output Matrix

	System Inputs	FACU Alarm Reverse	FACU Alarm Light	FACU Supervisory Reverse	FACU Supervisory Light	FACU Trouble Reverse	FACU Trouble Light	Notification Horn	Notification Strobes	Fire Sprinkler Alarm	Fire Alarm Relay	Fire Alarm Supervisory Notification	Fire Alarm Trouble Notification	Illuminate Annunciator	Air Handler Fan Shutdown Relay	Bypass All Fire Shutdown Relay	Unlock Access Controlled Door Leaves in the Direction of Egress	Remove Power To Cmbls Under Kitchen Hood	Close Smoke Dampers
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
	ALARM INPUTS																		
1	Spot Smoke or Heat Detectors	X	X					X	X	X							X		
2	Water Flow Switch	X	X					X	X	X	X				X		X		
3	Manual Fire Alarm Box	X	X					X	X	X									
4	Kitchen Hood Suppression System	X	X					X	X	X							X	X	
	SUPERVISORY INPUTS																		
5	Backflow Preventor			X	X							X							
6	Fire Protection Tamper Switch			X	X							X							
7	Duct Smoke Detectors			X	X							X			W				A
8	Emergency Generator Running			X	X							X							
9	Emergency Generator not in Automatic			X	X							X							
10	DAS is Offline			X	X							X							
	TROUBLE INPUTS																		
11	Ground Fault					X	X						X						
12	Short Circuit					X	X						X						
13	Open Circuit					X	X						X						
14	Battery Fail					X	X						X						
15	A/C Power Fail					X	X						X						
16	Misc. General System Trouble					X	X						X						
17	Emergency Generator Fail					X	X						X						
18	DAS Fault					X	X						X						
	SYSTEM CONTROL INPUTS																		
19	Notification Appliance Activate Switch	X	X			X	X	X	X	X			X						
20	Notification Appliance Bypass Switch					X	X						X	X					
21	Air Handler Shutdown Activate Switch					X	X						X		X				
22	Air Handler Shutdown Bypass Switch					X	X						X			X			
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R

X	System input causes system output function.
W	Shut down air handler supply fan for this unit only.
A	Closes dampers when detectors associated with those dampers activate.

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FIRE ALARM RISER DIAGRAM AND RESPONSE MATRIX

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10/1/2024 10:19:29 AM
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TECHNOLOGY SYSTEMS GENERAL NOTES

1. REFER TO SPECIFICATION SECTION "TECHNOLOGY GENERAL PROVISIONS" FOR MORE INFORMATION ABOUT DRAWINGS AND BID DOCUMENTS.

2. MANY SYMBOLS USED IN THIS PROJECT HAVE A TYPE ASSOCIATED WITH THEM. SEE SHEETS WITH DETAILS AND PROJECT SPECIFICATIONS FOR MORE INFORMATION ON THE DESCRIPTION OF EACH TYPE.

3. ALL CONDUIT FOR TECHNOLOGY SYSTEMS INDOOR ABOVE GRADE SHALL BE EMT AND ALL CONDUIT FOR BELOW GRADE SHALL BE PVC.

4. SEE LIFE SAFETY PLANS FOR LOCATIONS OF FIRE RATED PARTITIONS IN THIS PROJECT. ALL PENETRATIONS IN FIRE-RATED ASSEMBLIES SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 714 OF THE FLORIDA BUILDING CODE-BUILDING. SEE SPECIFICATION "RACEWAYS FOR TECHNOLOGY" FOR MORE INFORMATION.

5. WORKING CLEARANCES AROUND ELECTRICAL EQUIPMENT SHALL BE MAINTAINED IN COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE ARTICLE 110. COORDINATE EQUIPMENT INSTALLATION TO MAINTAIN REQUIRED CLEARANCES.

6. SYMBOLS USED ON THE TECHNOLOGY DRAWINGS ARE NOT THE SAME SIZE AS THE ACTUAL OBJECT BEING REPRESENTED. THEREFORE LOCATIONS OF THE SYMBOLS ON THE FLOOR PLANS ARE AN APPROXIMATION TO THE ACTUAL LOCATION OF THE DEVICE AND NEED TO BE CAREFULLY COORDINATED WITH OTHER ELEMENTS IN THE VICINITY, AS A GENERAL GUIDELINE:
   A. VOICE/DATA OUTLET FOR WORK-AREAS SHALL BE INSTALLED WITHIN 6 INCHES OF A POWER OUTLET INDICATED IN ELECTRICAL DRAWINGS.
   B. TV OUTLETS SHALL BE INSTALLED WITHIN 6 INCHES OF A POWER OUTLET SHOWN ON THE ELECTRICAL DRAWINGS.
   C. WHEN MULTIPLE TECHNOLOGY SYSTEMS OUTLETS ARE INDICATED NEXT TO EACH OTHER WITH SYMBOLS, THE SPACING BETWEEN OUTLETS SHALL BE CONSISTENT IF NO ELEVATION IS SHOWN ON THE DRAWINGS.
   D. WHEN INSTALLER IS NOT CERTAIN ABOUT SPECIFIC ADJACENCIES OF A DEVICE, THE QUESTION SHALL BE ASKED TO THE ENGINEER PRIOR TO INSTALLATION.

7. FOR EXACT LOCATION OF CEILING MOUNTED EQUIPMENT REFER TO THE ARCHITECTURAL REFLECTED CEILING PLAN. LOCATIONS OF EQUIPMENT NOT INCLUDED ON THE REFLECTED CEILING PLAN SHALL BE COORDINATED WITH THOSE ITEMS SHOWN. COORDINATION OF CEILING MOUNTED EQUIPMENT SHALL BE PRIOR TO ANY ROUGH-IN. NOTIFY ENGINEER OF ANY DISCREPANCY.

8. LOCATIONS OF FLOOR BOXES AND FLOOR PENETRATIONS SHALL NOT BE MEASURED FROM THIS SET OF DRAWINGS, INSTALLER SHALL REQUEST PRECISE LOCATIONS FROM ARCHITECT.

9. EACH VOICE/DATA RJ45 JACK SHALL BE CONNECTED TO A DEDICATED 4 PR CABLE.

10. THE RESPONSIBILITY OF RACEWAY INSTALLATION SHALL BE AS DIRECTED BY THE CONSTRUCTION MANAGER OR GENERAL CONTRACTOR, BUT ALL RACEWAYS FOR TECHNOLOGY ARE TO BE INCLUDED IN THIS CONTRACT.

11. WHEN CONDUIT RUNS ARE INDICATED ABOVE GRADE OR BELOW GRADE ON THESE DRAWINGS, NOT EVERY SINGLE JUNCTION BOX (OR COMMUNICATIONS VAULT) REQUIRED IS INDICATED ON THE DRAWINGS. TYPICALLY ONLY END POINT LOCATIONS OR SPECIFIC PASS-THROUGH LOCATIONS WHERE THE ENGINEER DESIRES A BOX ARE SHOWN ON THE DRAWINGS. SEE SPECIFICATION "RACEWAYS FOR TECHNOLOGY" FOR REQUIREMENTS THAT INDICATE ADDITIONAL JUNCTION BOXES OR COMMUNICATION VAULTS THAT SHALL BE PROVIDED UNDER THIS CONTRACT. SUCH REQUIREMENTS INCLUDE ADDITIONAL BOXES REQUIRED BECAUSE OF NUMBER OF CONDUIT BENDS OR CHANGES IN ELEVATION.

12. SOME SYMBOLS INCLUDED IN THE SYMBOL LEGEND MAY NOT BE USED IN THESE PROJECT DRAWINGS.

13. UNDER NO CONDITIONS, CONDUITS FOR LOW VOLTAGE FOR FLOOR BOXES SHALL BE DAISY CHAINED TOGETHER BETWEEN ADJACENT FLOOR BOXES. ALL CONDUITS FOR FLOOR BOXES SHALL BE HOME RUNS TO NEAREST ACCESSIBLE CEILING SPACE.

14. THIS SET OF DRAWINGS DOES NOT INDICATE ALL GROUNDING AND BONDING REQUIREMENTS FOR TECHNOLOGY SYSTEMS. REFER TO SPECIFICATION SECTION "GROUNDING FOR TELECOMMUNICATION SYSTEM" FOR ADDITIONAL REQUIREMENTS.

15. ALL CABLES FOR TECHNOLOGY SYSTEMS RUN UNDER SLAB OR BELOW GRADE IN CONDUITS STUBBING UP INSIDE THE TELECOM ROOM SHALL BE INDOOR/OUTDOOR RATED. FOR CONDUITS STUBBING UP IN OTHER LOCATIONS DIFFERENT FROM TELECOM ROOMS AND FURTHER THAN 50 FT. FROM A TELECOM ROOM, DO NOT USE INDOOR/OUTDOOR RATED CABLES.

16. GRAPHICS USED FOR EQUIPMENT IN ELEVATIONS AND CHANNELS (LINE DRAWINGS) DO NOT NECESSARILY REPRESENT THE PART NUMBER OF THE EQUIPMENT SPECIFIED. THE PART NUMBERS LISTED IN THE DRAWINGS AND SPECIFICATIONS ARE TO BE FOLLOWED FOR BASIS OF DESIGN. NOT THE GRAPHICS.

17. THE TECHNOLOGY DRAWINGS DO NOT SHOW ALL REQUIRED CONDUITS/RACEWAYS TO BE PROVIDED UNDER THIS CONTRACT. TYPICALLY CONDUIT SLEEVES SMALLER THAN 2" ARE NOT SHOWN ON THE DRAWINGS. SEE SPECIFICATIONS "RACEWAYS FOR TECHNOLOGY" AND DRAWING DETAILS FOR ADDITIONAL RACEWAY REQUIREMENTS.

18. DEFINITION OF ACRONYMS USED IN THESE DRAWINGS.
   A. NIC (N.I.C.) - NOT IN CONTRACT
   B. OFE (O.F.E.) = OWNER FURNISHED EQUIPMENT. SEE RESPONSIBILITY MATRIX FOR MORE INFORMATION.
   C. DHI (D.H.I.) = DOOR HARDWARE INSTALLER
   D. USC (U.S.C.) = UNDER SEPARATE CONTRACT.

19. ALL REQUIRED WALL PENETRATIONS, EXISTING AND NEW, SHALL MAINTAIN THE NEW WALL RATING AFTER CABLING HAS BEEN INSTALLED OR REMOVED.

20. ALL SPEAKERS MOUNTED IN A CEILING TILE SHALL BE CENTERED IN THE CEILING TILE.

SECURITY SYSTEM GENERAL NOTES

1. SYMBOLS USED TO REPRESENT DEVICES SUCH AS CCTV CAMERAS, INTERCOM STATIONS, SECURITY WORKSTATIONS, CALL STATIONS, AND EMERGENCY PHONE STATIONS REQUIRE ONE (1) DATA DROP FOR SUCH DEVICE. THIS DATA DROP IS NOT SHOWN ON THE VOICE/DATA FLOOR PLANS, BUT SHALL BE PROVIDED FOLLOWING ALL REQUIREMENTS FOR VOICE/DATA DROPS INDICATED IN THE DRAWING DETAILS AND IN THE SPECIFICATION "STRUCTURED CABLING SYSTEM".

2. ANY DATA DROPS FOR SECURITY DEVICES EXCEEDING 295 FT. OF PERMANENT LINK DISTANCE TO THE TELECOM ROOM WHERE CAMERA WILL BE WIRED TO, SHALL BE WIRED WITH FIBER OPTICS FOR HORIZONTAL CABLING AND A 2 CONDUCTOR AWG-16 CU(2P) CABLE. THE FIBER CABLE SHALL BE AS DESCRIBED IN SPECIFICATION "STRUCTURED CABLING SYSTEM". IF NO INDICATION IN SUCH SPECIFICATION, FIBER OPTIC CABLE SHALL BE A 2-STRAND OM1 CABLE WITH A SUITABLE JACKET FOR THE APPLICATION.

3. ALL DOUBLE DOORS THAT ARE SHOWN WITH TWO DOOR POSITIONS SWITCHES ARE TO RECEIVE (1) DOOR POSITION SWITCH ON EACH DOOR LEAF AND SHALL REPORT AS ONE ALARM POINT.

4. ALL CAMERAS, CARD READERS AND/OR KEYPADS DEDICATED FOR ELEVATOR FLOOR SELECTION CONTROL ARE SHOWN INSIDE THE ELEVATOR CAB ON THE LOWEST LEVEL FLOOR PLAN TO WHICH THE ELEVATOR TRAVELS.

5. LOCATION OF SURVEILLANCE CAMERAS SHALL BE CLOSELY COORDINATED WITH OTHER TRADES TO AVOID OBSTRUCTIONS IN THE FIELD OF VIEW. IT IS NOT REQUIRED FOR CAMERAS TO BE MOUNTED IN CENTER OF A CEILING TILE (OR CENTER OF A HALLWAY) IF THAT LOCATION CAUSES AN OBSTRUCTION IN THE FIELD OF VIEW OF THE CAMERA. ALL CAMERAS ARE TO BE INSTALLED AS TO MINIMIZE THE OBSTRUCTIONS IN THE FIELD OF VIEW WITHIN A 4' RADIUS OF THE SPECIFIED LOCATION.

6. SURVEILLANCE CAMERAS INDICATED IN THE CORNER OF A ROOM SHALL BE INSTALLED AS CLOSE AS PHYSICALLY POSSIBLE TO THE CORNER OF THE ROOM TO GAIN THE BEST FIELD OF VIEW FOR THAT CAMERA.

7. EACH ACCESS CONTROLLED DOOR IN THE PROJECT HAS A DOOR IDENTIFIER SYMBOL THAT ASSOCIATES THE DOOR TO A CORRESPONDING ROUGH-IN DETAIL IN THE DRAWINGS AND A SPECIFIC FUNCTIONALITY OF THE DOOR IN THE SECURITY SPECIFICATIONS.

DISTRIBUTED ANTENNA SYSTEM (DAS) GENERAL NOTES

1. DISTRIBUTED ANTENNA SYSTEMS (DAS) SHALL BE A DELEGATED DESIGN AND INSTALLATION OF A PUBLIC SAFETY SYSTEMS BOOSTING THE LOCAL FIRST RESPONDERS FREQUENCY SIGNALS WHERE THEY ARE DEFICIENT IN THE BUILDING. THIS SHALL INCLUDE ALL COMMISSIONING AND TESTING OF SYSTEM IN ACCORDANCE WITH THESE PLANS AND THE APPLICABLE SPECIFICATION SECTIONS. SYSTEM SHALL SUPPORT FREQUENCIES REQUIRED FREQUENCIES PROVIDED BY THE AHJ.

2. DAS SYSTEMS SHALL MEET NFPA 1221 REQUIREMENTS, AS WELL AS LOCAL/STATE/NATIONAL CODES, INCLUDING LATEST EDITION OF THE FLORIDA BUILDING CODE, ADMINISTRATIVE CODE & STATUTES.

3. DAS SYSTEM ALARMS SHALL REPORT TO THE FIRE ALARM CONTROL PANEL AND BE PROVIDED WITH A DAS DEDICATED ANNUNCIATOR PANEL LOCATED AT A MONITORED LOCATION.

4. DAS SYSTEM VERTICAL RISER SHALL BE DESIGNED TO A LEVEL 2 SURVIVABILITY PATHWAY FOR CABLE AND ALL ROOMS OR SHAFTS CONTAINING DAS EQUIPMENT SHALL BE 2-HOUR RATED. ALL HORIZONTAL DAS CABLING LOCATED OUTSIDE OF THE 2-HOUR RATED CHASE/ROOMS SHALL BE IN METAL RACEWAY (MINIMUM IMC) WITH A MINIMUM LEVEL 1 SURVIVABILITY. ALL DAS RACEWAYS SHALL HAVE A MINIMUM BEND RADIUS OF 12-INCHES. ALL DAS RELATED PULLBOXES SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR, WETHER INDICATED ON THE PLANS OR NOT, IN ORDER TO COMPLY WITH PULLING TENSION AND BEND RADIUS REQUIREMENTS ON CABLES, PER THE MANUFACTURER.

5. RADIO EQUIPMENT SHALL BE FCC COMPLIANT. REFER TO RELATED SPECIFICATIONS FOR ADDITIONAL INFORMATION OR REQUIREMENTS.

6. EXTERIOR ANTENNAS SHALL BE HIGH GAIN, VERTICALLY POLARIZED AND PERFORM IN THE AHJ REQUIRED OPERATING FREQUENCIES AS INDICATED ABOVE. REFER TO RELATED SPECIFICATIONS FOR ADDITIONAL INFORMATION OR REQUIREMENTS.

7. THE CONTRACTOR'S BID PRICE SHALL INCLUDE THE FOLLOWING:
   A. AN INITIAL 1ST RESPONDER RADIO COVERAGE SURVEY OF BUILDING, AFTER MAJORITY OF WALLS AND SYSTEMS ARE INSTALLED, SURVEY SHALL BE SUBMITTED TO AHJ FOR REVIEW AND APPROVAL.
   B. IF AHJ DEEMS A BOOSTER SYSTEM IS REQUIRED FOR BUILDING, THE CONTRACTOR SHALL PROVIDE A DELEGATED DESIGN OF THE DAS IN ACCORDANCE WITH THESE DRAWINGS AND SPECIFICATION SECTION 280537.

OWNER PREFERENCES GENERAL NOTES

1. SOUTH VEHICLE GATE OPERATOR SHALL HAVE SPECIAL PROGRAMMING FOR OPERATION. CONTRACTOR SHALL ALSO PROVIDE A QUANTITY OF REMOTE GATE OPENERS TO OWNER FOR USE TO OPEN VEHICLE GATE WITHOUT ACCESS CARDS. SEE SHEET T-002 FOR ADDITIONAL INFORMATION.

2. VIDEO SURVEILLANCE SYSTEM (VSS-CCTV) SHALL BE GENETEC SOFTWARE (MATCHING THE CITY'S EXISTING SYSTEM) WITH AXIS CAMERAS. VSS SHALL BE CFCI. NO EQUALS WILL BE ACCEPTED FOR THE VSS IN ORDER TO MAINTAIN CONSISTENCY WITH THE CITY'S CURRENT VSS OPERATIONS.

3. ACCESS CONTROL SYSTEM (ACS) SHALL BE VIA PROXIMITY CARD READERS WITH TYCO C-CURE 900 ACS SOFTWARE. ACS SHALL BE CFCI. NO EQUALS WILL BE ACCEPTED FOR THE ACS SOFTWARE IN ORDER TO MAINTAIN CONSISTENCY WITH THE CITY'S CURRENT ACS OPERATIONS.

4. WIRELESS ACCESS POINTS (WAPS) SHALL BE OFCI. CONTRACTOR SHALL PROVIDE A CABLING TO WAP LOCATIONS. CABLE SHALL BE TERMINATED ON BISCUIT-TYPE JACKS AND TESTED. (2) CAT. 6 CABLES SHALL BE PROVIDED AT ALL WAP LOCATIONS ON PLANS.

5. ALL FIBER OPTIC CABLING CONNECTOR SHALL BE UNKEYED LC-TYPE.

6. ALL CABLING ON PROJECT SHALL BE UTP CAT. 6 PLENUM RATED CABLE, U.O.N.

BASIC MATERIALS

- CONDUIT TURNED UP
- CONDUIT TURNED DOWN
- CAPPED CONDUIT
- CONDUIT STUBBED AND BUSHED INTO ACCESSIBLE CEILING CAVITY
- CONDUIT CONTINUED
- CONDUIT SLEEVES/ THROUGH WALL FITTING FIRE STOP/ SMOKE SYSTEM, REFER TO SPECIFICATION 270528 FOR REQUIREMENTS
  X= QTY OF SLEEVES
  Y= SIZE OF CONDUITS SLEEVES PENETRATING WALL ABOVE CEILING SPACE.
  Z= FS OR SS: IF FS = FIRE STOP SYSTEM, SS = SMOKE SYSTEM
  IF NO QUANTITY INDICATED USE AS MANY SLEEVES AS REQUIRED TO MATCH CROSS SECTIONAL AREA OF CABLE TRAY NEXT TO SLEEVE.
- TUBULAR RUNWAY, HUNG ABOVE CEILING OR AS NOTED
- CABLE TRAY (TYPE), HUNG ABOVE CEILING OR AS NOTED
- SURFACE MOUNTED ENCLOSED TECHNOLOGY SYSTEMS. SEE SHEETS WITH DETAILS FOR ADDITIONAL INFORMATION
- JUNCTION BOX WALL MOUNTED. SIZE PER NEC IF NOT INDICATED ON DRAWING. NEMA 1 FOR INTERIOR, NEMA 4X FOR EXTERIOR USE WITH HINGED COVER AND LOCKING COVER
- JUNCTION BOX CEILING MOUNTED. SIZE PER NEC IF NOT INDICATED ON DRAWING. NEMA 1 FOR INTERIOR, NEMA 4X FOR EXTERIOR USE WITH HINGED COVER AND LOCKING COVER
- TELECOMMUNICATIONS GROUND VAULT. SEE DETAILS AND SPECS FOR MORE INFORMATION
  X= BOX TYPE. IF NOT SHOWN, ONLY ONE TYPE IN PROJECT
- TELECOMMUNICATIONS PULLBOX. SEE DETAILS AND SPECS FOR MORE INFORMATION
  X= BOX TYPE. IF NOT SHOWN, ONLY ONE TYPE IN PROJECT
- TECHNOLOGY POLE. SEE SHEETS WITH DETAILS FOR ADDITIONAL INFORMATION

GENERAL

- NEW EQUIPMENT
- EXISTING WORK AND/OR EQUIPMENT REFERENCE, SHOWN ON MULTIPLE DRAWINGS
- DEVICE TO BE REMOVED (DEMO PLANS) UNDERFLOOR CONDUIT (NEW PLANS)
- WIRE AND/OR CONDUIT RUN CONTINUED ON REFERENCED DETAIL
- MATCH LINE REFERENCING CONTINUATION ON OTHER DRAWINGS
- DETAIL AND/OR SECTION REFERENCE
- CABLE ROUTING BOUNDARY
- FUTURE WORK

DRAWING NOTES AND DESIGNATIONS

- DRAWING KEYED NOTES
- CABLE ROUTING NOTES
- DETAIL OR SECTION REFERENCE TAG

VOICE AND DATA SYSTEM

- TELECOMMUNICATION OUTLET
  X= MOUNTING: (E= EXISTING, F= FLUSH, S= SURFACE, M= MODULAR FURNITURE ADAPTER, P= POLE, L= FLOOR, R= RACEWAY)
  N= NUMBER OF DATA CABLES IN THE FACEPLATE
  Y= NUMBER OF COAX CABLES IN THE FACEPLATE
  Z= NUMBER OF FIBER OPTIC STRANDS IN THE FACEPLATE
  U= USER(IF APPLICABLE)
  +H= INSTALLATION HEIGHT IN INCHES AT CENTER OF OUTLET, COORDINATE WITH ELECTRICAL. IF NOT SHOWN INSTALL AT TYPICAL RECEPTACLE HEIGHT.
  W= WALL TELEPHONE FACEPLATE WITH SUPPORT STUDS, INSTALLED AT 48" AFF AT CENTER OF OUTLET AND 12" FROM EDGE OF WALL.
  WP=WEATHERPROOF
  EXAMPLE: F2 = TWO DATA JACKS IN A SINGLE FACEPLATE, FLUSH MOUNTED
- OUTLET FOR MECHANICAL/ ELECTRICAL/ FIRE ALARM/ ELEVATOR/ STAR CONNECTION
  N: AS DESCRIBED FOR TELECOMMUNICATIONS OUTLET
  U: AS DESCRIBED FOR TELECOMMUNICATIONS OUTLET
  +H= IF NOT SHOWN, COORDINATE EXACT LOCATION WITH DEVICE
- CEILING MOUNTED INFORMATION OUTLET, MOUNTED ON FINISHED CEILING
  XN: AS DESCRIBED FOR TELECOMMUNICATIONS OUTLET
  U: AS DESCRIBED FOR TELECOMMUNICATIONS OUTLET
- OUTLET FOR WIRELESS ACCESS POINT, WALL MOUNTED
  XN: AS DESCRIBED FOR TELECOMMUNICATIONS OUTLET
  U: AS DESCRIBED FOR TELECOMMUNICATIONS OUTLET
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF OUTLET, IF NOT SHOWN, INSTALL AT 8'-0" AFF
- OUTLET FOR WIRELESS ACCESS POINT, MOUNTED ON FINISHED CEILING
  XN: AS DESCRIBED FOR TELECOMMUNICATIONS OUTLET
  U: AS DESCRIBED FOR TELECOMMUNICATIONS OUTLET
- FLOOR BOX FOR TECHNOLOGY SYSTEMS AND POWER OUTLETS. REFER TO POKE-THRU/ FLOORBOX SCHEDULE FOR MORE INFORMATION
  F= FLOOR CONDITION: (C= CONCRETE TYPE, G= GRADE, R= RAISED FLOOR, W= WOOD)
  Y= DENOTES # OF GANGS (1,2,3....)
  Z= DENOTES PLATE TYPE (A,B,C....), A= NO AUDIO/VISUAL
  LN= AS DESCRIBED FOR TELECOMMUNICATIONS OUTLET
  U: AS DESCRIBED FOR TELECOMMUNICATIONS OUTLET
- POKE-THRU FOR TECHNOLOGY SYSTEMS AND POWER OUTLETS. REFER TO POKE-THRU & FLOOR BOX SCHEDULE FOR MORE INFORMATION
  Y= DENOTES POKE-THRU SIZE (4=4", 6=6" 8=8".....)
  Z= DENOTES PLATE TYPE (A,B,C....), A= NO AUDIO/VISUAL
  LN= AS DESCRIBED FOR TELECOMMUNICATIONS OUTLET
  U: AS DESCRIBED FOR TELECOMMUNICATIONS OUTLET
- WALL MOUNTED FURNITURE FEED USED TO FEED CABLES TO MODULAR FURNITURE OR CABLES
- FLOOR BOX USED TO FEED CABLES TO MODULAR FURNITURE, REFER TO DETAIL SHEET
  X= TYPE, IF NOT SHOWN, ONLY ONE TYPE IN PROJECT
- POKE-THRU USED TO FEED CABLES TO MODULAR FURNITURE, REFER TO DETAIL SHEET
  X= TYPE, IF NOT SHOWN, ONLY ONE TYPE IN PROJECT
- AV BACKBOX, INSTALLED BEHIND DISPLAY/ CREDENZA RACK, COORDINATE BACKBOX PRIOR TO ROUGH-IN. REFER TO DETAIL & SCHEDULE FOR MORE INFORMATION
  G= DENOTES # OF GANGS
  XNY= AS DESCRIBED FOR TELECOMMUNICATIONS OUTLET
  U: AS DESCRIBED FOR TELECOMMUNICATIONS OUTLET
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF DEVICE
- RECESS IN-WALL STORAGE BOX, INSTALLED BEHIND DISPLAY, COORDINATE BACKBOX PRIOR TO ROUGH-IN. REFER TO DETAIL & SCHEDULE FOR MORE INFORMATION
  G= DENOTES # OF GANGS
  XNY= AS DESCRIBED FOR TELECOMMUNICATIONS OUTLET
  U: AS DESCRIBED FOR TELECOMMUNICATIONS OUTLET
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF DEVICE
- POWER POLE FOR COMBINED USE - TECHNOLOGY SYSTEMS AND POWER.
  X= TYPE, IF NOT SHOWN, ONLY ONE TYPE IN PROJECT
- FIBER OPTICS ROUTING TAG FOR BACKBONE CABLING
  N= DENOTES CONNECTION TYPE (P=PRIMARY, S=SECONDARY)
  XX= DENOTES FIBER STAND QUANTITY
  Z= DENOTES RUN NUMBER
  REFER TO FIBER OPTICS RISER FOR MORE INFORMATION.

COVERAGE FOR IDF

COVERAGE OF EACH TELECOM ROOM. THE SHADED REGIONS REPRESENT THE MAXIMUM DISTANCE LOW VOLTAGE CABLES CAN BE RUN FROM EACH IDF.



COVERAGE FOR IT ROOM 1



COVERAGE FOR IT ROOM 2

BROADBAND TELEVISION SYSTEM

- RX ANTENNA
- TX ANTENNA
- TX/RX ANTENNA
- 2 WAY SPLITTER
- 3 WAY SPLITTER
- 4 WAY SPLITTER
- 8 WAY SPLITTER
- SATELLITE DISH
- CATV AMPLIFIER
  I= INPUT LEG
  O= OUTPUT LEG
  T= TEST PORT
  X= AMPLIFIER TYPE - SP: SERVICE PROVIDER, H: HEADEND AMPLIFIER, D: DISTRBUTION AMPLIFIER
- DISTRIBUTION TAP
  I= INPUT LEG
  O= OUTPUT LEG
  T= TAP LEGS, QTY AS INDICATED IN RISER
- DIRECTIONAL COUPLER
  I= INPUT LEG
  O= OUTPUT LEG
  T= TAP LEGS, QTY AS INDICATED IN RISER
- CATV TAP DEFINITION TAG
  X= NUMBER OF TAP LEGS
  Y= TAP VALUE IN dB
- CATV EQUALIZER
  X= EQUALIZING VALUE IN dB
  I= INPUT LEG
  O= OUTPUT LEG
- TERMINATOR
- SURGE SUPRESSOR AT BUILDING ENTRY POINT
- TELEVISION OUTLET, COORDINATE ROUGH-IN WITH TV MOUNT INSTALLER, CEILING MOUNTED
  X= DENOTES TYPE OF OUTLET, SEE DETAIL FOR MORE INFORMATION
  U=USER(IF APPLICABLE). THIS ONLY APPLIES TO DATA AND FIBER NOT COAX
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF OUTLET, IF NOT SHOWN, INSTALL AT 7'-0" AFF
- TELEVISION OUTLET, COORDINATE ROUGH-IN WITH TV MOUNT INSTALLER, WALL MOUNTED
  X= DENOTES TYPE OF OUTLET, SEE DETAIL FOR MORE INFORMATION
  U=USER(IF APPLICABLE). THIS ONLY APPLIES TO DATA AND FIBER NOT COAX
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF OUTLET, IF NOT SHOWN, INSTALL AT 7'-0" AFF

AUDIO VISUAL EQUIPMENT

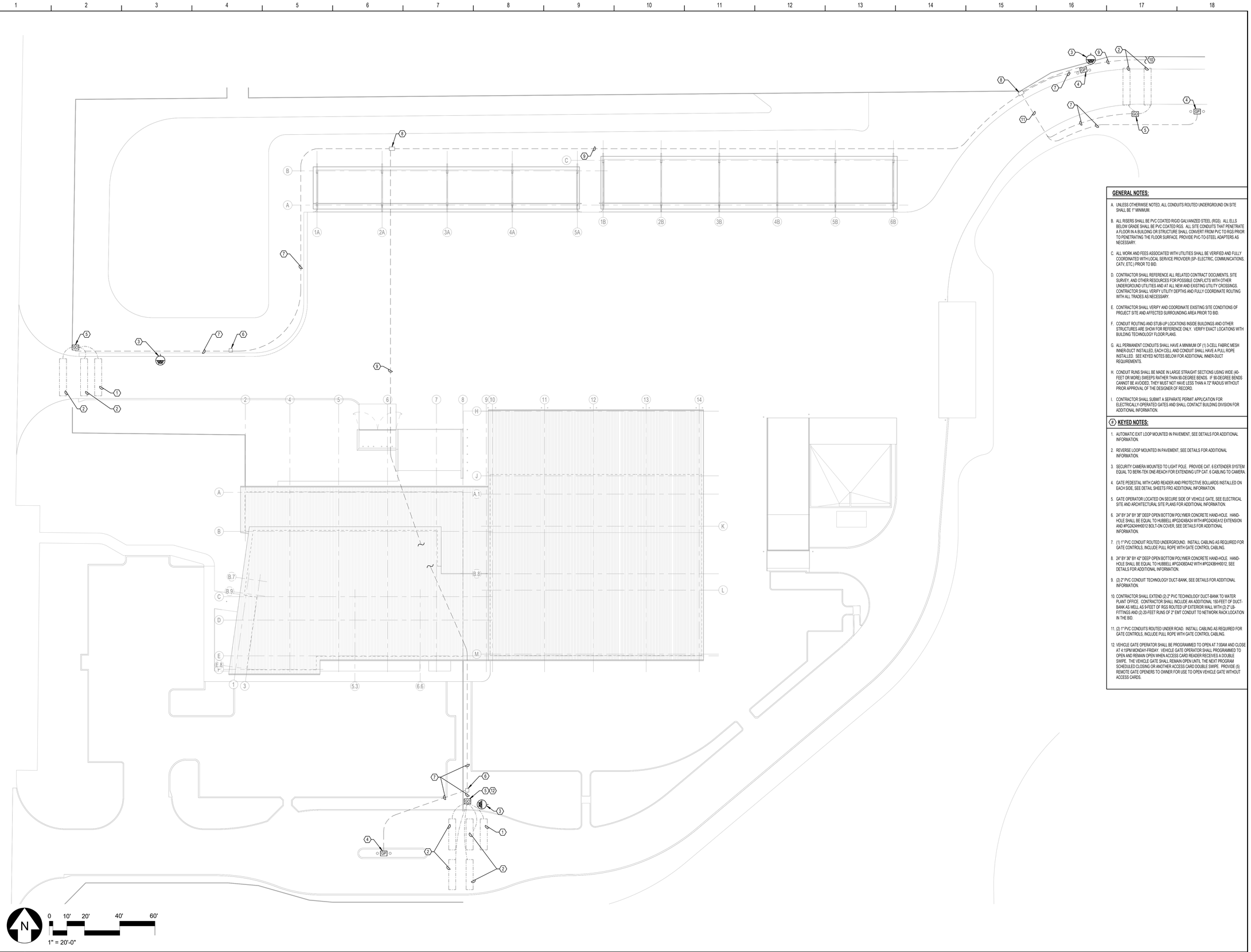
- CEILING MOUNTED SPEAKER
  X= SPEAKER TYPE
  Y= SPEAKER ZONE
  Z= DENOTES SPEAKER # IN ZONE
  W= DENOTES SPEAKER WATTAGE TAP
  NO ZONE INDICATES LOCAL ZONE FOR A/V SYSTEM IN ROOM
- WALL MOUNTED SPEAKER
  X= SPEAKER TYPE
  Y= SPEAKER ZONE
  Z= DENOTES SPEAKER # IN ZONE
  W= DENOTES SPEAKER WATTAGE TAP
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF DEVICE
  NO ZONE INDICATES LOCAL ZONE FOR A/V SYSTEM IN ROOM
- VOLUME CONTROL, WALL MOUNTED
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF OUTLET, IF NOT SHOWN, INSTALL AT 4'-0" AFF
- FLIP TOP DEVICE MOUNTED ON TABLE
- SENS MICROPHONE FOR AMBIENT NOISE, WALL MOUNTED
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF OUTLET, IF NOT SHOWN, INSTALL AT 8'-0" AFF
- SENS MICROPHONE FOR AMBIENT NOISE, CEILING MOUNTED
- MICROPHONE, DESK MOUNTED
  X= TYPE, IF NOT SHOWN, ONLY ONE TYPE IN PROJECT
- MICROPHONE, WALL MOUNTED
  X= DENOTES TYPE OF OUTLET, IF NOT SHOWN, ONLY ONE TYPE
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF OUTLET
- MICROPHONE, CEILING MOUNTED
  X= TYPE, IF NOT SHOWN, ONLY ONE TYPE IN PROJECT
- WIRELESS ANTENNA FOR WIRELESS MICRPHONE, WALL MOUNTED
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF OUTLET, IF NOT SHOWN, INSTALL AT 8'-0" AFF
- TOUCH SCREEN FOR AUDIO/VIDEO CONTROL, DESK MOUNTED
  X= DENOTES TYPE OF OUTLET, SEE RISER FOR MORE INFO, IF NOT SHOWN, ONLY ONE TYPE
- TOUCH SCREEN FOR AUDIO/VIDEO CONTROL, WALL MOUNTED. INCLUDES BACK BOX
  X= DENOTES TYPE OF OUTLET, SEE RISER FOR MORE INFO, IF NOT SHOWN, ONLY ONE TYPE
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF OUTLET, IF NOT SHOWN, INSTALL AT 4'-0" AFF
- CAMERA FOR AV SYSTEM, WALL MOUNTED
  X= DENOTES TYPE OF OUTLET, SEE RISER FOR MORE INFO, IF NOT SHOWN, ONLY ONE TYPE
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF OUTLET
- CAMERA FOR AV SYSTEM, CEILING MOUNTED
  X= DENOTES TYPE OF OUTLET, SEE RISER FOR MORE INFO, IF NOT SHOWN, ONLY ONE TYPE
- ASSISTED LISTENING TRANSMITTER, WALL MOUNTED
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF OUTLET
- ROOM SCHEDULING PANEL, WALL MOUNTED, INCLUDES BACK BOX
  X= DENOTES TYPE OF OUTLET, SEE RISER FOR MORE INFO, IF NOT SHOWN, ONLY ONE TYPE
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF OUTLET, IF NOT SHOWN, INSTALL AT 4'-0" AFF
- OCCUPANCY SENSOR, CEILING MOUNTED
  X= TYPE, C= CRESNET, E= ETHERNET
- AUDIO VISUAL DISPLAY
  TT= DISPLAY TYPE WITH MOUNT
  XX= SCREEN SIZE
  YY= HEIGHT TO CENTER OF SCREEN
- INTERACTIVE WHITEBOARD
  TT= DISPLAY TYPE WITH MOUNT
  XX= SCREEN SIZE
  YY= HEIGHT TO CENTER OF SCREEN
- OVERHEAD PROJECTOR WITH MOUNT
  X= TYPE
  Y= LENS THROW RATIO
- PULLDOWN PROJECTION SCREEN
  X= DIAGONAL DIMENSION IN INCHES
- MOTORIZED PROJECTION SCREEN
  X= DIAGONAL DIMENSION IN INCHES
- WALL SWITCH FOR MOTORIZED SCREEN
- PODIUM FOR AV EQUIPMENT, REFER TO DETAIL SHEETS
  X= DENOTES TYPE OF OUTLET, IF NOT SHOWN, ONLY ONE TYPE IN PROJECT
- AV PLATE OUTLET, REFER TO DETAIL SHEETS
  X= DENOTES TYPE OF OUTLET, SEE DETAIL FOR MORE INFO, IF NOT SHOWN, ONLY ONE TYPE
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF OUTLET, IF NOT SHOWN, INSTALL AT 1'-6" AFF
- SOUND BAR WITH CAMERA, WALL MOUNTED
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF OUTLET, IF NOT SHOWN, INSTALL AT 8'-0" AFF

DISTRIBUTED ANTENNA SYSTEMS

- DAS ANTENNA, WALL MOUNTED
  X= ANTENNA TYPE
  Y= ANTENNA NUMBER
  Z= SPLITTER NUMBER THE ANTENNA IS ASSOCIATED WITH
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF DEVICE
- DAS ANTENNA, CEILING MOUNTED
  X= ANTENNA TYPE
  Y= ANTENNA NUMBER
  Z= SPLITTER NUMBER THE ANTENNA IS ASSOCIATED WITH
- DAS SPLITTER
  X= SPLITTER NUMBER
- ROOF ANTENNA, WALL MOUNTED
- FIBER BDA
  X= FIBER BDA NUMBER
- DAS REPEATER
- DAS FIRE RATED ACCESS PANEL SYSTEM. REFER TO DAS ACCESS PANEL CHASE ELEVATION ON TECHONLOGY ELEVATION SHEET FOR MORE INFORMATION

ELECTRONIC SECURITY SYSTEM

- CARD READER, WALL MOUNTED
- CARD READER WITH INTEGRATED KEYPAD, WALL MOUNTED
- BIOMETRIC ACCESS CONTROL DEVICE, WALL MOUNTED
- KEYPAD, WALL MOUNTED
- WIRED IP LOCK, DOOR MOUNTED
- WIRELESS MORTISE LOCK, DOOR MOUNTED
- WIRELESS CYLINDRICAL LOCK, DOOR MOUNTED
- INTRUSION ALARM KEYPAD
- ELECTRIC MORTISE LOCK OR ELECTRIC TRIM
- DELAYED EGRESS LATCH LOCK
- DELAYED EGRESS MAG LOCK
- ELECTRIC CYLINDRICAL LOCK
- ELECTRIC LATCH RETRACTION LOCK
- ELECTROMAGNETIC LOCK
- ELECTRONIC DETENTION LOCK
- ELECTRIC DOOR STRIKE
- ELECTRIC DOOR OPERATOR (ACTUATOR ARM)
- DOOR POSITION SWITCH
- BALANCED MAGNETIC SWITCH
- PIM MODULE FOR WIRELESS LOCKS, WALL MOUNTED
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF OUTLET, IF NOT SHOWN, INSTALL AT 7'-0" AFF
- ALARM, BLUE LIGHT, WALL MOUNTED
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF OUTLET, IF NOT SHOWN, INSTALL AT 7'-0" AFF
- LOCAL ALARM - HORN/STROBE, WALL MOUNTED
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF OUTLET, IF NOT SHOWN, INSTALL AT 7'-0" AFF
- SIREN ALARM FOR INTRUSION DETECTION, WALL MOUNTED
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF OUTLET, IF NOT SHOWN, INSTALL AT 7'-0" AFF
- ASSISTANCE STATION, WALL MOUNTED
  X= TYPE, IF NOT SHOWN, ONLY ONE TYPE IN PROJECT, REFER TO SPECIFICATION FOR TYPE
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF OUTLET, IF NOT SHOWN, INSTALL AT 4'-0" AFF
- ASSISTANCE STATION (BLUE LIGHT), TOWER STATION
  X= TYPE, IF NOT SHOWN, ONLY ONE TYPE IN PROJECT, REFER TO SPECIFICATION FOR TYPE
- INTERCOM SUBSTATION (DOOR STATION), WALL MOUNTED
  X= TYPE, IF NOT SHOWN, ONLY ONE TYPE IN PROJECT, REFER TO RISER FOR TYPE
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF OUTLET, IF NOT SHOWN, INSTALL AT 4'-0" AFF
- INTERCOM MASTER STATION, DESK MOUNTED
  X= TYPE, IF NOT SHOWN, ONLY ONE TYPE IN PROJECT, REFER TO RISER FOR TYPE
- INTERCOM MASTER STATION, WAII MOUNTED
  X= TYPE, IF NOT SHOWN, ONLY ONE TYPE IN PROJECT, REFER TO RISER FOR TYPE
  +H= MOUNTING HEIGHT IN INCHES AT CENTER OF OUTLET, IF NOT SHOWN, INSTALL AT 4'-0" AFF
- CAL



0 10' 20' 40' 60'

1" = 20'-0"

GENERAL NOTES:

A. UNLESS OTHERWISE NOTED, ALL CONDUITS ROUTED UNDERGROUND ON SITE SHALL BE 1" MINIMUM.

B. ALL RISERS SHALL BE PVC COATED RIGID GALVANIZED STEEL (RGS). ALL ELLS BELOW GRADE SHALL BE PVC COATED RGS. ALL SITE CONDUITS THAT PENETRATE A FLOOR IN A BUILDING OR STRUCTURE SHALL CONVERT FROM PVC TO RGS PRIOR TO PENETRATING THE FLOOR SURFACE. PROVIDE PVC-TO-STEEL ADAPTERS AS NECESSARY.

C. ALL WORK AND FEES ASSOCIATED WITH UTILITIES SHALL BE VERIFIED AND FULLY COORDINATED WITH LOCAL SERVICE PROVIDER (SP- ELECTRIC, COMMUNICATIONS, CATV, ETC.) PRIOR TO BID.

D. CONTRACTOR SHALL REFERENCE ALL RELATED CONTRACT DOCUMENTS, SITE SURVEY, AND OTHER RESOURCES FOR POSSIBLE CONFLICTS WITH OTHER UNDERGROUND UTILITIES AND AT ALL NEW AND EXISTING UTILITY CROSSINGS. CONTRACTOR SHALL VERIFY UTILITY DEPTHS AND FULLY COORDINATE ROUTING WITH ALL TRADES AS NECESSARY.

E. CONTRACTOR SHALL VERIFY AND COORDINATE EXISTING SITE CONDITIONS OF PROJECT SITE AND AFFECTED SURROUNDING AREA PRIOR TO BID.

F. CONDUIT ROUTING AND STUB-UP LOCATIONS INSIDE BUILDINGS AND OTHER STRUCTURES ARE SHOW FOR REFERENCE ONLY. VERIFY EXACT LOCATIONS WITH BUILDING TECHNOLOGY FLOOR PLANS.

G. ALL PERMANENT CONDUITS SHALL HAVE A MINIMUM OF (1) 3-CELL FABRIC MESH INNER-DUCT INSTALLED, EACH CELL AND CONDUIT SHALL HAVE A PULL ROPE INSTALLED. SEE KEYED NOTES BELOW FOR ADDITIONAL INNER-DUCT REQUIREMENTS.

H. CONDUIT RUNS SHALL BE MADE IN LARGE STRAIGHT SECTIONS USING WIDE (40-FEET OR MORE) SWEEPS RATHER THAN 90-DEGREE BENDS. IF 90-DEGREE BENDS CANNOT BE AVOIDED, THEY MUST NOT HAVE LESS THAN A 72" RADIUS WITHOUT PRIOR APPROVAL OF THE DESIGNER OF RECORD.

I. CONTRACTOR SHALL SUBMIT A SEPARATE PERMIT APPLICATION FOR ELECTRICALLY-OPERATED GATES AND SHALL CONTACT BUILDING DIVISION FOR ADDITIONAL INFORMATION.

(#) KEYED NOTES:

1. AUTOMATIC EXIT LOOP MOUNTED IN PAVEMENT, SEE DETAILS FOR ADDITIONAL INFORMATION.
2. REVERSE LOOP MOUNTED IN PAVEMENT, SEE DETAILS FOR ADDITIONAL INFORMATION.
3. SECURITY CAMERA MOUNTED TO LIGHT POLE. PROVIDE CAT. 6 EXTENDER SYSTEM EQUAL TO BERK-TEK ONE-REACH FOR EXTENDING UTP CAT. 6 CABLING TO CAMERA.
4. GATE PEDESTAL WITH CARD READER AND PROTECTIVE BOLLARDS INSTALLED ON EACH SIDE, SEE DETAIL SHEETS FRO ADDITIONAL INFORMATION.
5. GATE OPERATOR LOCATED ON SECURE SIDE OF VEHICLE GATE, SEE ELECTRICAL SITE AND ARCHITECTURAL SITE PLANS FOR ADDITIONAL INFORMATION.
6. 24" BY 24" BY 39" DEEP OPEN BOTTOM POLYMER CONCRETE HAND-HOLE. HAND-HOLE SHALL BE EQUAL TO HUBBELL #PG2424BA39 WITH #PG2424EA12 EXTENSION AND #PG2424HH0012 BOLT-ON COVER, SEE DETAILS FOR ADDITIONAL INFORMATION.
7. (1) 1" PVC CONDUIT ROUTED UNDERGROUND. INSTALL CABLING AS REQUIRED FOR GATE CONTROLS, INCLUDE PULL ROPE WITH GATE CONTROL CABLING.
8. 24" BY 36" BY 42" DEEP OPEN BOTTOM POLYMER CONCRETE HAND-HOLE. HAND-HOLE SHALL BE EQUAL TO HUBBELL #PG2436DA42 WITH #PG2436HH0012, SEE DETAILS FOR ADDITIONAL INFORMATION.
9. (2) 2" PVC CONDUIT TECHNOLOGY DUCT-BANK, SEE DETAILS FOR ADDITIONAL INFORMATION.
10. CONTRACTOR SHALL EXTEND (2) 2" PVC TECHNOLOGY DUCT-BANK TO WATER PLANT OFFICE. CONTRACTOR SHALL INCLUDE AN ADDITIONAL 150-FEET OF DUCT-BANK AS WELL AS 9-FEET OF RGS ROUTED UP EXTERIOR WALL WITH (2) 2" LB-FITTINGS AND (2) 20-FEET RUNS OF 2" EMT CONDUIT TO NETWORK RACK LOCATION IN THE BID.
11. (2) 1" PVC CONDUITS ROUTED UNDER ROAD. INSTALL CABLING AS REQUIRED FOR GATE CONTROLS, INCLUDE PULL ROPE WITH GATE CONTROL CABLING.
12. VEHICLE GATE OPERATOR SHALL BE PROGRAMMED TO OPEN AT 7:00AM AND CLOSE AT 4:15PM MONDAY-FRIDAY. VEHICLE GATE OPERATOR SHALL PROGRAMMED TO OPEN AND REMAIN OPEN WHEN ACCESS CARD READER RECEIVES A DOUBLE SWIPE. THE VEHICLE GATE SHALL REMAIN OPEN UNTIL THE NEXT PROGRAM SCHEDULED CLOSING OR ANOTHER ACCESS CARD DOUBLE SWIPE. PROVIDE (5) REMOTE GATE OPENERS TO OWNER FOR USE TO OPEN VEHICLE GATE WITHOUT ACCESS CARDS.

A1 TECHNOLOGY SITE PLAN

1" = 20'-0"

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CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

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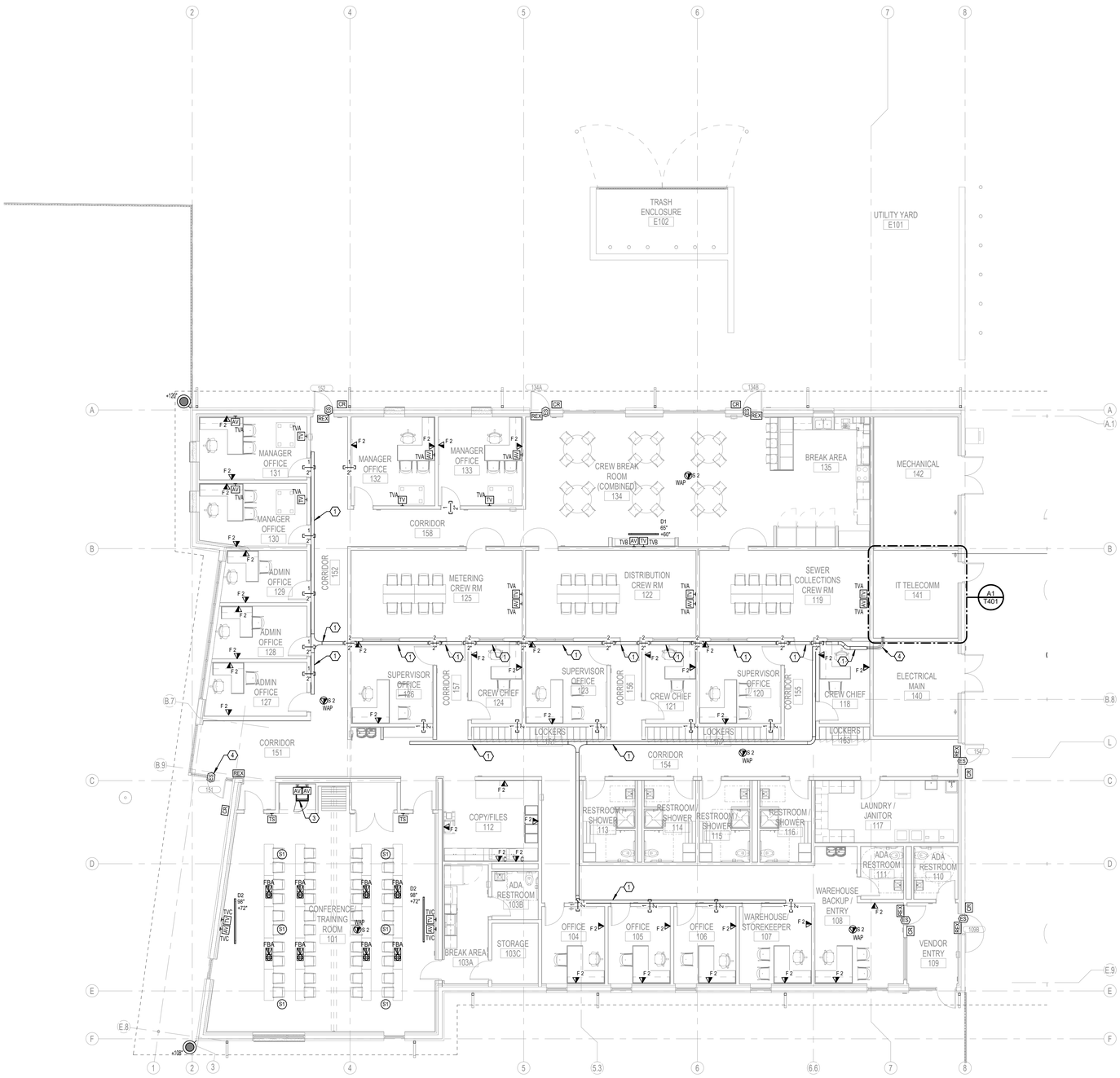
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TECHNOLOGY SITE PLAN

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GENERAL NOTES:

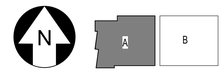
A. CONDUIT AND OUTLET BOXES LOCATED IN RATED WALLS OR CEILINGS SHALL BE CONSTRUCTED OF NON-COMBUSTIBLE MATERIALS.

B. A GROUND CONDUCTOR, SIZED PER ANSI/TIA 607-B, IS REQUIRED TO BE INSTALLED IN EACH CABLE TRAY, OR CABLE TRAYS SHALL BE CONNECTED SUCH THAT THEY ARE ELECTRICALLY CONTINUOUS THROUGHOUT THE BUILDING.

C. ALL CATEGORY (CAT.) CABLING SHALL BE CONTINUOUS FROM OUTLET IN BUILDING TO OUTLET AT THE ASSOCIATED PATCH PANEL LOCATED IN THE IT SPACE RACK/CABINET AND SHALL BE NO LONGER THAN 90 METERS (295-FEET). CABLING SHALL BE LOCATED IN DEDICATED TECHNOLOGY RACEWAY SYSTEM (CONDUIT/J-HOOKS/CABLE TRAY) FROM OUTLET TO OUTLET. CABLING SHALL NOT BE ROUTED IN FREE AIR OR ON ANY OTHER BUILDING SYSTEM.

KEYED NOTES:

1. PROVIDE 8" WIDE BY 2" HIGH WIRE MESH BASKET-STYLE TELECOMMUNICATIONS CABLE TRAY ROUTED SUCH THAT THE BOTTOM OF THE CABLE TRAY IS A MIMIMUM OF 8" ABOVE THE TOP OF THE LAY-IN CEILING SUPPORTS AND THE TOP OF THE CABLE TRAY HAS A MINIMUM OF 12" CLEARANCE FOR THE FUTURE ADDS-MOVES-CHANGES.
2. ACCESS CONTROL CABLING SHALL BE ROUTED INSIDE MULLION SYSTEM TO DOOR FRAME TO CONCEAL CABLING. NO EXPOSED CABLING OR EXPOSED CONDUIT WILL BE ALLOWED FOR ACCESS CONTROL CABLING.
3. PROVIDE 35" HIGH MOBILE A-V CABINET EQUAL TO MIDDLE ATLANTIC #RFR-1226B-BR. PROVIDE INTERNAL FAN EQUAL TO #RFR-CABCOOL50.
4. PROVIDE (2) 2" CONDUITS FOR VOICE/DATA CABLE ROUTING. PROVIDE NON-METALLIC BUSHING ON ENDS.



KEYPLAN

A1 TECHNOLOGY PLAN - ADMINISTRATION

1/8" = 1'-0"

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1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

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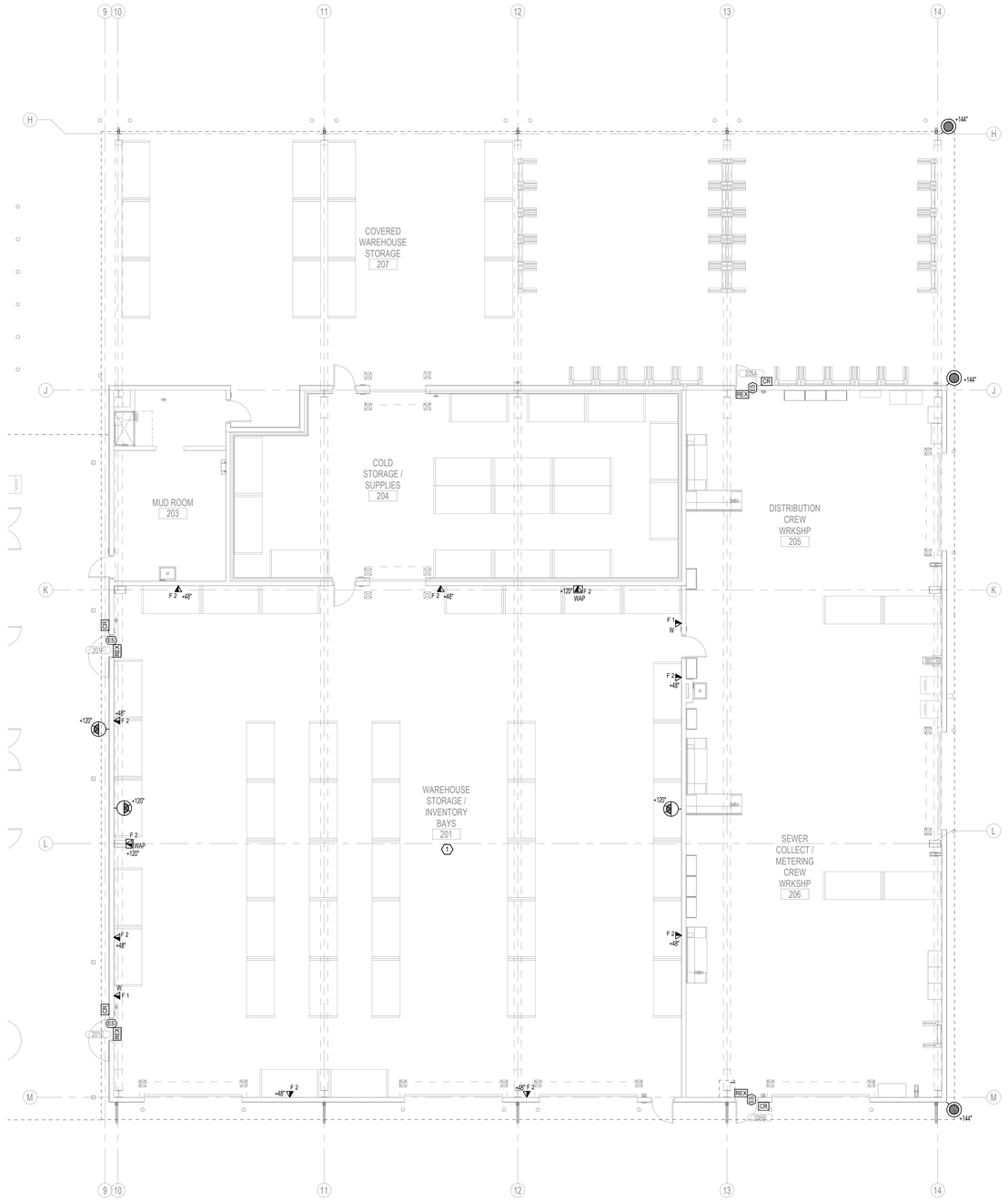
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TECHNOLOGY FLOOR PLAN - ADMINISTRATION

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GENERAL NOTES:

A. CONDUIT AND OUTLET BOXES LOCATED IN RATED WALLS OR CEILINGS SHALL BE CONSTRUCTED OF NON-COMBUSTIBLE MATERIALS.

B. A GROUND CONDUCTOR, SIDED PER ANSI/TIA 607-B, IS REQUIRED TO BE INSTALLED IN EACH CABLE TRAY, OR CABLE TRAYS SHALL BE CONNECTED SUCH THAT THEY ARE ELECTRICALLY CONTINUOUS THROUGHOUT THE BUILDING.

C. ALL CATEGORY (CAT.) CABLING SHALL BE CONTINUOUS FROM OUTLET IN BUILDING TO OUTLET AT THE ASSOCIATED PATCH PANEL LOCATED IN THE IT SPACE RACK/CABINET AND SHALL BE NO LONGER THAN 90-METERS (295-FEET). CABLING SHALL BE LOCATED IN DEDICATED TECHNOLOGY RACEWAY SYSTEM (CONDUIT/J-HOOKS/CABLE TRAY) FROM OUTLET TO OUTLET. CABLING SHALL NOT BE ROUTED IN FREE AIR OR ON ANY OTHER BUILDING SYSTEM.

KEYED NOTES:

1. ALL TECHNOLOGY DEVICES LOCATED IN WAREHOUSE BUILDING SHALL BE TERMINATED IN MDF 141 IN ADMINISTRATION BUILDING. ALL CABLING SHALL BE ROUTED UNDERGROUND AND SHALL INDOOR-OUTDOOR RATING CABLING.



KEYPLAN

A1 TECHNOLOGY PLAN - WAREHOUSE

1/8" = 1'-0"

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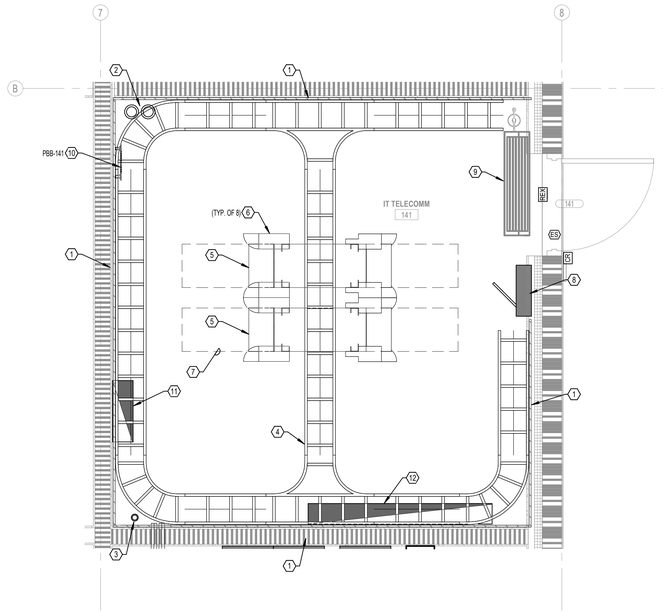
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TECHNOLOGY FLOOR PLAN - WAREHOUSE

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GENERAL NOTES:

A. CONDUIT AND OUTLET BOXES LOCATED IN RATED WALLS OR CEILINGS SHALL BE CONSTRUCTED OF NON-COMBUSTIBLE MATERIALS.

B. A GROUND CONDUCTOR, SIDED PER ANSI/TIA 607-B, IS REQUIRED TO BE INSTALLED IN EACH CABLE TRAY, OR CABLE TRAYS SHALL BE CONNECTED SUCH THAT THEY ARE ELECTRICALLY CONTINUOUS THROUGHOUT THE BUILDING.

C. ALL CATEGORY (CAT.) CABLING SHALL BE CONTINUOUS FROM OUTLET IN BUILDING TO OUTLET AT THE ASSOCIATED PATCH PANEL LOCATED IN THE IT SPACE RACK/CABINET AND SHALL BE NO LONGER THAN 90 METERS (295-FEET). CABLING SHALL BE LOCATED IN DEDICATED TECHNOLOGY RACEWAY SYSTEM (CONDUIT/J-HOOKS/CABLE TRAY) FROM OUTLET TO OUTLET, CABLING SHALL NOT BE ROUTED IN FREE AIR OR ON ANY OTHER BUILDING SYSTEM.

KEYED NOTES:

1. PROVIDE 3/4" BY 48" BY 96" A-C GRADE PLYWOOD BACKBOARD MOUNTED FROM 12" AFF TO 108" AFF ALONG THIS ENTIRE WALL. MOUNT BACKBOARD SUCH THAT "A" SIDE IS EXPOSED TO ROOM. PAINT ALL SIX (6) SIDE OF BACKBOARD WITH TWO (2) COATS OF FIRE-RESISTANT GRAY PAINT, LEAVING THE "A" STAMP EXPOSED FOR INSPECTION.
2. PROVIDE (2) 2" RGS CONDUITS STUBBED UP 4" ABOVE FINISHED FLOOR WITH NON-METALLIC BUSHINGS FOR SERVICE ENTRANCE CABLING. PROVIDE REUSABLE FIRE CAULK IN EACH CONDUIT AFTER ALL CABLES ARE INSTALLED. PROVIDE WALL MOUNTED 9" WIDE TELECOMMUNICATIONS LADDER (RUNWAY-STYLE) TUBULAR CABLE TRAY VERTICALLY INSTALLED FROM 6" AFF TO ELEVATION OF HORIZONTAL CABLE TRAY IN ROOM.
3. PROVIDE (1) 1" RGS CONDUITS STUBBED UP 4" ABOVE FINISHED FLOOR WITH NON-METALLIC BUSHINGS FOR SERVICE ENTRANCE CABLING. PROVIDE REUSABLE FIRE CAULK IN EACH CONDUIT AFTER ALL CABLES ARE INSTALLED. PROVIDE WALL MOUNTED 6" WIDE TELECOMMUNICATIONS LADDER (RUNWAY-STYLE) TUBULAR CABLE TRAY VERTICALLY INSTALLED FROM 6" AFF TO ELEVATION OF HORIZONTAL CABLE TRAY IN ROOM.
4. PROVIDE 12" WIDE TELECOMMUNICATIONS LADDER (RUNWAY-STYLE) TUBULAR CABLE TRAY ROUTED AS SHOWN AT 90° AFF.
5. PROVIDE BLACK FLOOR MOUNTED TELECOMMUNICATIONS 45RU FOUR-POST RACK EQUAL TO CHATSWORTH #50100-B3D. SECURE RACK TO FLOOR PER MANUFACTURER'S RECOMMENDATION AFTER LOCATION IS CONFIRMED WITH OWNER'S IT REP.
6. PROVIDE BLACK VERTICAL DOUBLE-SIDED CABLE MANAGER SIZED FOR 45RU RACK EQUAL TO PANDUIT #PRVDS06.
7. PROVIDE INDUSTRY (BICSI) STANDARDS RECOMMENDIED WORKING ON FRONT AND BACK SIDE OF RACKS.
8. ELECTRICAL PANEL SERVING TECHNOLOGY EQUIPMENT, SEE ELECTRICAL PLANS FOR ADDITIONAL INFORMATION.
9. MECHANICAL EQUIPMENT MOUNTED ABOVE DOOR PROVIDING HVAC TO MDF ROOM, SEE MECHANICAL PLANS FOR ADDITIONAL INFORMATION.
10. PROVIDE UL LISTED TELECOMMUNICATIONS PRIMARY BONDING BUSBAR (PBB-141) MOUNTED AT 84" AFF. PBB SHALL BE SIZED PER DETAILS AND SPECIFICATIONS. PROVIDE PERMANENT LABEL AND PROTECTIVE COVER FOR BUSBAR.
11. PROVIDE ACCESS CONTROL SYSTEM (ACS) PANEL. PANEL SHALL BE C-CURE 9000.
12. PROVIDE 1ST RESPONDER DAS PANEL & HEAD END EQUIPMENT, IF REQUIRED.
13. (2) 2" CONDUITS. PROVIDE NON-METALLIC BUSHING ON ENDS.

N

0 1' 2' 4' 6'

1/2" = 1'-0"

A1 ENLARGED IT/COMMUNICATIONS MDF 335

1/2" = 1'-0"

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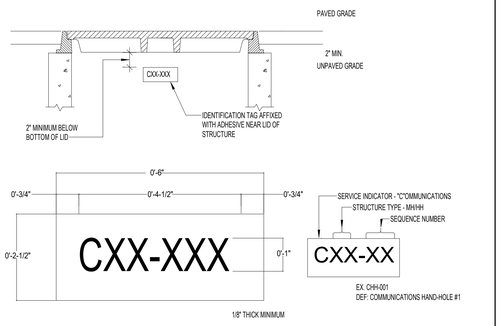
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TECHNOLOGY ENLARGED PLANS

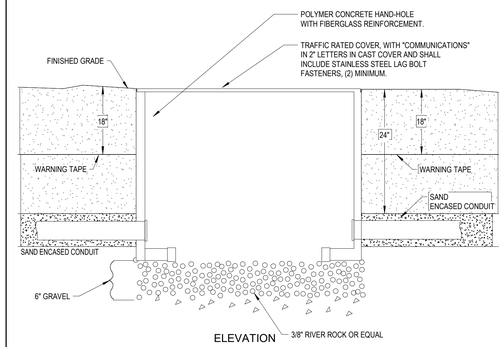
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GENERAL NOTES:

1. PROVIDE MANHOLE IDENTIFICATION TAG IN ALL NEW TELECOMMUNICATIONS UNDERGROUND STRUCTURES.
2. COORDINATION OF STRUCTURE INSTALLATION SHALL BE WITH GC.
3. IDENTIFICATION PLATE SHALL BE FABRICATED BY LOCAL MACHINE SHOP OPERATOR AND SHALL BE SEQUENCED IN ACCORDANCE WITH CURRENT TELECOMMUNICATIONS INFRASTRUCTURE IMPROVEMENT DOCUMENTATION AND MASTER PLANNING DOCUMENTATION.
4. IDENTIFICATION TAG SHALL BE INSTALLED, AS NEAR AS POSSIBLE, ON A NORTHERN ORIENTED SURFACE SPACE OF THE STRUCTURE COLLAR.
5. IDENTIFICATION PLATE SHALL BE AFFIXED TO THE STRUCTURE COLLAR WITH ADHESIVE, OR REQUIRED NECESSARY SUPPORTIVE MATERIAL, SO AS TO MAKE PERMANENT THE ATTACHMENT. METHOD OF ATTACHMENT TO BE APPROVED BY OWNER.



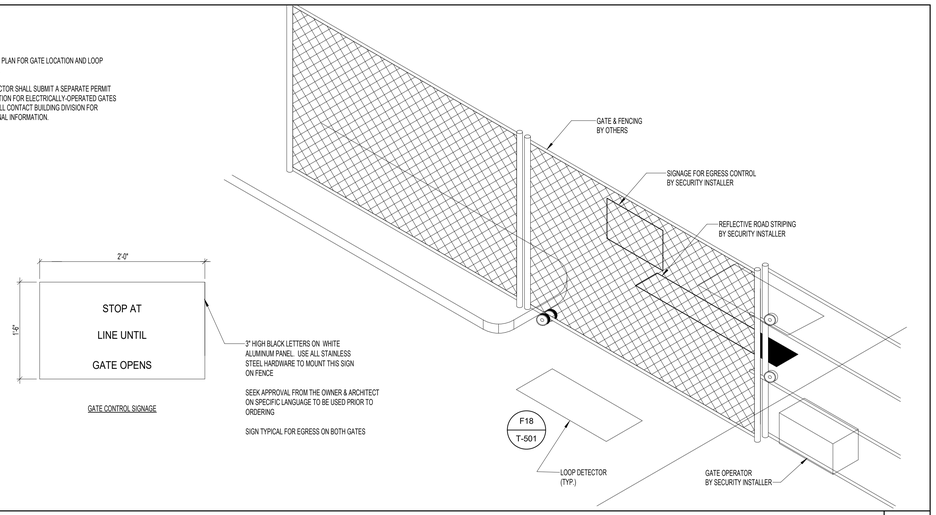
SITE HAND-HOLE IDENTIFICATION LABEL — L5
No Scale



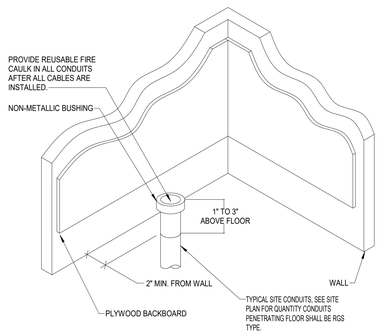
SITE TECHNOLOGY HAND-HOLE — L9
No Scale

NOTES:

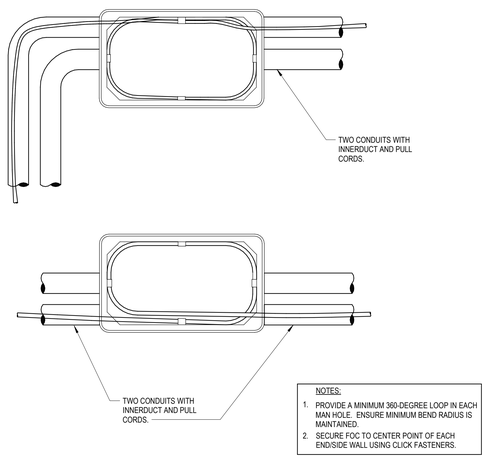
1. SEE SITE PLAN FOR GATE LOCATION AND LOOP LAYOUT.
2. CONTRACTOR SHALL SUBMIT A SEPARATE PERMIT APPLICATION FOR ELECTRICALLY-OPERATED GATES AND SHALL CONTACT BUILDING DIVISION FOR ADDITIONAL INFORMATION.



SITE VEHICLE GATE — L18
No Scale



SITE TECHNOLOGY CONDUITS THROUGH MDF FLOOR — F5
No Scale

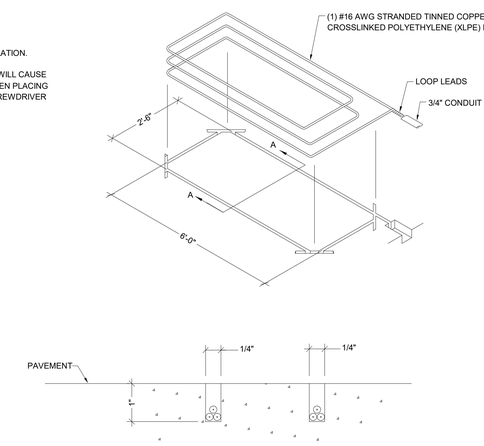


SITE TEECHNOLOGY HAND-HOLE SERVICE LOOP — F9
No Scale

CAUTION:

DO NOT FRACTURE WIRE INSULATION.

LOOPS SHORTED TO GROUND WILL CAUSE DETECTOR MALFUNCTION. WHEN PLACING WIRE IN SLOT, DO NOT USE SCREWDRIVER OR OTHER SHARP TOOLS.



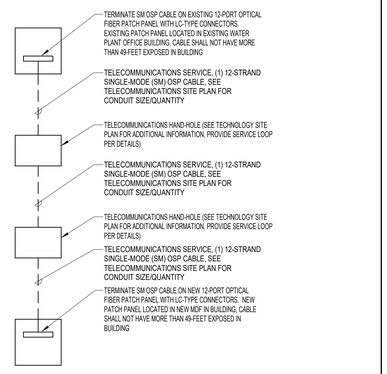
NOTES:

1. LOOP LEADS SHALL NOT EXCEED 100'
2. LOOP LEADS MUST HAVE (6) TWIST PER FOOT.
3. LOOP & LOOP LEADS MUST BE LOCATED AT LEAST 18" FROM ANY ELECTRICAL POWER SERVICE OR OR STEEL REINFORCING
4. LOOP LEADS MUST BE IN SEPARATE CONDUIT BETWEEN LOOP AND DETECTOR. THEY MUST NOT SHARE CONDUIT WITH OTHER WIRING OR LEADS FROM OTHER LOOPS.
5. VERY ALL MANUFACTURER WIRE RECOMMENDATIONS.
6. ALL WIRE SHALL BE CONTINUOUS WITHOUT SPLICING.
7. SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL PRIOR TO PROCEEDING WITH WORK.

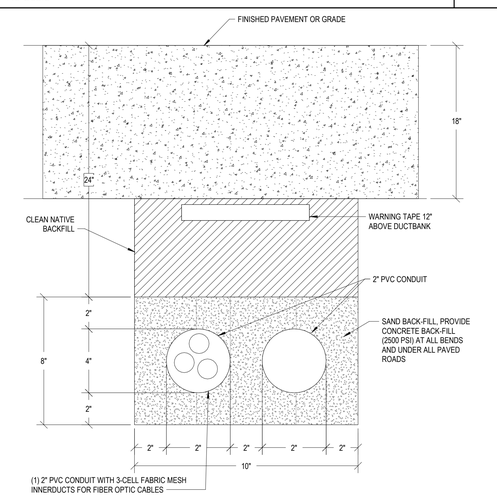
TYPICAL LAYOUT NOTES:

1. SAW SLOT 1/4" WIDE 1" DEEP. MAKE RECTANGULAR
2. SHAPE TO SPECIFIC LOOP DIMENSIONS PLUS SLOT FOR LEAD CONDUIT.
3. GROUT WITH NO. 202 WEATHER BAN SEALANT. A PRODUCT OF THE 3M COMPANY" OR EQUIVALENT.

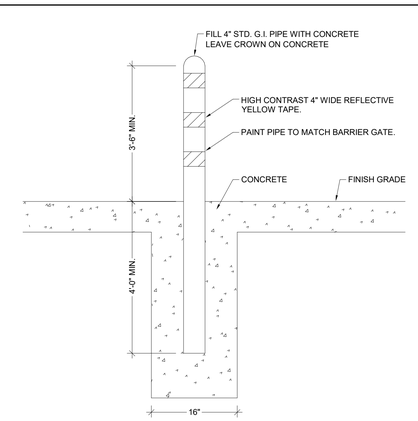
SITE VECHICLE GATE LOOP DETECTORS — F18
No Scale



SITE TEECHNOLOGY RISER DIAGRAM (OSP) — A5
No Scale

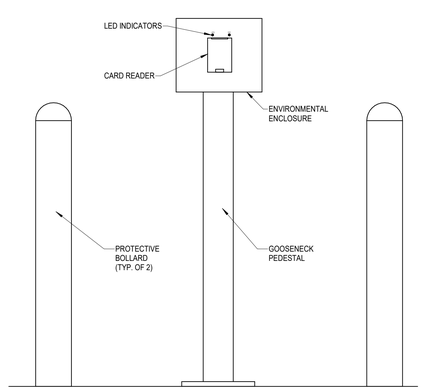


SITE TECHNOLOGY 2-WAY DUCT-BANK — A9
No Scale



FIXED BARRIER

SITE VEHICLE GATE PROTECTIVE BOLLARD — A14
No Scale



SITE VEHICLE GATE PEDESTAL — A18
No Scale

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
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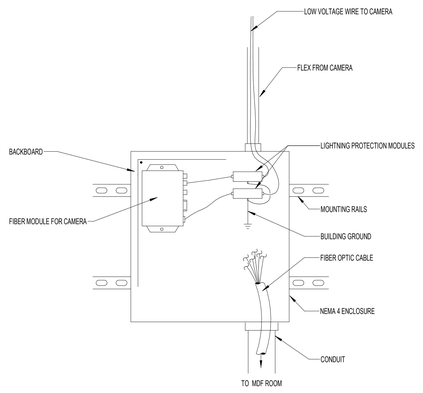
COMM. NO.: 2021815
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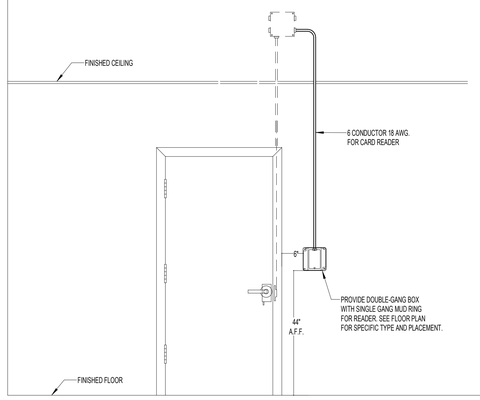


SECURITY CAMERA IN-GROUND ENCLOSURE

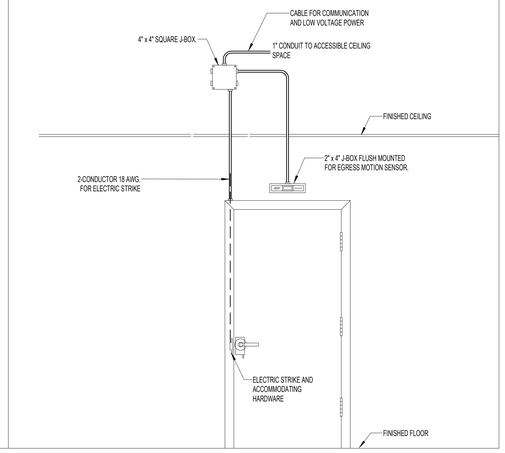
No Scale

L5

NOTES:
1. CABLE TYPE AND SIZE MUST COMPLY WITH ALL ESTABLISHED REQUIREMENTS AND APPLICABLE CODES.
2. ALL CONDUIT SHALL BE 3/4" UNLESS OTHERWISE NOTED.
3. DOOR HARDWARE SHOWN FOR GRAPHICAL ILLISTRATION ONLY, REFERENCE DIVISION 8 HARDWARE SCHEDULE AS NEEDED FOR ACTUAL HARDWARE SET.



UNSECURE SIDE

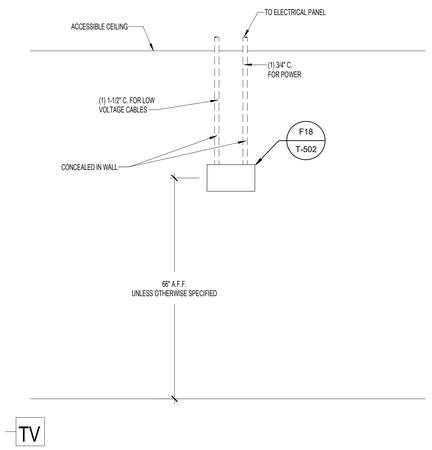


SECURE SIDE

SECURITY SINGLE DOOR - CARD READER - ELECTRIC STRIKE - REX

No Scale

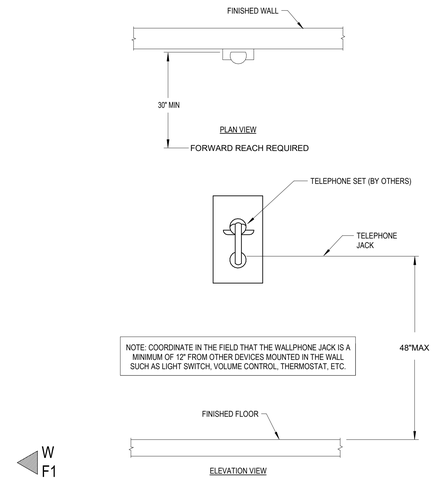
L14



A-V DISPLAY INFRASTRUCTURE

No Scale

L18

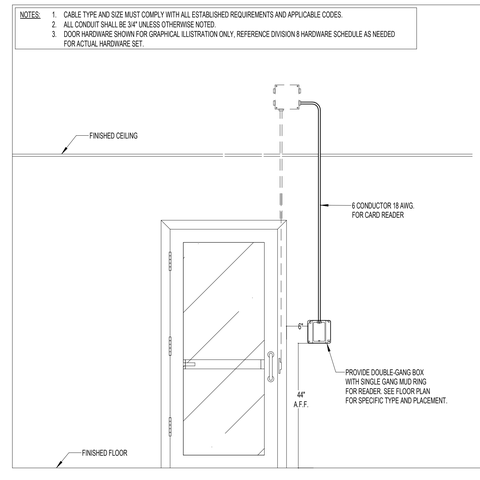


VOICE-DATA WALL PHONE MOUNTING HEIGHT

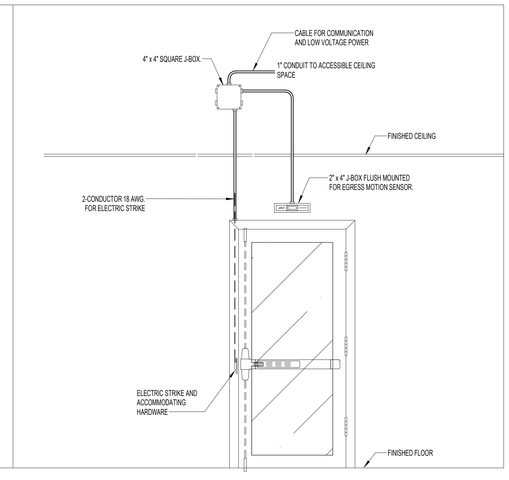
No Scale

F5

NOTES:
1. CABLE TYPE AND SIZE MUST COMPLY WITH ALL ESTABLISHED REQUIREMENTS AND APPLICABLE CODES.
2. ALL CONDUIT SHALL BE 3/4" UNLESS OTHERWISE NOTED.
3. DOOR HARDWARE SHOWN FOR GRAPHICAL ILLISTRATION ONLY, REFERENCE DIVISION 8 HARDWARE SCHEDULE AS NEEDED FOR ACTUAL HARDWARE SET.



UNSECURE SIDE

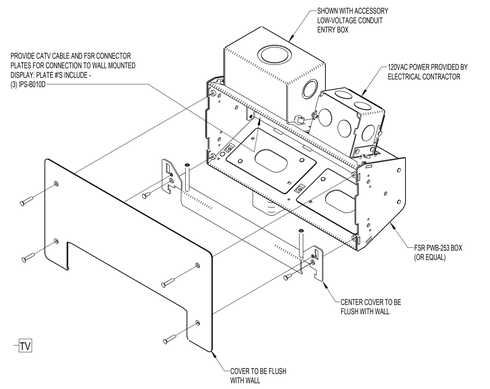


SECURE SIDE

SECURITY SINGLE STORE FRONT DOOR - CARD READER - ELECTRIC STRIKE - REX Copy 1

No Scale

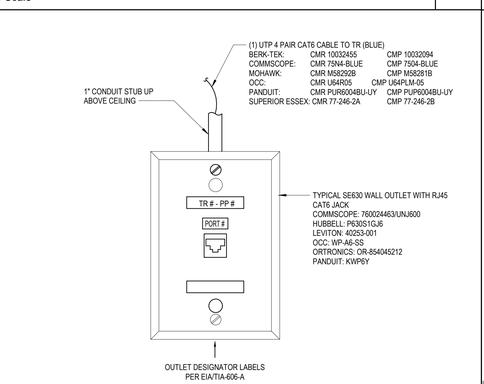
F14



A-V DISPLAY RECESSED WALL BOX

No Scale

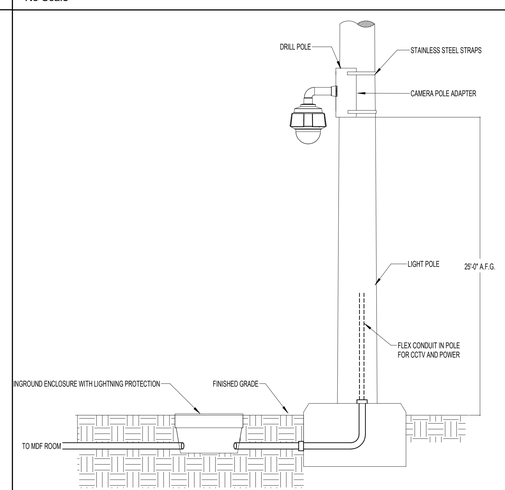
F18



VOICE-DATA WALL PHONE OUTLET

No Scale

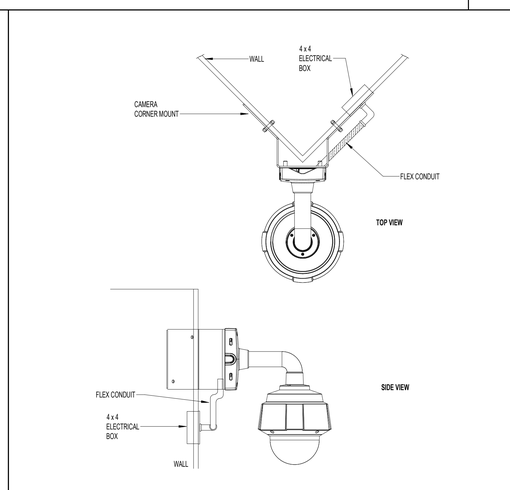
A5



SECURITY CAMERA POLE MOUNT

No Scale

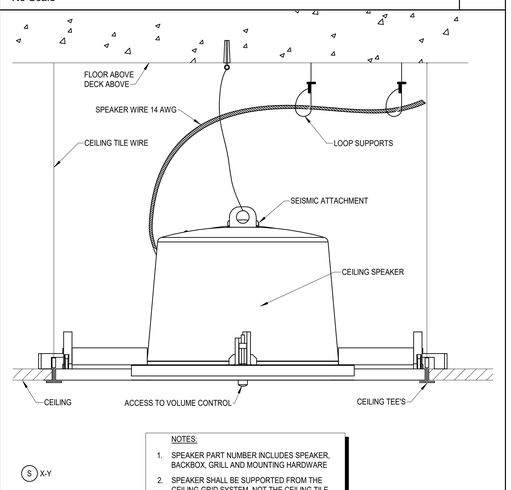
A9



SECURITY CAMERA CORNER MOUNT

No Scale

A14



NOTES:
1. SPEAKER PART NUMBER INCLUDES SPEAKER, BACKBOX, GRILL AND MOUNTING HARDWARE.
2. SPEAKER SHALL BE SUPPORTED FROM THE CEILING GRID SYSTEM, NOT THE CEILING TILE.

A-V SPEAKER - CEILING MOUNTED

No Scale

A18

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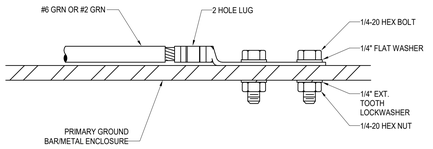
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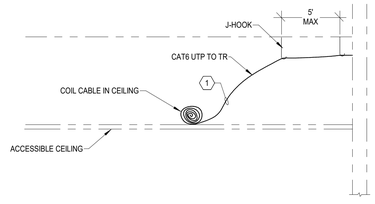
#6 OR #2 GRN TO GROUND BAR OF FLAT SURFACE.

#6 IS USED PRIMARILY AS CABINET TO BUS LINK.

INSTALLATION NOTES:

A. SELECT BOLT LENGTH TO PROVIDE A MINIMUM OF TWO EXPOSED THREADS.
B. BURNISH MOUNTING SURFACE TO REMOVE PAINT IN THE AREA OF LUG CONTACT.
C. APPLY ANTI-OXIDANT COMPOUND TO MATING SURFACE OF LUG AND WIPE CLEAN EXCESS COMPOUND.
D. USE SOLID COPPER WIRE AND MECHANICAL 2-HOLE LUG FOR ALL EXTERIOR GROUNDING.

VOICE-DATA BUSBAR 2-LUG TERMINATIONS — L5
No Scale

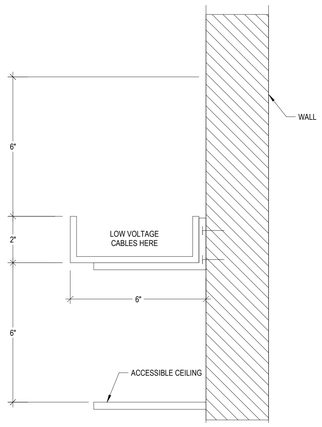


WAP S02

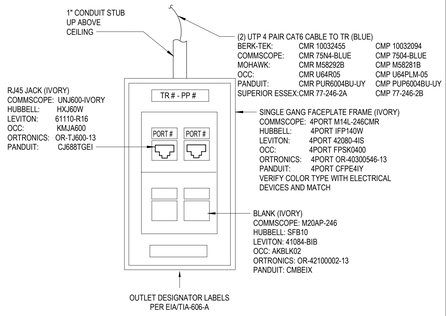
NOTE:
WIRELESS ACCESS POINT AND ANTENNA NOT IN CONTRACT.

DETAIL NOTE:
1 COIL 10' LOOP IN CEILING.

VOICE-DATA WIRELESS ACCESS POINT — L9
No Scale

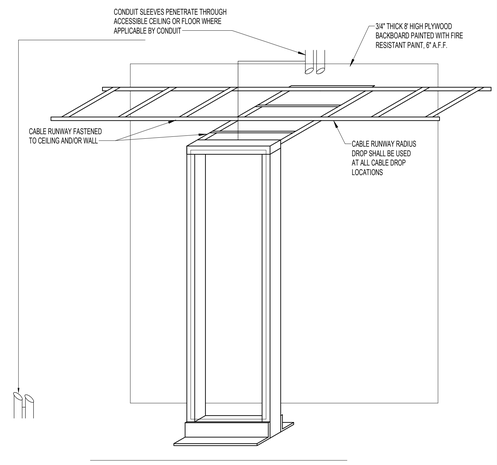


VOICE-DATA CABLE TRAY WALL MOUNTING — L14
No Scale

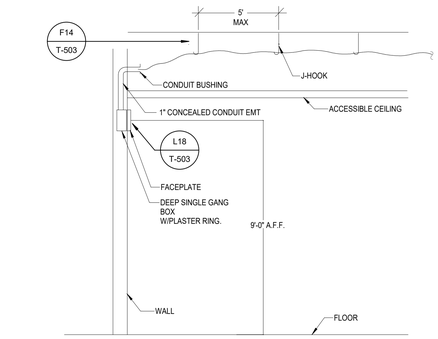


F12

VOICE-DATA WORKSTATION OUTLET — L18
No Scale

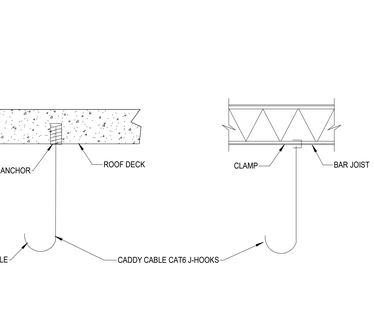


VOICE-DATA TECH RACK ISOMETRIC VIEW — F5
No Scale

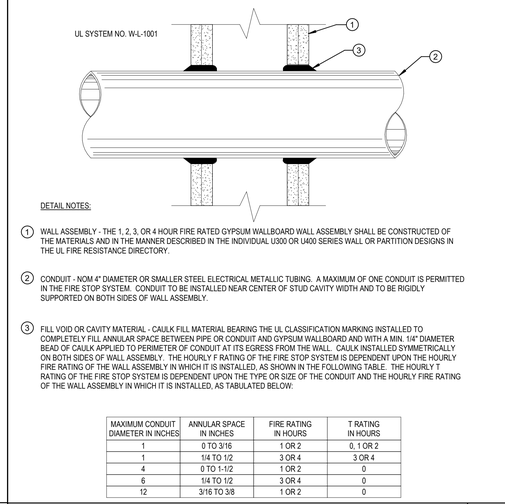


WAP F02

VOICE-DATA WIRELESS ACCESS POINT WALL MOUNT — F9
No Scale



VOICE-DATA J-HOOK MOUNTING — F14
No Scale



DETAIL NOTES:

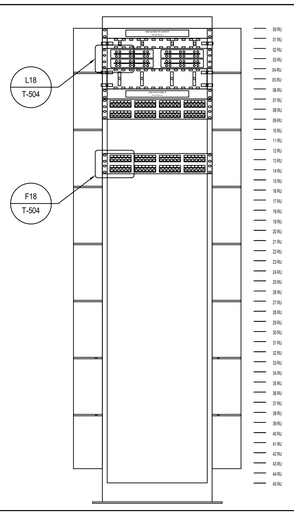
1. WALL ASSEMBLY - THE 1, 2, 3, OR 4 HOUR FIRE RATED GYPSUM WALLBOARD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY.

2. CONDUIT - NOM 4" DIAMETER OR SMALLER STEEL ELECTRICAL METALLIC TUBING. A MAXIMUM OF ONE CONDUIT IS PERMITTED IN THE FIRE STOP SYSTEM. CONDUIT TO BE INSTALLED NEAR CENTER OF STUD CAVITY WIDTH AND TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY.

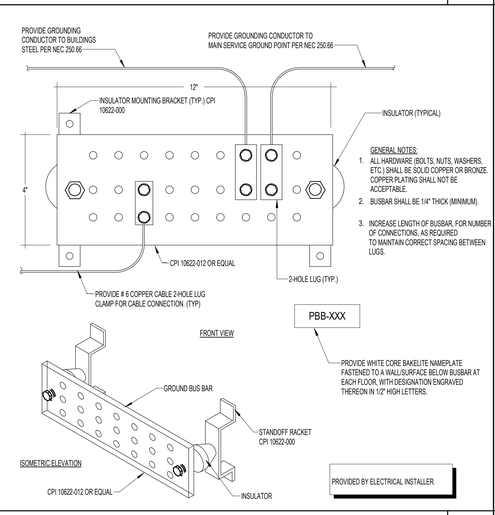
3. FILL VOID OR CAVITY MATERIAL - CAULK FILL MATERIAL BEARING THE UL CLASSIFICATION MARKING INSTALLED TO COMPLETELY FILL ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND GYPSUM WALLBOARD AND WITH A MIN. 1/4" DIAMETER BEAD OF CAULK APPLIED TO PERIMETER OF CONDUIT AT ITS EGRESS FROM THE WALL. CAULK INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL ASSEMBLY. THE HOURLY F RATING OF THE FIRE STOP SYSTEM IS DEPENDENT UPON THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS SHOWN IN THE FOLLOWING TABLE. THE HOURLY T RATING OF THE FIRE STOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE CONDUIT AND THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS TABULATED BELOW:

MAXIMUM CONDUIT DIAMETER IN INCHES	ANNULAR SPACE IN INCHES	FIRE RATING IN HOURS	T RATING IN HOURS
1	0 TO 3/16	1 OR 2	0, 1 OR 2
1	1/4 TO 1/2	3 OR 4	3 OR 4
4	0 TO 1-1/2	1 OR 2	0
6	1/4 TO 1/2	3 OR 4	0
12	3/16 TO 3/8	1 OR 2	0

VOICE-DATA CONDUIT PENETRATION — F18
No Scale



VOICE-DATA TECH RACK LABELING — A5
No Scale



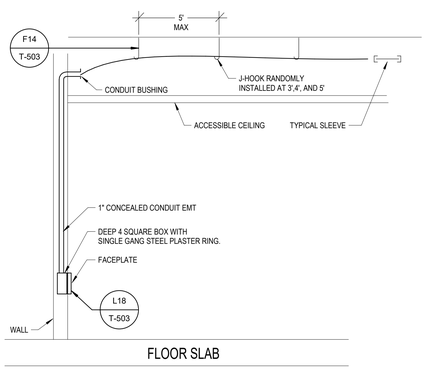
GENERAL NOTES:

1. ALL HARDWARE (BOLTS, NUTS, WASHERS, ETC.) SHALL BE SOLID COPPER OR BRONZE. COPPER PLATING SHALL NOT BE ACCEPTABLE.
2. BUSBAR SHALL BE 1/4" THICK (MINIMUM).
3. INCREASE LENGTH OF BUSBAR, FOR NUMBER OF CONNECTIONS, AS REQUIRED TO MAINTAIN CORRECT SPACING BETWEEN LUGS.

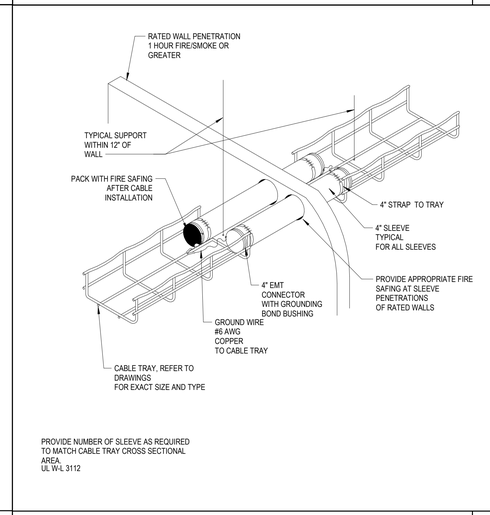
PROVIDE WHITE CORE BAKELITE NAMEPLATE FASTENED TO A WALL/SURFACE BELOW BUSBAR AT EACH FLOOR, WITH DESIGNATION ENGRAVED THEREON IN 1/2" HIGH LETTERS.

PROVIDED BY ELECTRICAL INSTALLER.

VOICE-DATA PRIMARY BONDING BUSBAR — A9
No Scale



VOICE-DATA TYPICAL FLUSH OUTLET — A14
No Scale



PROVIDE NUMBER OF SLEEVE AS REQUIRED TO MATCH CABLE TRAY CROSS SECTIONAL AREA.
UL W-L 3112

VOICE-DATA CABLE TRAY WALL PENETRATION — A18
No Scale

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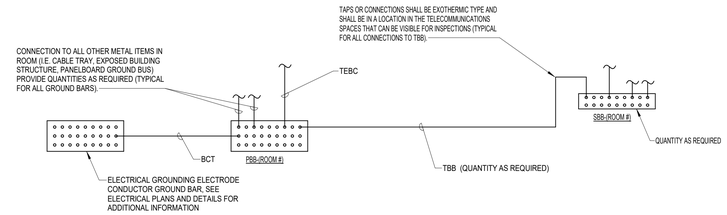
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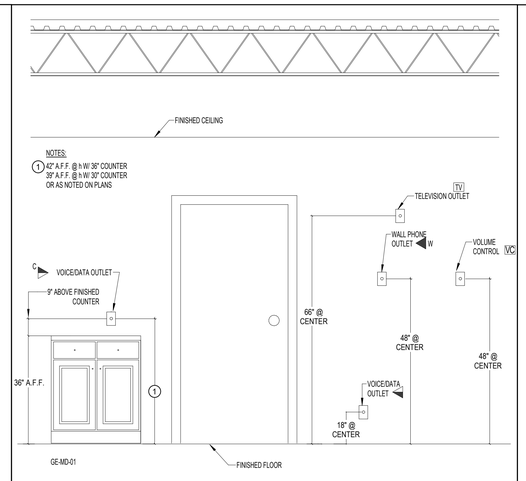
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GENERAL NOTES:

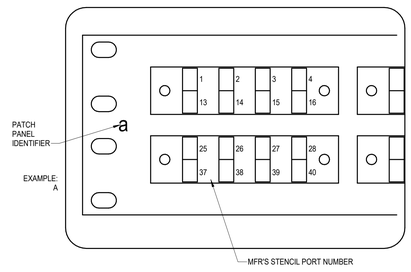
1. TEBC = TELECOMMUNICATIONS EQUIPMENT BONDING CONDUCTOR.
2. BCT = BONDING CONDUCTOR FOR TELECOMMUNICATIONS.
3. TBB = TELECOMMUNICATIONS BONDING BACKBONE.
4. PBB = PRIMARY BONDING BUSBAR (4"x1/4"x24" LISTED BUSBAR)
5. SBB = SECONDARY BONDING BUSBAR (4"x1/4"x12" LISTED BUSBAR)
6. ALL CONNECTIONS TO TBB AT SBB SHALL BE BY CRIMPING METHOD AND SHALL BE VISIBLE IN EACH TELECOMMUNICATIONS SPACE FOR EASE OF INSPECTION.
7. TBB SHALL BE EQUAL TO BCT (#3/0 BARE COPPER CONDUCTOR).
8. TEBC AND ALL BONDING CONDUCTORS INSIDE EACH SPACE SHALL BE A MINIMUM OF #6 INSULATED GREEN CONDUCTOR.
9. ALL CONNECTIONS TO EACH TGB AND TMGB SHALL BE VIA 2-LUG BARREL TYPE CONNECTORS.
10. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
11. INSTALLATION, INCLUDING ALL LABELS SHALL BE IN ACCORDANCE WITH ANSI/TIA 607, LATEST EDITION.



VOICE-DATA BONDING RISER DIAGRAM
No Scale — L5



VOICE-DATA EQUIPMENT MOUNTING HEIGHTS
No Scale — L14

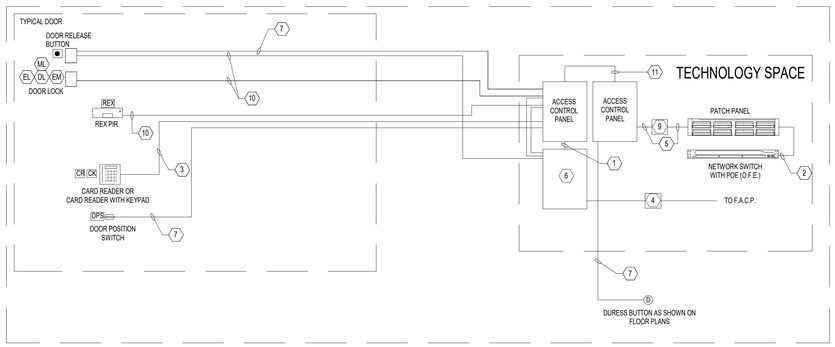


ALL LABELING SHALL BE MACHINE GENERATED, AND INSTALLED UNDER FACTORY PLASTIC COVER.

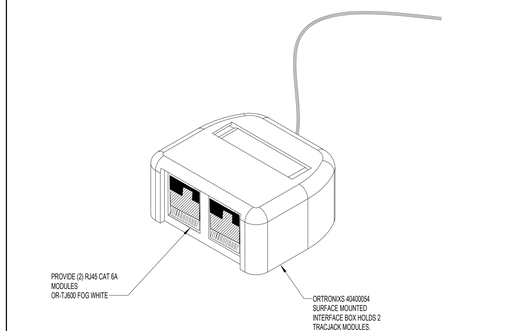
VOICE-DATA FIBER OPTIC PATCH PANEL
No Scale — L18

KEYED NOTES

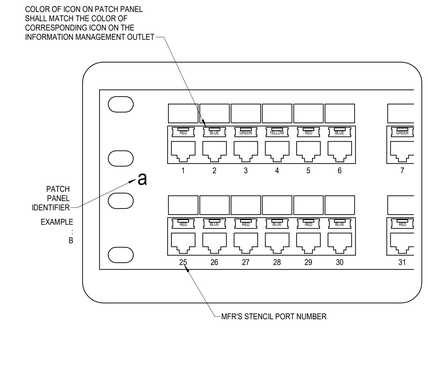
1. PROVIDE POWER SUPPLY CABLE. SEE SPECIFICATIONS.
2. PROVIDE 4-PAIR PATCH COR. SEE SPECIFICATIONS.
3. PROVIDE CARD READER CABLE. SEE SPECIFICATIONS.
4. FIRE ALARM RELAY
5. HORIZONTAL 4-PAIR UTP CABLE
6. POWER SUPPLY/ENCLOSURE - ACCESS CONTROL SYSTEMS/LOCKS.
7. PROVIDE UN-POWERED SENSOR CABLE, AS REQUIRED.
8. SERIAL LINE CONNECTION.
9. TERMINAL SERVER.
10. PROVIDE POWERED SENSOR CABLE. SEE SPECIFICATIONS.



SECURITY TYPICAL ACS RISER DIAGRAM
No Scale — F5



VOICE-DATA SURFACE MOUNTING
No Scale — F14

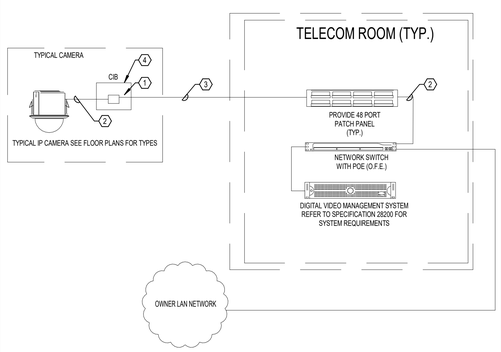


ALL LABELING SHALL BE MACHINE GENERATED, AND INSTALLED UNDER FACTORY PLASTIC COVER.

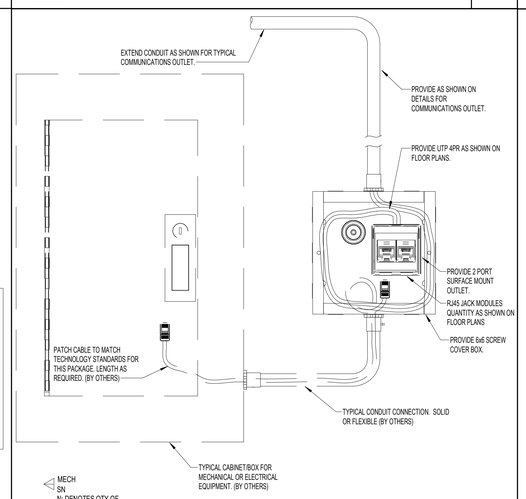
VOICE-DATA COPPER PATCH PANEL
No Scale — F18

KEYED NOTES

1. PROVIDE SURFACE MOUNTED DATA OUTLET.
2. PROVIDE 4-PAIR PATCH CORD CABLE. SEE SPECIFICATIONS.
3. PROVIDE 4-PAIR HORIZONTAL CABLE CAT 6 RUN TO TELECOM ROOM.
4. PROVIDE CAMERA INTERFACE BOX, 6"x6"x4" NEMA 1 ENCLOSURE WITH HINGED DOOR MOUNTED IN ACCESSIBLE SPACE AS CLOSE AS POSSIBLE TO THE CAMERA.



SECURITY TYPICAL VSS SYSTEM
No Scale — A9

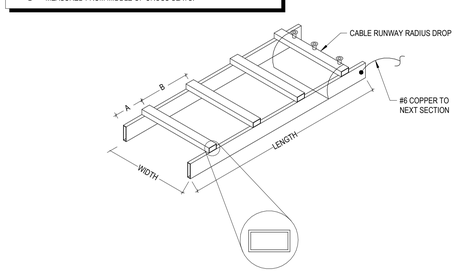


VOICE-DATA OUTLET FOR MECHANICAL
No Scale — A14

NOTES:

"A" MEASURED FROM END OF STRINGER TO MIDDLE OF CROSS SLAT.

"B" MEASURED FROM MIDDLE OF CROSS SLATS.



UNIVERSAL TUBULAR RUNWAY SYSTEM

VOICE-DATA TUBULAR RUNWAY TRAY
No Scale — A18

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

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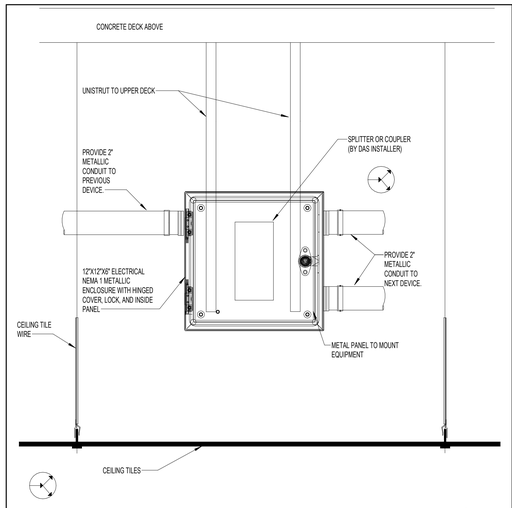
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SECURITY DAS SPLITTER MOUNTING
No Scale

L9

KEYED NOTES :

1.DAS ANTENNA FOR LIFE SAFETY. REFER TO TECHNOLOGY FLOOR PLAN FOR LOCATIONS, MOUNTING TYPE, AND QUANTITIES.

2.TYPICAL SPLITTER/COUPLER FOR DAS SYSTEM.

3.CAT6 PATCH CORD

4.POLYPHASER SURGE SUPPRESSOR.

5.BONDING STRAP FOR COAXIAL CABLE SHIELD.

6. NEMA 4 METALLIC ENCLOSURE WITH HINGED COVER AND LOCK, PAINTED RED AND MARKED WITH LETTER AS INDICATE BY CODE.

7. MONITORING MODULE TO SUPERVISE DAS SYSTEM.

8. UPS WITH 12 HOURS OF POWER BACKUP AND SUPERVISION BOARD WITH DRY CONTACT CLOSURE RELAYS.

9.TYPICAL FIRE ALARM MONITORING MODULES TO SUPERVISE DAS SYSTEM.

10. REMOTE ANNUNCIATOR PANEL FOR DAS SYSTEM.

11.FIRE ALARM CONTROL PANEL.

12.INSTALL ANTENNA ON WALL MOUNTED L BRACKET

13.PROVIDE 2" CONDUIT TO PROTECT THIS CABLE. THESE CONDUITS ARE NOT SHOWN IN FLOOR PLANS.

SEQUENCE OF OPERATION:

1. ACTIVATION OF ANY UPS OR REPEATER ALARM IN THE DAS SYSTEM SHALL CAUSE THE FOLLOWING EVENTS:
   A. DISPLAY A CUSTOM MESSAGE DESCRIBING THE DEVICE ORIGINATING THE ALARM CONDITION AT THE FIRE ALARM CONTROL PANEL AND STORE THE EVENT IN THE HISTORY OF THE LOG.
   B. SOUND AN ALERT TONE AT THE FIRE ALARM CONTROL PANEL UNTIL THE ALARM CONDITION IS ACKNOWLEDGED.
   C. ACTIVATE THE SUPERVISORY RELAY FOR OFF-SITE LISTED CENTRAL STATION.

THESE ARE THE ALARMS BELOW:

800MHZ REPEATER (R1)
- DL/UL CURRENT ALARM
- DONOR ANTENNA ALARM
- ODSC ALARM

150MHZ REPEATER (R2)
- DL/UL CURRENT ALARM
- DONOR ANTENNA ALARM

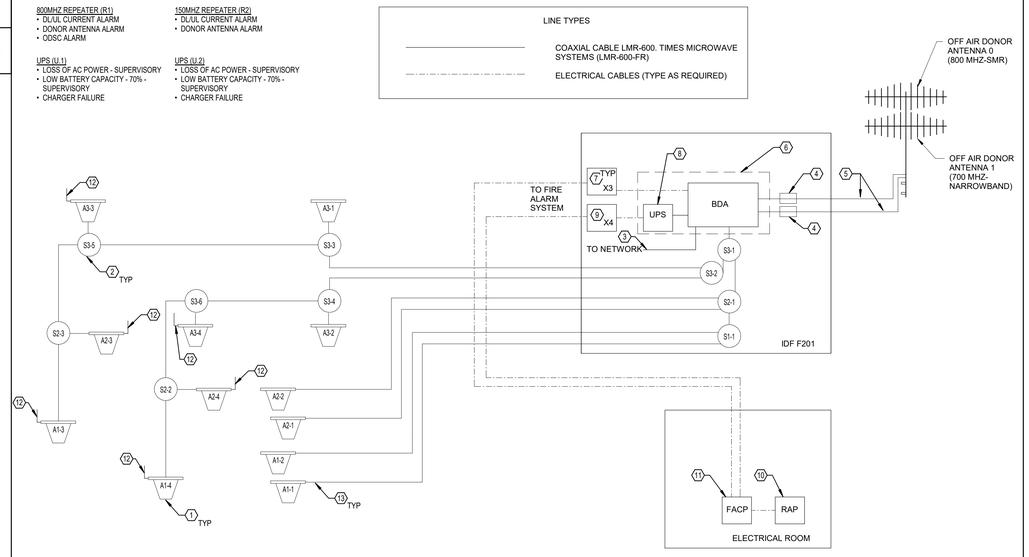
UPS (U1)
- LOSS OF AC POWER - SUPERVISORY
- LOW BATTERY CAPACITY - 70% - SUPERVISORY
- CHARGER FAILURE

UPS (U2)
- LOSS OF AC POWER - SUPERVISORY
- LOW BATTERY CAPACITY - 70% - SUPERVISORY
- CHARGER FAILURE

GENERAL NOTES :

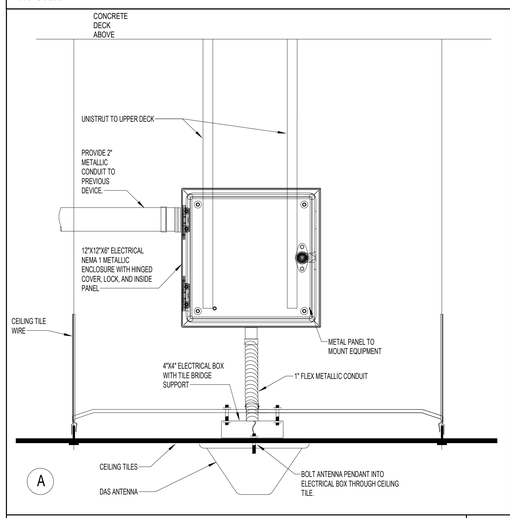
1. THIS IS A PERFORMANCE BASED SYSTEM ONLY. THIS IS NOT A COMPLETE DESIGN. REFER TO SPECIFICATION SECTION 280537 FOR MODE DETAILS.
2. THIS SYSTEM SHALL BE COMPLIANT WITH THE PUBLIC SAFETY IN-BUILDING TWO WAY RADIO COMMUNICATIONS ENHANCEMENTS SYSTEM REQUIREMENTS SET BY THE AHJ.
3. NFPA 72 CODE FOLLOWED: 24.5.2.5.5.1: EQUIPMENT IS POWERED BY 20A CIRCUIT IS CONNECTED TO AN ENGINE DRIVEN 12 HOUR GENERATOR.
4. NFPA 72 CODE FOLLOWED: 24.5.2.5.5.2: SECONDARY POWER SOURCE IS 4-HOUR AT 100% CAPACITY.
5. NFPA 72 CODE FOLLOWED: 24.5.2.6.2: REPEATERS, UPS AND FIBER EQUIPMENT ALARMS ARE CONNECTED TO THE FIRE ALARM CONTROL PANEL.
6. NFPA 72 CODE FOLLOWED: 24.5.2.5.2: ALL ACTIVE REPEATER EQUIPMENT AND UPS IS ENCLOSED IN NEMA 4 ENCLOSURES.
7. RISER HAS LEVEL 2 SURVIVABILITY PATHWAY FOR CABLE; ALL ROOMS CONTAINING EQUIPMENT IS 2-HOUR FIRE RATED.
8. THE ROOM ENCLOSING THE FACP, BOOSTER POWER SUPPLY, AMPLIFIER IS MECHANICALLY VENTILATED.
9. THE FACP AMPLIFIERS AND ASSOCIATED EQUIPMENT IS PROTECTED WITH A SMOKE DETECTOR.
10. ALL EQUIPMENT IS CONNECTED TO A DEDICATED CIRCUIT BREAKER MARKED "RADIO ENHANCEMENT CONTROL CIRCUIT" PER NFPA 72: 10.5.5.2.1.
11. THE RADIO ENHANCEMENT SYSTEM IS EQUIPPED WITH AN FCC COMPLIANT CLASS B SIGNAL BOOSTER.
12. RADIO EQUIPMENT IS LOCATED IN A PLACE THAT MEETS ALL ENVIRONMENTAL CONTROLS.
13. THERE ARE AT LEAST (2) INDEPENDENT AND RELIABLE POWER SUPPLIES PER NFPA 72 5.2.5.5.
14. REPEATERS INSTALLED ARE FCC CERTIFIED AND COMPATIBLE WITH BOTH ANALOG AND DIGITAL NFPA 72.24.5.2.5.4.
15. THE INTEGRITY OF THE CIRCUIT MONITORING THE REPEATER SYSTEM COMPLIES WITH NFPA 72 10.6.9.
16. THE REPEATER SYSTEM IS CAPABLE OF UPGRADE IN ACCORDANCE WITH NFPA 72: 24.5.2.4.2.
17. THERE IS A MINIMUM INBOUND AND OUTBOUND SIGNAL OF 95dBm THROUGHOUT THE COVERAGE AREA.
18. ISOLATION BETWEEN THE DONOR AND INDOOR ANTENNAS EXCEEDS 15dB ABOVE THE SIGNAL BOOSTER GAIN.
19. THERE ARE NO PERMANENT EXTERNAL FILTERS AND ATTACHMENTS TO THE REPEATER SYSTEM.
20. THERE IS A GRID SYSTEM OVERLAYING ALL FLOORS IN ORDER TO IDENTIFY AREAS OF DEFICIENCIES WHEN TESTED.
21. ALL EXTERIOR ANTENNAS ARE HIGH GAIN, VERTICALLY POLARIZED AND SPECIFIED FOR THE OPERATING FREQUENCIES.
22. DAS SHALL BE ISSUED UNDER SEPARATE PERMIT. CONTRACTORS SHALL SUBMIT SIGN AND SEALED SHOP DRAWINGS AND SHALL COMPLY WITH ANY LOCAL AMENDMENTS TO THE BUILDING CODE.

LINE TYPES
- COAXIAL CABLE LMR-600. TIMES MICROWAVE SYSTEMS (LMR-600-FR)
- ELECTRICAL CABLES (TYPE AS REQUIRED)



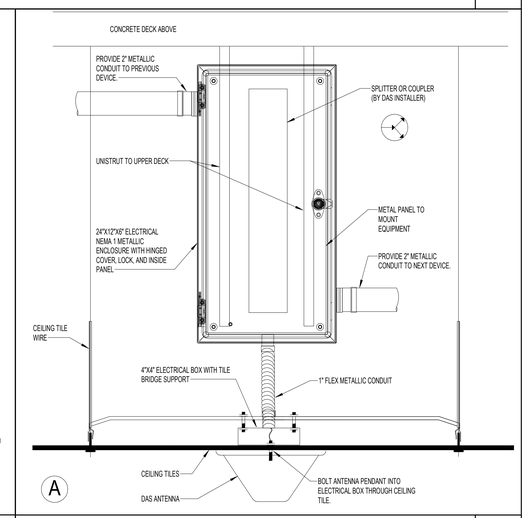
SECURITY DAS TYPICAL RISER DIAGRAM
No Scale

F18



SECURITY DAS ANTENNA MOUNTING
No Scale

A14



SECURITY DAS ANTENNA & SPLITTER MOUNTING
No Scale

A18

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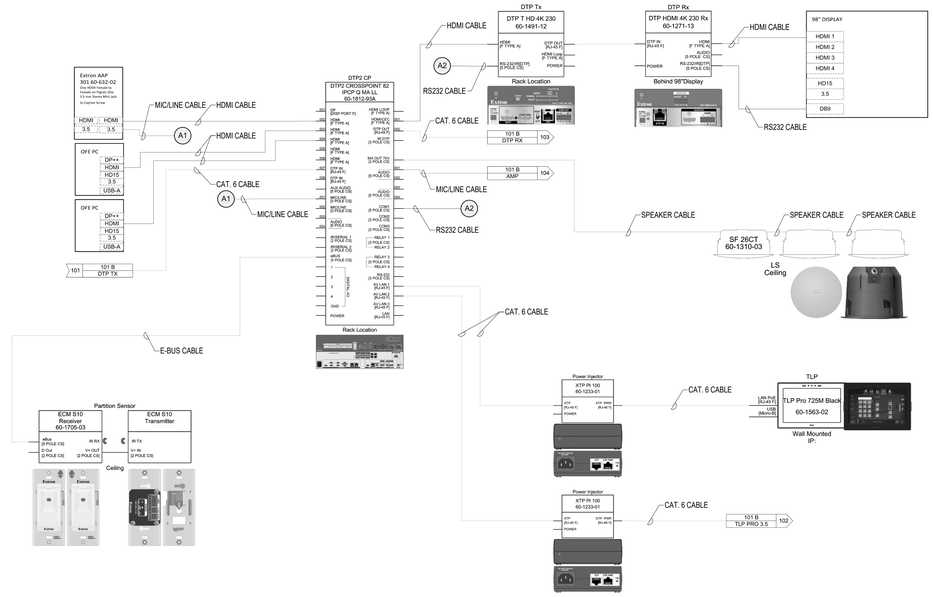
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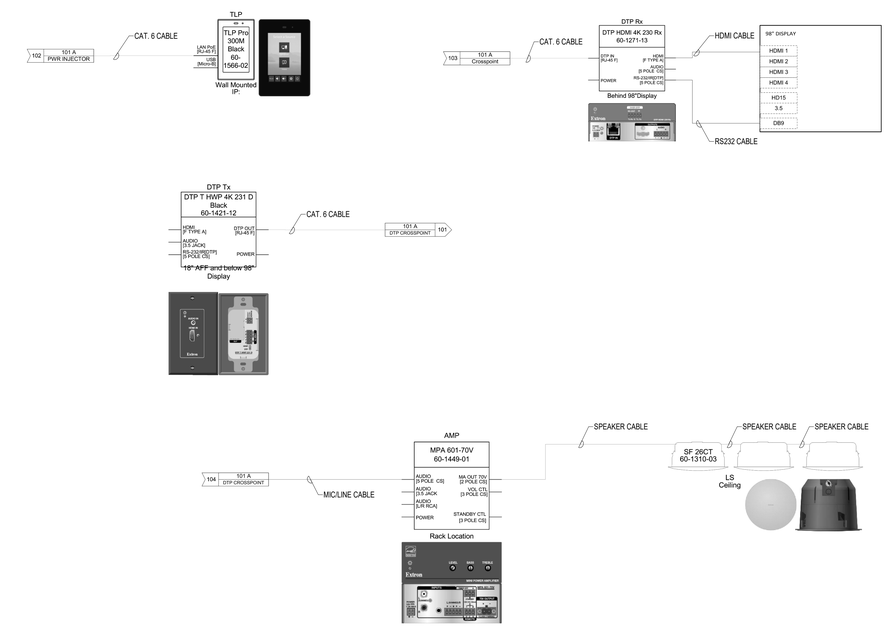
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A-V CONFERENCE ROOM 101A LAYOUT

No Scale

J18



A-V CONFERENCE ROOM 101B LAYOUT

No Scale

A18

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PORT ORANGE FIELD OPERATIONS BUILDING

DESIGN AND CONSTRUCTION RESPONSIBILITIES

ITEM	SYSTEM	SCOPE	DESIGN RESPONSIBILITY	PROCUREMENT RESPONSIBILITY	CONSTRUCTION RESPONSIBILITY
1.00	**VOICE SYSTEM (TELEPHONE COMMUNICATIONS SYSTEM ALL AREAS)**				
1.01	RACEWAYS	Conduit, boxes, cable tray, etc.	A&E	CM	CM
1.02	INSIDE PREMISE WIRING	Structured cabling system, including patch cords	A&E	CM	CM
1.03	OUTSIDE PREMISE WIRING IN PRIVATE CAMPUS	Structured cabling system	A&E	CM	CM
1.04	OUTSIDE PREMISE WIRING FROM SERVICE PROVIDERS	Fiber and copper for services	A&E/OWNER	SP	SP
1.05	PATCHING OF VOICE LINES	labor only of patching at racks and work areas	A&E	N/A	OWNER
1.06	PHONE SWITCH	Equipment selection, sizing, equipment layout, RFP	OWNER	OWNER	OWNER
2.00	**DATA SYSTEM (COMPUTER NETWORKS ALL AREAS)**				
2.01	RACEWAYS	Conduit, boxes, cable tray, etc.	A&E	CM	CM
2.02	INSIDE PREMISE WIRING	Structured cabling system, including patch cords	A&E	CM	CM
2.03	PATCHING OF DATA LINES	labor only of patching at racks and work areas	A&E	N.A.	OWNER
2.04	ACTIVE ELECTRONICS (NETWORKING EQUIPMENT, SWITCHES, ROUTERS, SERVERS AND COMPUTERS)	Equipment selection, sizing, equipment layout, RFP	OWNER	OWNER	OWNER
2.05	WIRELESS SURVEY	Recommended location of WAPs	A&E	N/A	OWNER
2.06	WAPs	Wireless access points, including installation labor, support materials,	OWNER	OWNER	OWNER
3.00	**TELECOM ROOM OUTFIT**				
3.01	PLYWOOD AND WALL SLEEVES	Plywood and sleeves for cables	A&E	CM	CM
3.02	GROUNDING SYSTEM	Ground bar and ground bus	A&E	CM	CM
3.02	RACKS, WIRE MANAGERS AND LADDER TRAY	Racks and all passive elements	A&E	CM	CM
4.00	**CATV DISTRIBUTION (CABLE TV FOR ALL AREAS)**				
4.01	RACEWAYS	Conduit, boxes, cable tray, etc.	OWNER	OWNER	OWNER
4.02	INSIDE PREMISE WIRING	Coaxial cable	OWNER	OWNER	OWNER
4.03	DISTRIBUTION DEVICES	TAPS, amplifiers, splitter, DC	OWNER	OWNER	OWNER
4.04	MOUNTS FOR TVS	Mounts for the TVS	OWNER	OWNER	OWNER
5.00	**AV SYSTEMS/ PAGING**				
5.01	RACEWAYS	Conduit, boxes, cable tray, etc.	A&E	CM	CM
5.02	INSIDE PREMISE WIRING	AV wiring for systems	A&E	CM	CM
5.03	ACTIVE ELECTRONICS	Projectors, presentation control system, paging system, etc.	A&E	CM	CM
6.00	**SECURITY SYSTEMS, BUILDING CCTV AND ACCESS CONTROL**				
6.01	RACEWAYS	Conduit, boxes, cable tray, etc.	A&E	CM	CM
6.02	INSIDE PREMISE WIRING	Cables for cameras and card access	A&E	CM	CM
6.03	ACTIVE ELECTRONICS	Cameras, DVRs, Access control panels, readers, etc	A&E	CM	CM
6.04	LOCKING DEVICES	Magnets, electric mortise locks	Architect	CM	CM
7.00	**EMERGENCY POWER BACKUP (UPS) FOR ACTIVE EQUIPMENT**				
7.01	POWER WIRING	Conduit, cables and circuits	A&E	CM	CM
7.02	POWER DISTRIBUTION UNITS	ePDUs to be installed in racks and cabinets	A&E	CM	CM
7.03	ACTIVE EQUIPMENT - WORK AREAS	UPS units in work areas	OWNER	OWNER	OWNER
7.04	ACTIVE EQUIPMENT - SMALL UNITS < 10KVA	UPS units in racks or cabinets	OWNER	OWNER	OWNER
7.05	ACTIVE EQUIPMENT - LARGE UNITS >10KVA	Central UPS system	OWNER	OWNER	OWNER
8.00	**FIRE ALARM AND BUILDING MANAGEMENT SYSTEM**				
8.01	RACEWAYS	Conduit, boxes, cable tray, etc.	A&E	CM	CM
8.02	INSIDE PREMISE WIRING	Cabling, grounding	A&E	CM	CM
8.03	ACTIVE ELECTRONICS	Data gathering panels, sensors, etc	A&E	CM	CM
9.00	**DISTRIBUTED ANTENNA SYSTEM (LIFESAFETY)**				
9.01	RACEWAYS	Conduit, boxes, cable tray, etc.	A&E	CM	CM
9.02	INSIDE PREMISE WIRING	Cabling, grounding	A&E	CM	CM
9.03	ACTIVE ELECTRONICS	Head end system, BDA, TX/RX and antennas	A&E	CM	CM
10.00	**DISTRIBUTED ANTENNA SYSTEM (CELL PHONES)**				
10.01	RACEWAYS	Conduit, boxes, cable tray, etc.	N/A	N/A	N/A
10.02	INSIDE PREMISE WIRING	Cabling, grounding	N/A	N/A	N/A
10.03	ACTIVE ELECTRONICS	Head end system, BDA, TX/RX and antennas	N/A	N/A	N/A

NOTES:
A&E: ARCHITECT AND ALL CONSULTANTS WORKING UNDER ARCHITECT, LIKE TLC ENGINEERING SOLUTIONS
CM: CONSTRUCTION MANAGER
SP: SERVICE PROVIDER
VENDOR: A SYSTEM INSTALLER HIRED DIRECTLY BY THE OWNER FOR A SPECIFIC SYSTEM
N/A: NOT APPLICABLE

ELECTRICAL-TECHNOLOGY SPECIAL OUTLET SCHEDULE

DESIGNATION	DESCRIPTION
FBA	PROVIDE 4-GANG ROUND ACCESS FLOOR BOX #CFB4G30R BY HUBBELL OR APPROVED EQUAL BY WIREMOLD WITH THE FOLLOWING CHARACTERISTICS: • GANG 1: PROVIDE (1) #PWFBMPRC20GRY PRE-WIRED (1) 20A. 125V. 2P. 3W. NEMA 5-20R GRAY DUPLEX RECEPTACLE DEVICE PLATE • GANG 2: PROVIDE (1) #FBMPREC DECORATOR OPENING WITH (1) #ISF6GY GRAY 6-PORT INSERT WITH (6) #HXUKB CAT. 6 DATA JACKS. PROVIDE (1) 1-1/4" CONDUIT ROUTED UNDERFLOOR FROM DEVICE TO MDF 141 AND STUBBED UP 4" WITH NON-METALLIC BUSHINGS • GANG 3: PROVIDE (1) #PWFBMPCR20GRY PRE-WIRED (1) 20A. 125V. 2P. 3W. NEMA 5-20R GRAY DUPLEX RECEPTACLE DEVICE PLATE • GANG 4: PROVIDE (1) #PWFBMPCR20GRY PRE-WIRED (1) 20A. 125V. 2P. 3W. NEMA 5-20R GRAY DUPLEX RECEPTACLE DEVICE PLATE • COVER: PROVIDE (1) #CFB51R6CVRALU BRUSHED ALUMINUM COVER WITH (2) EGRESS DOORS FOR CABLING ENTRANCE/EXIT • CABLING: PROVIDE (6) INDOOR-OUTDOOR RATED CAT. 6 CABLES. DATA CABLES SHALL BE TERMINATED ON CAT. 6 DATA PATCH PANEL IN MDF 141
TVA	PROVIDE WHITE FLAT PANEL RECESSED WALL MOUNTED BOX WITH COVER #PWB-253-WHT BY FSR OR APPROVED EQUAL WITH THE FOLLOWING CHARACTERISTICS: • GANG 1: PROVIDE (1) #SSD2DUP PRE-WIRED (1) 20A. 125V. 2P. 3W. NEMA 5-20R GRAY DUPLEX RECEPTACLE DEVICE PLATE • GANG 2: PROVIDE (1) #IPS-V610S SINGLE FEMALE-TO-FEMALE HDMI CONNECTOR PLATE, (1) #IPS-071IS SINGLE RJ-45 IDC CAT. 6 CONNECTOR PLATE. (4) #IPS-B00SS BLANK PLATES • CABLING: PROVIDE (1) PLENUM RATED CAT. 6 DATA CABLE TO NEAREST TECHNOLOGY SPACE FOR TERMINATION ON CAT. 6 DATA PATCH PANEL. PROVIDE (1) PLENUM RATED HDMI CABLE TO WALL MOUNTED A-V BOX IN ROOM. PROVIDE THE FOLLOWING STATION CABLES FROM RECESSED OUTLET TO TV: NO STATION CABLES REQUIRED. OWNER WILL PROVIDE CONNECTIONS TO FUTURE TV
TVB	PROVIDE WHITE FLAT PANEL RECESSED WALL MOUNTED BOX WITH COVER #PWB-253-WHT BY FSR OR APPROVED EQUAL WITH THE FOLLOWING CHARACTERISTICS: • GANG 1: PROVIDE (1) #SSD2DUP PRE-WIRED (1) 20A. 125V. 2P. 3W. NEMA 5-20R GRAY DUPLEX RECEPTACLE DEVICE PLATE • GANG 2: PROVIDE (1) #IPS-V610S SINGLE FEMALE-TO-FEMALE HDMI CONNECTOR PLATE, (1) #IPS-071IS SINGLE RJ-45 IDC CAT. 6 CONNECTOR PLATE. (4) #IPS-B00SS BLANK PLATES • CABLING: PROVIDE (1) PLENUM RATED CAT. 6 DATA CABLE TO NEAREST TECHNOLOGY SPACE FOR TERMINATION ON CAT. 6 DATA PATCH PANEL. PROVIDE (1) PLENUM RATED HDMI CABLE TO WALL MOUNTED A-V BOX IN ROOM. PROVIDE THE FOLLOWING STATION CABLES FROM RECESSED OUTLET TO TV: (1) CAT. 6 DATA CABLE. (1) HDMI CABLE • DISPLAY: PROVIDE 65" DISPLAY SAMSUNG MODEL #55S57-A OR APPROVED EQUAL • DISPLAY MOUNT: PROVIDE LOW-PROFILE PULL OUT MOUNT CHIEF MODEL #PAC501B & #PWRWUB OR APPROVED EQUAL, MOUNT SHALL BE RATED FOR MORE THAN WEIGHT OF SELECTED DISPLAY AND SHALL BE PULL OUT TYPE
TVC	PROVIDE WHITE FLAT PANEL RECESSED WALL MOUNTED BOX WITH COVER #PWB-253-WHT BY FSR OR APPROVED EQUAL WITH THE FOLLOWING CHARACTERISTICS: • GANG 1: PROVIDE (1) #SSD2DUP PRE-WIRED (1) 20A. 125V. 2P. 3W. NEMA 5-20R GRAY DUPLEX RECEPTACLE DEVICE PLATE • GANG 2: PROVIDE (1) #IPS-V610S SINGLE FEMALE-TO-FEMALE HDMI CONNECTOR PLATE, (1) #IPS-071IS SINGLE RJ-45 IDC CAT. 6 CONNECTOR PLATE. (4) #IPS-B00SS BLANK PLATES • CABLING: PROVIDE (1) PLENUM RATED CAT. 6 DATA CABLE TO NEAREST TECHNOLOGY SPACE FOR TERMINATION ON CAT. 6 DATA PATCH PANEL. PROVIDE (1) PLENUM RATED HDMI CABLE TO WALL MOUNTED A-V BOX IN ROOM. PROVIDE THE FOLLOWING STATION CABLES FROM RECESSED OUTLET TO TV: (1) CAT. 6 DATA CABLE. (1) HDMI CABLE • DISPLAY: PROVIDE 98" DISPLAY SAMSUNG MODEL #QP98R-8K OR APPROVED EQUAL • DISPLAY MOUNT: PROVIDE LOW-PROFILE PULL OUT MOUNT CHIEF MODEL #PAC501B & #PWRWUB OR APPROVED EQUAL, MOUNT SHALL BE RATED FOR MORE THAN WEIGHT OF SELECTED DISPLAY AND SHALL BE PULL OUT TYPE

THE FOLLOWING SHALL APPLY TO ALL SPECIAL OUTLETS LISTED IN SPECIAL OUTLET SCHEDULE:
- CONTRACTOR SHALL PROVIDE ALL HOUSINGS, COVERS, MOUNTING PLATES, ETC. FOR A COMPLETE AND OPERATIONAL UNIT ASSEMBLY
- CONTRACTOR SHALL VERIFY COVER FINISH AND COLOR WITH ARCHITECT, INTERIOR DESIGNER, AND OWNER PRIOR TO ORDERING
- LOCATIONS FOR SPECIAL OUTLETS ARE SCHEMATICALLY SHOWN. CONTRACTOR SHALL VERIFY EXACT LOCATION (HORIZONTALLY AND VERTICALLY FOR WALL MOUNTED DEVICES) OF EACH DEVICE WITH ARCHITECTURAL PLANS & ELEVATIONS AS WELL AS FIELD CONDITIONS PRIOR TO ANY ROUGH-IN WORK. RELOCATION OF ANY DEVICES WITHOUT VERIFICATION WILL BE AT THE CONTRACTOR'S EXPENSE
- CONTRACTOR SHALL VERIFY FLOOR AND WALL TYPE WITH ARCHITECTURAL PLANS AND MATCH FOR TYPE OF COVER, EDGE OF DEVICE BACK-BOX SHALL BE FLUSH WITH SURFACE IT IS MOUNTED TO (I.E. FLOOR, CEILING, WALL). FLOOR DEVICES SHALL BE INSTALLED SUCH THAT THEY ARE NOT A TRIPPING HAZARD AS DESCRIBED IN LOCAL, STATE, & NATIONAL CODES
- STATION CABLE LENGTHS SHALL BE CONFIRMED WITH INSTALLATION LOCATION PRIOR TO ORDERING

CITY OF PORT ORANGE
1000 CITY CENTER CIRCLE PORT ORANGE, FL 32129

CITY OF PORT ORANGE PUBLIC UTILITIES FIELD OPERATIONS FACILITY

PROJECT LOCATION:
4505 CLYDE MORRIS BLVD
PORT ORANGE, FL 32129

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TECHNOLOGY SCHEDULES

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PROJECT MANUAL

City of Port Orange Public Utilities Field Operations Facility

Permit/ Bid Documents

VOLUME 1 of 2
Divisions 01 through 13

PREPARED FOR:	City of Port Orange
ISSUED:	September 30, 2024
COMMISSION NO.:	2021815

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STATEMENT OF COMPLIANCE

To the best of the Architects knowledge the Plans and Specifications comply with the applicable minimum building codes and the applicable fire-safety standards as determined by the local authority in accordance with this section and 633 Florida Statutes.

END OF SECTION 00 04 00

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SECTION 00 05 00
NON-ASBESTOS STATEMENT

To the best of the Architect's knowledge these Contract Documents do not contain any asbestos containing materials intended for use in construction.

END OF SECTION 00 05 00

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DOCUMENT 00 31 32
GEOTECHNICAL DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 GEOTECHNICAL DATA

A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information. This Document and its attachments are not part of the Contract Documents.

B. Because subsurface conditions indicated by the soil borings are a sampling in relation to the entire construction area, and for other reasons, the Owner, the Architect, the Architect's consultants, and the firm reporting the subsurface conditions do not warranty the conditions below the depths of the borings or that the strata logged from the borings are necessarily typical of the entire site. Any party using the information described in the soil borings and geotechnical report shall accept full responsibility for its use.

C. A geotechnical investigation report for Project, is available for viewing as appended to this documents.

1. The opinions expressed in this report are those of a geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by a geotechnical engineer. Owner is not responsible for interpretations or conclusions drawn from the data.
2. Any party using information described in the geotechnical report shall make additional test borings and conduct other exploratory operations that may be required to determine the character of subsurface materials that may be encountered.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF DOCUMENT 00 31 32

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REPORT OF GEOTECHNICAL STUDY

Port Orange Field Operations Facility

4505 Clyde Morris Boulevard
Port Orange, Volusia County, Florida

BET Project No. G22121

June 23, 2022

Prepared For:

Mr. Johnnie Lohrum, Jr.
Schenkel Shultz Architecture
200 East Robinson Street, Suite 300
Orlando, Florida 32801

Prepared By:

Bechtol Engineering and Testing, Inc.
605 West New York Avenue
DeLand, Florida 32720

BECHTOL ENGINEERING AND TESTING, inc.

June 23, 2022
BET Project No. G22121

TO: Mr. Johnnie Lohrum, Jr.
Schenkel Shultz Architecture
200 East Robinson Street, Suite 300
Orlando, Florida 32801

RE: Report of Geotechnical Study
Port Orange Field Operations Facility
4505 Clyde Morris Boulevard
Port Orange, Volusia County, Florida

Dear Mr. Lohrum:

As requested, Bechtol Engineering and Testing, Inc. (BET) has completed a Geotechnical Study at the above referenced site. The purpose of BET's study was to evaluate physical and strength characteristics of subsurface materials encountered by test borings within the probable construction area of the new Port Orange Field Operations Facility, and based on these characteristics, to render opinions as to the overall site subsurface conditions and the material's potential reaction to proposed construction activities. The following report summarizes BET's findings and evaluations, and provides earthwork, foundation, and pavement section related recommendations.

BET appreciates the opportunity to provide our services on this project, and trusts this report is complete and sufficient for your needs regarding the required Geotechnical Engineering services. If you should have any questions regarding the contents of this report, or if you should require any additional information, please do not hesitate to call.

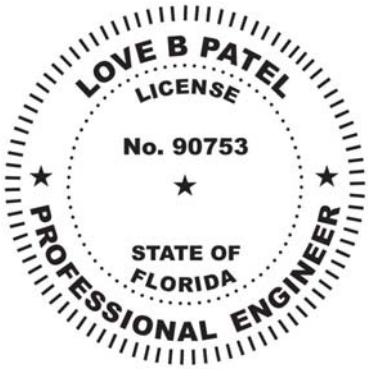
Respectfully,

Bechtol Engineering and Testing, Inc.

Love B Patel

Digitally signed by Love B Patel
Date: 2022.06.23 15:29:44 -04'00'

Love B. Patel, P.E.
Senior Geotechnical Engineer
Love B. Patel, P.E., State of Florida
Professional Engineer, License No. 90753
This item has been digitally signed and sealed by Love B. Patel, P.E. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.



G22121 Report of Geotechnical Study.wpd

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1.0 INTRODUCTION

1.1 Purpose of Study

Bechtol Engineering and Testing, Inc. (BET) has completed a Geotechnical Study relative to the proposed design and construction of the new Port Orange Field Operations Facility in Port Orange, Volusia County, Florida. The purpose of BET's study was to evaluate physical and strength characteristics of subsurface materials encountered by test borings within the area of proposed construction, and based on these characteristics, to render opinions as to the overall site subsurface conditions and the material's potential reaction to proposed construction activities. The following report summarizes BET's findings and evaluations, and provides earthwork, foundation, and pavement section related recommendations.

1.2 Intended Use / Limitations

This report is prepared solely for the use of BET's client and their various design professionals as an aid in project design and preparation of project plans and documents. Evaluations and recommendations presented herein are based on limited subsurface data derived from test borings and on the proposed developmental scheme represented on the *Paving, Grading & Drainage Plan (Sheet C6)* prepared by *Zev Cohen & Associates, Inc.* (dated 06/03/2022). Subsurface conditions not disclosed by the borings performed may occur, and could influence construction of proposed improvements. Changes in the developmental scheme may alter the applicability of the evaluations and recommendations presented herein.

2.0 SITE AND VICINITY CHARACTERISTICS

2.1 Site Location

The project site is situated generally within the northeastern quadrant of the intersection of Clyde Morris Boulevard and Regency Drive, and to the north of the Port Orange Police Department in Port Orange, Volusia County, Florida. The property is located in Section 6, Township 16 South, Range 33 East, and is centered near Latitude 29° 08' 12.8", Longitude -81° 01' 48.8".

2.2 Regional Geology

The project site lies in eastern Volusia County along the eastern fringe of the Pamlico Terrace, a broad, relatively flat plain paralleling the Atlantic Ocean, characterized by pine/palmetto flatwoods, interspersed with shallow hardwood depressions and drainage ways. Elevations throughout the region generally range from 15 feet (ft) to 35 ft National Geodetic Vertical Datum of 1929 (NGVD). Groundwater levels throughout most of the immediate site vicinity are generally within five ft of ground surface, and in some depressional areas are near or above ground surface.

Sediments of Pleistocene and Recent Age, consisting mostly of sand and shell, blanket the region. In the immediate site vicinity, these deposits extend to elevations on the order of -50 ft NGVD. Underlying deposits are of Miocene or Pliocene Age, consisting mostly of clay with some shell and sand. In the immediate site vicinity these deposits extend to an estimated elevation of about -80 ft NGVD, and are underlaid by Ocala Group and Avon Park Limestone formations associated with the Floridan Aquifer. Potentiometric surface level of water in the Florida Aquifer in the immediate site vicinity is estimated to be in the range of 0 to 10 ft NGVD.

2.3 Site Physical Characteristics

The project site consists of an irregularly shaped parcel of land with a total area of about 8.1 acres, bounded by municipal properties to the north and east, the Port Orange Police Department to the south, and undeveloped wooded properties to the west. At the time of BET's field study completed on June 6th and 7th of 2022, the project site was mostly open with vegetation consisting of a few scattered pine trees and other various hardwood trees, in addition to a small retention pond located in the north / northwestern portion of the project site. In reference to topographic data shown on the *Paving, Grading & Drainage Plan (Sheet C6)* prepared by *Zev Cohen & Associates, Inc.* (dated 06/03/2022), existing site elevations in the project area appear to generally range from 27' to 31' North American Vertical Datum of 1988 (NAVD).

3.0 PROPOSED DEVELOPMENT

3.1 Structures

As shown on the *Paving, Grading & Drainage Plan (Sheet C6)* prepared by *Zev Cohen & Associates, Inc.* (dated 06/03/2022), the proposed development consists of the following structures:

1. a single-story administrative building having a total area of 11,398 square feet (SF);
2. a single-story warehouse structure having a total area of 16,674 SF.

As shown on the *Paving, Grading & Drainage Plan (Sheet C6)* prepared by *Zev Cohen & Associates, Inc.* (dated 06/03/2022), the design finish floor elevation for both the administrative building and the warehouse structure is 32.00' NAVD. Foundations are anticipated to consist of conventional strip wall footings and spread column footings with floated slab on grade, or monolithic slab foundations. As reported by the project Structural Engineer, maximum design wall and interior column load for the structures are approximately 4 KLF and 90 Kips, respectively.

3.2 Pavement

Proposed development would include construction of new parking and drive aisles surrounding the proposed structures. On-site pavement sections may include both light-duty sections in parking areas, and heavy-duty sections in main drives and truck marshaling areas, and may consist of either asphaltic concrete surface course over limerock or crushed concrete base course and stabilized subgrade, or Portland Cement Concrete pavement over stabilized subgrade. As shown on the *Paving, Grading & Drainage Plan (Sheet C6)* prepared by *Zev Cohen & Associates, Inc.* (dated 06/03/2022), proposed finish pavement grades appear to range from 28.80' to 31.95' NAVD. Design vehicle loadings and frequencies were not known at the time of this report, but traffic is anticipated to consist mostly of light-duty cars, pick-up trucks and vans, and occasional heavy-duty delivery, garbage and fire trucks.

4.0 GEOTECHNICAL FIELD STUDY

4.1 Subsurface Soil Borings

BET's field study, completed on June 6th and 7th of 2022, consisted of advancing six (6) Standard Penetration Test (SPT) borings (ASTM D-1586) within the proposed building areas each to depths ranging from 30 to 35 feet below existing ground surface, supplemented by five (5) auger borings within the proposed parking/drive areas, each to depth of 6 feet below existing ground surface.

4.2 Presentation of Boring Locations and Subsurface Findings

Graphic presentation of the subsurface findings are presented in Appendix A of this report. Approximate locations of the borings are shown on the Boring Location Plan presented on Sheet A1. Encountered subsurface conditions are presented in the form of Soil Profiles, along with corresponding Soil and Symbol Legend, shown on Sheets A2 and A3.

5.0 ENCOUNTERED SUBSURFACE CONDITIONS

5.1 Soil Conditions

In general, the borings encountered surficial deposits comprised of very loose to loose dark gray-brown to gray-brown and dark brown slightly silty to silty fine sands (Stratum 1) and/or very loose to medium dense gray to light gray fine sands (Stratum 2), extending to depths ranging from 5.2 to 9 feet below the existing ground surface. BET notes that the Stratum 1 soils at boring TB-5 encountered some roots between depths of 2 to 3 feet below the existing ground surface. Underlying soils consisted of loose to very dense dark brown to brown slightly silty to silty fine sands, some with traces of roots and some with cemented sands [Hardpan-Type] (Stratum 3), extending to depths ranging from 13.5 to 18.5 feet below the existing ground surface. Underlying soils to the boring termination depths consisted of loose to medium dense light brown to brown and gray to gray-brown fine sands to slightly silty fine sands (Stratum 4), very soft gray silty clay with trace shell (Stratum 5), and/or loose gray clayey fine sands (Stratum 6). For a more in-depth soil stratification, please refer to the soil profiles presented on Sheets A2 and A3 in Appendix A.

5.2 Groundwater Conditions

Groundwater levels, as measured at each of the SPT and auger boring locations, were encountered at depths ranging from 3.4 to 5.6 feet below the ground surface existing at the time of drilling. In reference to approximate ground surface elevations at the boring locations shown on the *Paving, Grading & Drainage Plan (Sheet C6)* prepared by *Zev Cohen & Associates, Inc.* (dated 06/03/2022), the corresponding groundwater elevations appeared to be in the range of 23' to 25.5' NAVD. BET cautions that groundwater levels are subject to variation due to seasonal climate changes and man-induced influences. BET estimates that average seasonal high groundwater levels are estimated to be +/- 2' above those levels encountered at the time of drilling. However, some potential exists for temporary perching of groundwater atop low-permeable Hardpan-Type soils (Stratum 3), which could periodically result in groundwater within 24 inches of the ground surface existing at the time of drilling.

6.0 GEOTECHNICAL EVALUATIONS AND RECOMMENDATIONS

6.1 Site Sinkhole Potential

The project site does not lie in an area of Karst topography, and the general geology and groundwater conditions suggest that the potential for sinkhole development in the project site vicinity is probably very low. Deeper seated test borings necessary for evaluation of sinkhole potential were not authorized as part of this study. Therefore, evaluation of sinkhole potential at the subject site is beyond the scope of this study.

6.2 Suitability of Encountered Soils

Although not indicated by the soil profiles, some surficial topsoils containing appreciable quantities of roots and organic matter may exist in some areas of the project site. If encountered, surficial topsoils should be removed from structural areas during standard clearing and grubbing operations. Additionally, BET notes that any demolition debris, abandoned utilities and/or deleterious materials remaining from the prior demolition activities should be removed from the construction areas to allow for construction of the proposed improvements. Generally, the underlying subgrade soils are granular in nature, and should be suitable as foundation and pavement section subgrade and as structural fill, pending adequate completion of certain earthwork activities, including clearing and grubbing of vegetation and surface topsoils, removal of demolition debris, abandoned utilities and/or deleterious materials, and compaction of subgrade and structural fill soils.

6.3 Earthwork Recommendations

Suitable support of proposed building and pavement sections would be dependent on several earthwork considerations including:

1. Clearing/stripping of surface vegetation and topsoils
2. Removal of demolition debris, abandoned utilities, and any other unsuitable/deleterious materials which may be encountered
3. Compaction of subgrade and fill soils.

General Earthwork Recommendations are presented in Appendix B.

6.4 Foundation Recommendations

The recommended foundation system for the proposed buildings on this site is either conventional shallow continuous strip wall footings and spread column footings, with interior slab on grade or conventional monolithic slab foundation. Foundations should be proportioned for maximum soil contact bearing pressure of 2,000 pounds per square foot (psf), to include all dead and live loads. Base of strip footings should be a minimum of 16 inches in width. Minimum size of spread column footings should be 24 inches by 24 inches. Base of conventional footings should be embedded a

minimum of 20 inches below lowest adjacent exterior grade. Base of thickened, load bearing monolithic slab sections should be a minimum of 16 inches in width and should be embedded a minimum of 12 inches below lowest adjacent exterior grade. Actual foundation dimensions, embedment and reinforcing should be determined by a licensed Structural Engineer based on design structural loads and the above allowable soil bearing pressure. Suitability of the recommended foundation systems is dependent on adequate completion of the recommended earthwork activities outlined in Appendix B.

6.5 Foundation Settlement

BET utilized AllPile v7.12 software in order to estimate potential degrees of foundation settlement for the proposed building. For purposes of the analysis, soil contact bearing pressure of 2,000 psf was assumed on a 2-foot wide strip footing and on a 7' x 7' spread footing, with base set at elevation 30' NAVD. Foundation subgrade soils compaction is assumed to be in accordance with the recommendations presented herein. Based on results of the AllPile Settlement Analysis' performed, BET estimates that maximum total foundation settlement would be one-half inch, or less. Maximum differential foundation settlement is estimated to be one-quarter inch, or less. The majority of any foundation settlement which may be experienced would be due to elastic deformation of granular subgrade soils. Any such settlement should be short-term in nature, generally occurring during construction, and within the first year following completion of construction. Future long-term foundation settlement should be negligible.

6.6 Pavement Section Recommendations

The borings conducted in the proposed new parking/drive aisles encountered subsurface soils consisting of slightly silty to silty fine sands (Stratum 1), fine sands (Stratum 2) and/or slightly silty to silty fine sands [Hardpan-Type] (Stratum 3). These soils appear to be relatively clean, stable granular materials which should be suitable for support of conventional asphalt and/or concrete pavement sections pending completion of certain earthwork acitivites. General Earthwork Recommendations are presented in Appendix B of this report. Pavement Section Recommendations are presented in Appendix C of this report. Actual design pavement section should be determined by a licensed Civil Engineer based on design vehicle loadings and frequencies.

6.7 Review of Final Design Criteria

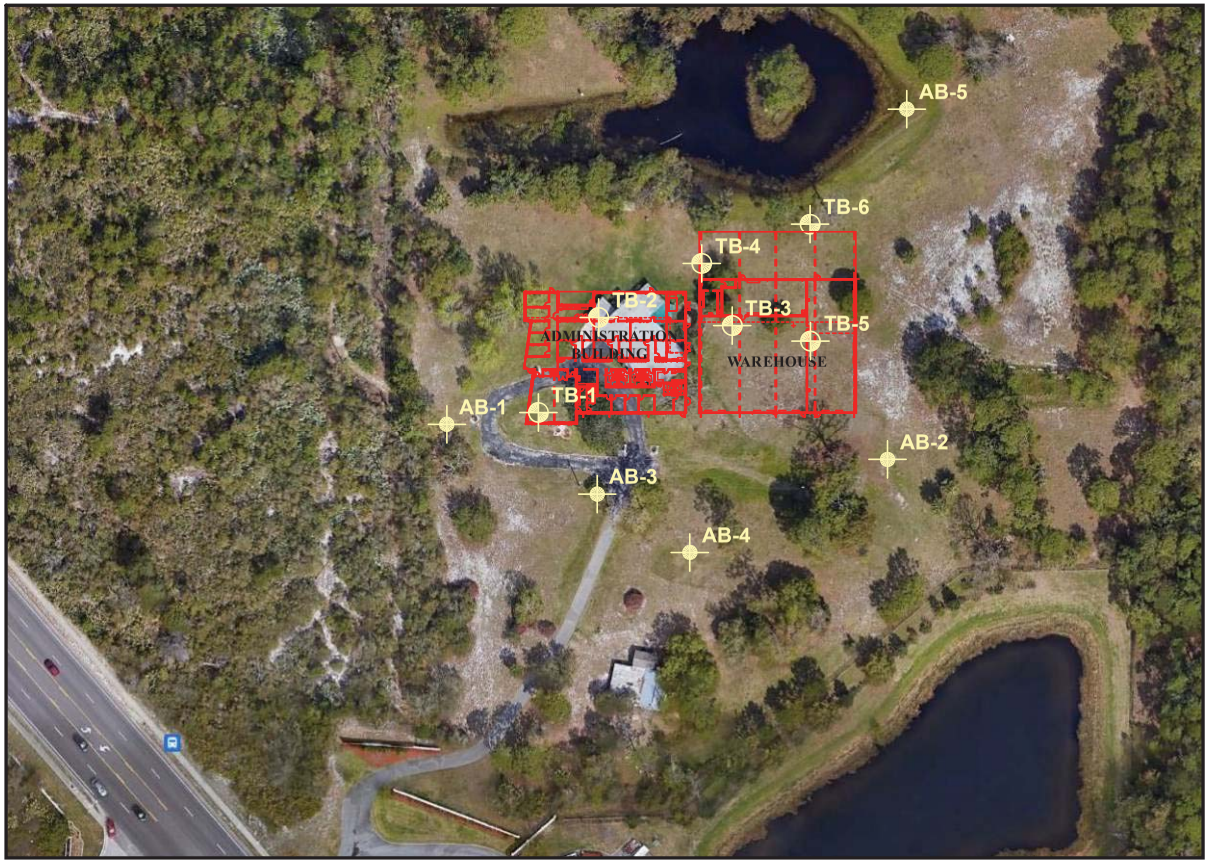
The evaluations and recommendations presented in this report are based partly on assumed design criteria. Final design criteria, including foundation plans, grading plans, and structural loading conditions, should be reviewed by BET in order that they may evaluate the applicability of their recommendations, and provide revised or additional recommendations as may be warranted.

APPENDIX A

BORING LOCATION PLAN
SOIL PROFILES
SOIL & SYMBOL LEGEND

BORING LOCATION PLAN

SCALE: 1" = 100'



SCALE (feet)

0 50 100

SYMBOL LEGEND

APPROXIMATE LOCATION OF STANDARD PENETRATION TEST BORING

APPROXIMATE LOCATION OF AUGER BORING

LIMITED GEOTECHNICAL STUDY

PORT ORANGE FIELD OPERATIONS FACILITY

4505 CLYDE MORRIS BOULEVARD

PORT ORANGE, VOLUSIA COUNTY, FLORIDA

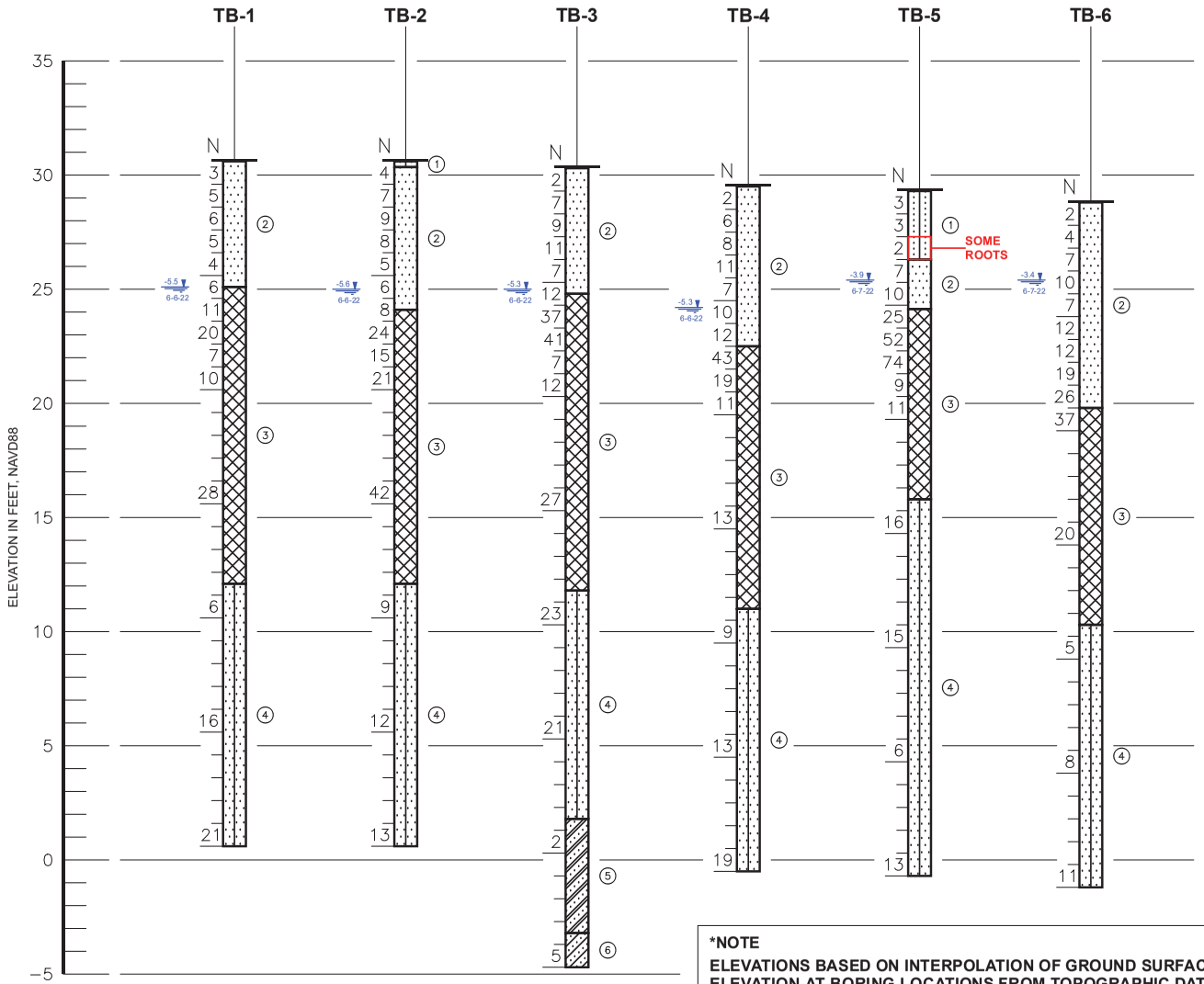
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DRAWN:	KG
CHECKED:	LP
APPROVED:	LP
DATE:	6-21-22
SCALE:	NOTED
PROJ. NO.:	G22121
	SHEET A1

BECHTOL ENGINEERING AND TESTING, INC.

CONSULTING GEOTECHNICAL, ENVIRONMENTAL AND MATERIALS TESTING ENGINEERS

SOIL PROFILES

VERTICAL SCALE: 1" = 5'



SOIL & SYMBOL LEGEND

①	DARK GRAY-BROWN TO GRAY-BROWN AND DARK BROWN SLIGHTLY SILTY TO SILTY FINE SAND, (SP-SM)(SM), VERY LOOSE TO LOOSE
②	GRAY TO LIGHT GRAY FINE SAND, (SP), VERY LOOSE TO MEDIUM DENSE,
③	DARK BROWN TO BROWN SLIGHLTY SILTY TO SILTY FINE SAND, SOME WITH TRACES ROOTS AND SOME WITH CEMENTED SANDS [SOME HARDPAN-TYPE], (SP-SM)(SM), LOOSE TO VERY DENSE
④	LIGHT BROWN TO BROWN AND GRAY TO GRAY-BROWN FINE SAND TO SLIGHLTY SILTY FINE SAND, (SP)(SP-SM), LOOSE TO MEDIUM DENSE,
⑤	GRAY SILTY CLAY WITH TRACE SHELL, (CL), VERY SOFT
⑥	GRAY CLAYEY FINE SAND, (SC), LOOSE
(SP)	UNIFIED SOIL CLASSIFICATION GROUP SYMBOL AS DETERMINED BY VISUAL EXAMINATION
-3.4 6-7-22	GROUNDWATER LEVEL, REFERENCED IN FEET TO EXISTING GROUND SURFACE, DATE OF READING
N	STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT

***NOTE**

ELEVATIONS BASED ON INTERPOLATION OF GROUND SURFACE ELEVATION AT BORING LOCATIONS FROM TOPOGRAPHIC DATA SHOWN ON THE PAVING, GRADING, AND DRAINAGE PLAN PROVIDED BY THE CLIENT. ACTUAL ELEVATIONS MAY VARY.

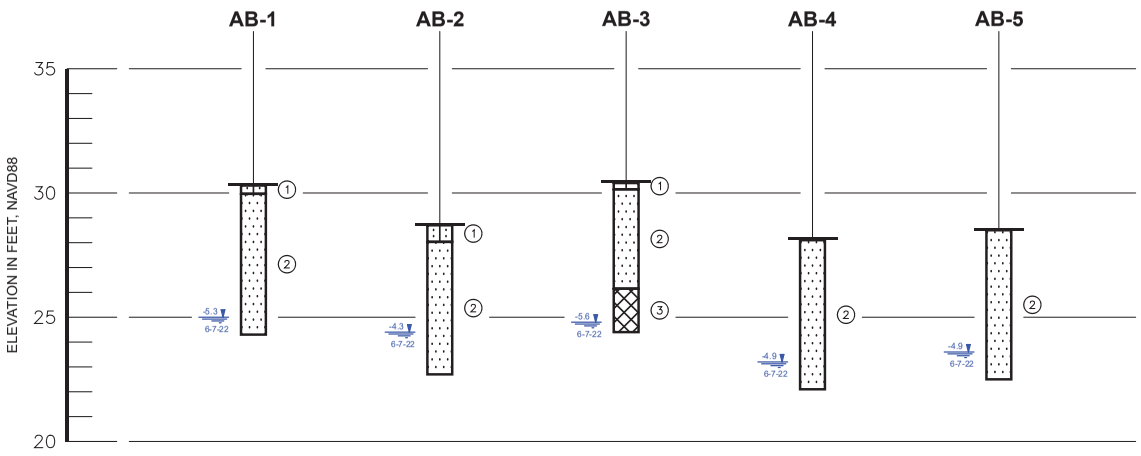
FIELD: CT KT
DRAWN: KG
CHECKED: LP
APPROVED: LP
DATE: 6-21-22
SCALE: NOTED
PROJ. NO.: G22121
SHEET A2

LIMITED GEOTECHNICAL STUDY
PORT ORANGE FIELD OPERATIONS FACILITY
4505 CLYDE MORRIS BOULEVARD
PORT ORANGE, VOLUSIA COUNTY, FLORIDA

BECHTOL ENGINEERING AND TESTING, INC.
CONSULTING GEOTECHNICAL, ENVIRONMENTAL AND MATERIALS TESTING ENGINEERS

SOIL PROFILES

VERTICAL SCALE: 1" = 5'



***NOTE**

ELEVATIONS BASED ON INTERPOLATION OF GROUND SURFACE ELEVATION AT BORING LOCATIONS FROM TOPOGRAPHIC DATA SHOWN ON THE PAVING, GRADING, AND DRAINAGE PLAN PROVIDED BY THE CLIENT. ACTUAL ELEVATIONS MAY VARY.

SOIL & SYMBOL LEGEND

1. DARK GRAY-BROWN TO GRAY-BROWN AND DARK BROWN SLIGHTLY SILTY TO SILTY FINE SAND, (SP-SM)(SM), VERY LOOSE TO LOOSE
2. GRAY TO LIGHT GRAY FINE SAND, (SP), VERY LOOSE TO MEDIUM DENSE,
3. DARK BROWN TO BROWN SLIGHLTY SILTY TI SILTY FINE SAND, SOME WITH TRACES ROOTS AND SOME WITH CEMENTED SANDS, (SP-SM)(SM), LOOSE TO VERY DENSE
4. LIGHT BROWN TO BROWN AND GRAY TO GRAY-BROWN FINE SAND TO SLIGHLTY SILTY FINE SAND, (SP)(SP-SM), LOOSE TO MEDIUM DENSE,
5. GRAY SILTY CLAY WITH TRACE SHELL, (CL), VERY LOOSE
6. GRAY CLAYEY FINE SAND, (SC), LOOSE

(SP) UNIFIED SOIL CLASSIFICATION GROUP SYMBOL AS DETERMINED BY VISUAL EXAMINATION

-4.3 6-7-22 GROUNDWATER LEVEL, REFERENCED IN FEET TO EXISTING GROUND SURFACE, DATE OF READING

FIELD: CT KT
DRAWN: KG
CHECKED: LP
APPROVED: LP
DATE: 6-21-22
SCALE: NOTED
PROJ. NO.: G22121
SHEET A3

LIMITED GEOTECHNICAL STUDY
PORT ORANGE FIELD OPERATIONS FACILITY
4505 CLYDE MORRIS BOULEVARD
PORT ORANGE, VOLUSIA COUNTY, FLORIDA

BECHTOL ENGINEERING AND TESTING, INC.
CONSULTING GEOTECHNICAL, ENVIRONMENTAL AND MATERIALS TESTING ENGINEERS

APPENDIX B

EARTHWORK RECOMMENDATIONS

APPENDIX B
EARTHWORK RECOMMENDATIONS

1.0 CLEARING/GRUBBING

1.1 The building and pavement areas, plus suitable margins, should be cleared and stripped of all vegetation, surface topsoils, demolition debris, abandoned utilities, and any other unsuitable/deleterious materials which may be encountered.

1.2 Tree removal should include the extraction of stumps and associated root network.

2.0 SUBGRADE SOILS COMPACTION

2.1 Exposed subgrade soils in cleared and stripped building and pavement areas, should be wetted as needed to achieve near-optimum soil moisture conditions, and compacted to the degree and depth recommended below.

2.2 Recommended degree of subgrade soils compaction is 98% of the material's theoretical maximum dry density, as determined by Modified Proctor Test (ASTM D-1557, AASHTO T-1 80).

2.3 Recommended depth of subgrade soils compaction in foundation areas is 2 feet below stripped grade or 2 feet below base of foundation elevation, whichever is deeper.

2.4 Recommended depth of subgrade soils compaction in pavement areas is one foot below finish subgrade elevation or for each foot of compacted fill thickness, whichever is deeper.

3.0 FILL MATERIAL PLACEMENT AND COMPACTION

3.1 Fill soils utilized to raise building and pavement areas to desired grade should consist of clean, granular materials with less than 15% passing Number 200 U.S. Standard Sieve.

3.2 Fill soils should be spread in loose lifts not exceeding sixteen inches (16") if compacted with heavy compaction equipment and eight inches (8") if compacted with light hand operated equipment.

3.3 Each successive lift should be wetted as needed to achieve near-optimum soil moisture conditions and compacted by appropriate mechanical means to the degree recommended below.

3.4 Recommended degree of fill soils compaction is 95% of the material's theoretical maximum dry density, as determined by Modified Proctor Test (ASTM D-1557, AASHTO T-180).

4.0 COMPACTION TESTING

4.1 The recommended depth and degree of compaction for subgrade and fill soils should be verified by in-place density tests conducted in general conformance with appropriate ASTM density testing procedures.

4.2 Density tests should be conducted for each foot of compacted thickness at each test location.

4.3 Recommended minimum frequency of in-place density testing is one (1) location per:

- each spread column footing.
- every 100 lineal feet of continuous strip footing or thickened slab section.
- every 2,000 square feet of slab area
- every 2,000 square feet of pavement area

Appropriate frequency of testing may vary depending upon construction procedures.

5.0 SPECIAL CONSIDERATIONS

5.1 Foundation and slab areas should be wetted and proof-rolled prior to pouring concrete in order to re-compact surface materials which may have become disturbed by utility installations and other construction activities.

5.2 The earthwork contractor should be aware of nearby structures, and use vibratory compaction equipment with appropriate discretion.

APPENDIX C

PAVEMENT SECTION RECOMMENDATIONS

APPENDIX C
PAVEMENT SECTION RECOMMENDATIONS

1.0 ASPHALT PAVEMENT

1.1 Surface Course

Surface course should consist of a minimum of two inches (compacted thickness) in heavy-duty truck marshaling and main drive areas, and a minimum of 1.5 inches (compacted thickness) in light duty parking areas of asphalt conforming to FDOT specifications for Superpave 12.5 mm or 9.5 mm traffic level "C" asphaltic concrete.

1.2 Base Course

1.2.1 *Limerock*: Base course should consist of a minimum of eight inches (compacted thickness) in heavy-duty truck marshaling and main drive areas, and six inches (compacted thickness) in light duty parking areas, of limerock compacted to minimum relative compaction of 98% of the material's Modified Proctor (ASTM D-1557, AASHTO T-180) laboratory maximum dry density. If limerock base is desirable, it is recommended that lowest finish pavement grade be set a minimum of 24 inches above estimated average seasonal high groundwater level.

1.2.2 *Crushed Concrete:* Base course should consist of a minimum of eight inches (compacted thickness) in heavy-duty truck marshaling and main drive areas, and six inches (compacted thickness) in light duty parking areas of crushed concrete (minimum LBR 100) compacted to minimum relative compaction of 98% of the material's Modified Proctor (ASTM D-1557, AASHTO T-180) laboratory maximum dry density.

1.3 Stabilized Subgrade

Subbase should consist of a minimum of eight inches (compacted thickness) in heavy-duty truck marshaling and main drive areas, and six inches (compacted thickness) in light duty parking areas, of granular fill or native soils mixed with a quantity of suitable stabilization material sufficient to achieve a minimum Limerock Bearing Ratio of 40% (LBR 40). Subbase should be compacted to minimum relative compaction of 98% of the material's Modified Proctor (ASTM D-1 557, AASHTO T-1 80) laboratory maximum dry density.

2.0 CONCRETE PAVEMENT

2.1 Surface Course

Surface course should consist of a minimum of eight inches (8") in heavy-duty truck marshaling areas, and six inches (6") in light duty parking areas, of concrete with a minimum 28-day compressive strength of 4,000 pounds per square inch (psi). Construction and contraction joints should be provided in general conformance to PCA guidelines.

2.2 Stabilized Subgrade

Subgrade should consist of a minimum of 12-inches (compacted thickness) of granular fill or native soils mixed with a quantity of suitable stabilization material sufficient to achieve a minimum Limerock Bearing Ratio of 30% (LBR 30). Subgrade should be compacted to minimum relative compaction of 95% of the material's Modified Proctor (ASTM 0-1557, AASHTO T-180) laboratory maximum dry density.

Actual design pavement section should be determined by a licensed Civil Engineer based on design vehicle loadings and frequencies.

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BECHTOL ENGINEERING AND TESTING, inc.

June 23, 2022
BET Project No. G22121

TO: Mr. Johnnie Lohrum, Jr.
Schenkel Shultz Architecture
200 East Robinson Street, Suite 300
Orlando, Florida 32801

RE: Soil Borings & Permeability Testing
Port Orange Field Operations Facility
4505 Clyde Morris Boulevard
Port Orange, Volusia County, Florida

Dear Mr. Lohrum:

As authorized, Bechtol Engineering and Testing, Inc. (BET) has conducted auger borings and field permeability/hydraulic conductivity testing at the subject site. The purpose of BET's borings and testing was to gain general insight as to the soil, groundwater and permeability characteristics in the areas of proposed stormwater management systems, and based on these characteristics to provide recommended design parameters for stormwater recovery analysis. Approximate locations of the borings and permeability tests performed are shown on the Boring Location Plan presented on the attached Figure 1. Encountered subsurface soils, encountered and estimated seasonal high groundwater levels, and applicable permeability data are summarized on the Soil Profiles, shown on Figure 2.

Based on the encountered conditions, BET would recommend the following design parameters be utilized in stormwater system design and recovery analyses:

DESIGN PARAMETER	RECOMMENDED VALUE		
	AP-1 - AP-4	AP-5	AP-6
ELEVATION OF EFFECTIVE AQUIFER BASE (FEET, NAVD88)	21.5	34.1	20.4
ELEVATION OF SEASONAL HIGH GROUNDWATER (FEET, NAVD88)	26.6	34.6	23.1
UNSATURATED VERTICAL HYDRAULIC CONDUCTIVITY (FPD)	4.8	8.3	20*
SATURATED HORIZONTAL HYDRAULIC CONDUCTIVITY (FPD)	14.5	24.9	40*

NOTES:
1. Elevations are based on interpolation of ground surface elevation at the boring locations from topographic data shown on the *Paving, Grading & Drainage Plan (Sheet C6)* prepared by *Zev Cohen & Associates, Inc.* (dated 06/03/2022). Actual elevations may vary.
2. Recommended hydraulic conductivity rates are based on averages of the values measured in the field at four test locations for AP-1 through AP-4.
3. Recommended aquifer base and seasonal high groundwater elevations are based on averages of the values measured and/or estimated in the field at four test locations for AP-1 through AP-4.

* Actual measured horizontal and vertical permeability rate was 80.0 FPD and 26.7 FPD, respectively. However for design purposes, BET recommends maximum horizontal and vertical values of 40 FPD and 20 FPD, respectively.

The boring profiles depict subsurface conditions only at the specific locations drilled and to the termination depths noted. Permeability and hydraulic conductivity rates noted are based on actual field measured parameters and do not incorporate any factor of safety for design.

The services requested and performed are for the sole purpose of aiding the design engineer in evaluating and designing stormwater management systems. Variations in subsurface conditions not disclosed by the borings and testing performed may occur, and could influence the performance and construction of such systems.

BET appreciates the opportunity to be of service, and trusts this information is complete and sufficient for your needs. If you should have any questions or if BET may be of further service, please do not hesitate to call.

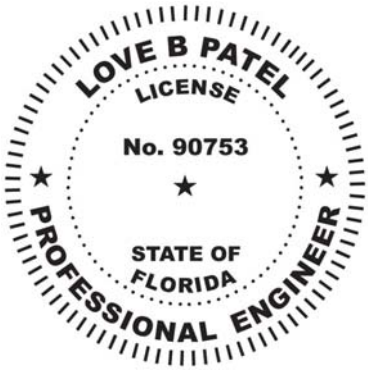
Respectfully,

Bechtol Engineering and Testing, Inc.

Love B Patel

Digitally signed by Love B Patel
Date: 2022.06.23 15:31:30 -04'00'

Love B. Patel, P.E.
Senior Geotechnical Engineer
Love B. Patel, P.E., State of Florida
Professional Engineer, License No. 90753
This item has been digitally signed and sealed by Love B. Patel, P.E. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.



BORING LOCATION PLAN

SCALE: 1" = 100'



SCALE (feet)
0 50 100

SYMBOL LEGEND

APPROXIMATE LOCATION OF AUGER BORING WITH FIELD PERMEABILITY TEST

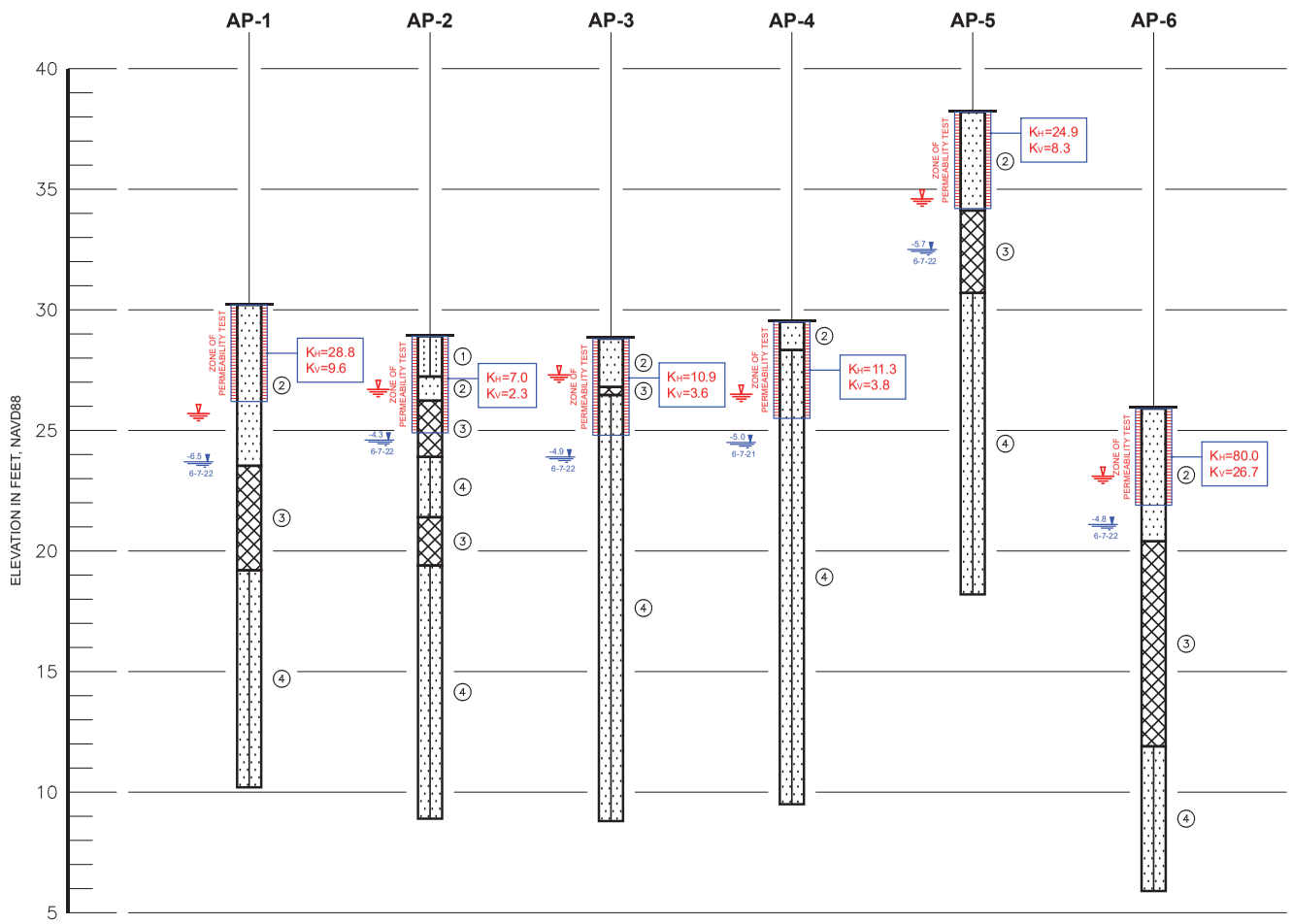
SOIL BORINGS AND PERMEABILITY TEST
PORT ORANGE FIELD OPERATIONS FACILITY
4505 CLYDE MORRIS BOULEVARD
PORT ORANGE, VOLUSIA COUNTY, FLORIDA

FIELD:	CT KT	DATE:	6-21-22
DRAWN:	KG	SCALE:	NOTED
CHECKED:	LP	PROJ. NO.:	G22121
APPROVED:	LP		FIGURE 1

BECHTOL ENGINEERING AND TESTING, INC.
CONSULTING GEOTECHNICAL, ENVIRONMENTAL AND MATERIALS TESTING ENGINEERS

SOIL PROFILES

VERTICAL SCALE: 1" = 5'



*NOTE

ELEVATIONS BASED ON INTERPOLATION OF GROUND SURFACE ELEVATION AT BORING LOCATIONS FROM TOPOGRAPHIC DATA SHOWN ON THE PAVING, GRADING, AND DRAINAGE PLAN PROVIDED BY THE CLIENT. ACTUAL ELEVATIONS MAY VARY.

SOIL & SYMBOL LEGEND

1	DARK GRAY-BROWN TO GRAY-BROWN AND DARK BROWN SLIGHTLY SILTY TO SILTY FINE SAND, (SP-SM)(SM), VERY LOOSE TO LOOSE
2	GRAY TO LIGHT GRAY FINE SAND, (SP), VERY LOOSE TO MEDIUM DENSE,
3	DARK BROWN TO BROWN SLIGHLTY SILTY TO SILTY FINE SAND, SOME WITH TRACES ROOTS AND SOME WITH CEMENTED SANDS [SOME HARDPAN-TYPE], (SP-SM)(SM), LOOSE TO VERY DENSE
4	LIGHT BROWN TO BROWN AND GRAY TO GRAY-BROWN FINE SAND TO SLIGHLTY SILTY FINE SAND, (SP)(SP-SM), LOOSE TO MEDIUM DENSE,
5	GRAY SILTY CLAY WITH TRACE SHELL, (CL), VERY SOFT
6	GRAY CLAYEY FINE SAND, (SC), LOOSE
(SP)	UNIFIED SOIL CLASSIFICATION GROUP SYMBOL AS DETERMINED BY VISUAL EXAMINATION
-4.3 6-7-22	GROUNDWATER LEVEL, REFERENCED IN FEET TO EXISTING GROUND SURFACE, DATE OF READING
	ESTIMATED AVERAGE SEASONAL HIGH GROUNDWATER LEVEL
K_H	MEASURED COEFFICIENT OF HORIZONTAL PERMEABILITY (IN FEET PER DAY)
K_V	ESTIMATED COEFFICIENT OF VERTICAL PERMEABILITY (IN FEET PER DAY)

FIELD:	CT KT
DRAWN:	KG
CHECKED:	LP
APPROVED:	LP
DATE:	6-21-22
SCALE:	NOTED
PROJ. NO.:	G22121
	FIGURE 2

SOIL BORINGS AND PERMEABILITY TEST

PORT ORANGE FIELD OPERATIONS FACILITY

4505 CLYDE MORRIS BOULEVARD

PORT ORANGE, VOLUSIA COUNTY, FLORIDA

BECHTOL ENGINEERING AND TESTING, INC.

CONSULTING GEOTECHNICAL, ENVIRONMENTAL AND MATERIALS TESTING ENGINEERS

Division 01

General Requirements

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SECTION 01 10 00
SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Phased construction.
4. Owner-furnished/Contractor-installed (OFCI) products.
5. Contractor's use of site and premises.
6. Work restrictions.
7. Specification and Drawing conventions.
8. Miscellaneous provisions.

1.3 DEFINITIONS

A. Work Package: A group of specifications, drawings, and schedules prepared by the design team to describe a portion of the Project Work for pricing, permitting, and construction.

1.4 PROJECT INFORMATION

A. Project Identification: City of Port Orange Public Utilities Field Operations Facility.

1. Project Location: Port Orange, Florida.

B. Owner: City of Port Orange.

1.5 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents.

B. Type of Contract:

1. Project will be constructed under a single prime contract.

1.6 WORK PERFORMED BY OWNER

A. Cooperate fully with Owner, so work may be carried out smoothly, without interfering with or delaying Work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.

1.7 WORK UNDER OWNER'S SEPARATE CONTRACTS

A. Work with Separate Contractors: Cooperate fully with Owner's separate contractors, so work on those contracts may be carried out smoothly, without interfering with or delaying Work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under Owner's separate contracts.

1.8 OWNER-FURNISHED/CONTRACTOR-INSTALLED (OFCI) PRODUCTS

A. Owner's Responsibilities: Owner will furnish products indicated and perform the following, as applicable:

1. Provide to Contractor Owner-reviewed Product Data, Shop Drawings, and Samples.
2. Provide for delivery of Owner-furnished products to Project site.
3. Upon delivery, inspect, with Contractor present, delivered items.

    a. If Owner-furnished products are damaged, defective, or missing, arrange for replacement.

4. Obtain manufacturer's inspections, service, and warranties.
5. Inform Contractor of earliest available delivery date for Owner-furnished products.

B. Contractor's Responsibilities: The Work includes the following, as applicable:

1. Designate delivery dates of Owner-furnished products in Contractor's construction schedule, utilizing Owner-furnished earliest available delivery dates.
2. Review Owner-reviewed Product Data, Shop Drawings, and Samples, noting discrepancies and other issues in providing for Owner-furnished products in the Work.
3. Receive, unload, handle, store, protect, and install Owner-furnished products.
4. Make building services connections for Owner-furnished products.
5. Protect Owner-furnished products from damage during storage, handling, and installation and prior to Substantial Completion.
6. Repair or replace Owner-furnished products damaged following receipt.

1.9 CONTRACTOR'S USE OF SITE AND PREMISES

A. Unrestricted Use of Site: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

B. Restricted Use of Site: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

C. Limits on Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Driveways, Walkways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.

a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

D. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

E. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.10 WORK RESTRICTIONS

A. Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work to between 7:00 a.m. to 6:00 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.

1. Weekend Hours: As coordinated with the Owner's Representative.
2. Early Morning Hours: As coordinated with the Owner's Representative.
3. Work in Existing Building: As coordinated with the Owner's Representative.
4. Hours for Utility Shutdowns: As coordinated with the Owner's Representative.

C. Smoking and Controlled Substance Restrictions: Use of tobacco products, alcoholic beverages, and other controlled substances within the building is not permitted.

D. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

E. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.

1. Maintain list of approved screened personnel with Owner's representative.

1.11 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.

C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings and published as part of the U.S. National CAD Standard.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 10 00

SECTION 01 25 00
SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

A. Substitution Requests: Submit documentation identifying product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use form that is part of web-based Project management software.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

    a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
    b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.

c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.7 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Substitution request is fully documented and properly submitted.
c. Requested substitution will not adversely affect Contractor's construction schedule.
d. Requested substitution has received necessary approvals of authorities having jurisdiction.
e. Requested substitution is compatible with other portions of the Work.
f. Requested substitution has been coordinated with other portions of the Work.
g. Requested substitution provides specified warranty.
h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Not allowed unless otherwise indicated.

C. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
b. Requested substitution does not require extensive revisions to the Contract Documents.
c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
d. Substitution request is fully documented and properly submitted.
e. Requested substitution will not adversely affect Contractor's construction schedule.
f. Requested substitution has received necessary approvals of authorities having jurisdiction.
g. Requested substitution is compatible with other portions of the Work.
h. Requested substitution has been coordinated with other portions of the Work.
i. Requested substitution provides specified warranty.
j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 25 00

SECTION 01 26 00
CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.3 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710.

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
2. Within 20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
    e. Quotation Form: Use forms acceptable to Architect.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 01 25 00 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Architect.

1.5 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Change Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on form provided as part of web-based Project management software.

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.7 WORK CHANGE DIRECTIVE

A. Work Change Directive: Architect may issue a Work Change Directive on form acceptable to the Architect. Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Work Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 26 00

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SECTION 01 29 00
PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
2. Submit the schedule of values to Architect at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.
4. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values coordinated with each element.
5. Subschedules for Separate Design Contracts: Where the Owner has retained design professionals under separate contracts who will each provide certification of payment requests, provide subschedules showing values coordinated with the scope of each design services contract, as described in Section 01 10 00 "Summary."

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the schedule of values:

a. Project name and location.

b. Owner's name.
c. Owner's Project number.
d. Name of Architect.
e. Architect's Project number.
f. Contractor's name and address.
g. Date of submittal.

2. Arrange schedule of values consistent with format of AIA Document G703.
3. Arrange the schedule of values in tabular form, with separate columns to indicate the following for each item listed:

   a. Related Specification Section or division.
   b. Description of the Work.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator.
   e. Name of supplier.
   f. Change Orders (numbers) that affect value.
   g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.

      1) Labor.
      2) Materials.
      3) Equipment.

4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

   a. Differentiate between items stored on-site and items stored off-site.

6. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
7. Purchase Contracts: Provide a separate line item in the schedule of values for each Purchase contract. Show line-item value of Purchase contract. Indicate Owner payments or deposits, if any, and balance to be paid by Contractor.
8. Overhead Costs, Proportional Distribution: Include total cost and proportionate share of general overhead and profit for each line item.
9. Overhead Costs, Separate Line Items: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
10. Temporary Facilities: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
11. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
12. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments, as certified by Architect and paid for by Owner.

B. Payment Application Times: The date for each progress payment is indicated in the Owner/Contractor Agreement. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Times: Submit Application for Payment to Architect by the 5th of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.

1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect.

D. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.

1. Other Application for Payment forms proposed by the Contractor may be acceptable to Architect and Owner. Submit forms for approval with initial submittal of schedule of values.

E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

F. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:

a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

G. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

H. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

I. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Combined Contractor's construction schedule (preliminary if not final) incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.
5. Products list (preliminary if not final).
6. Schedule of unit prices.
7. Submittal schedule (preliminary if not final).
8. List of Contractor's staff assignments.
9. List of Contractor's principal consultants.
10. Copies of building permits.
11. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
12. Initial progress report.
13. Report of preconstruction conference.
14. Certificates of insurance and insurance policies.
15. Performance and payment bonds.
16. Data needed to acquire Owner's insurance.

J. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.

a. Complete administrative actions, submittals, and Work preceding this application, as described in Section 01 77 00 "Closeout Procedures."

2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

K. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Certification of completion of final punch list items.
3. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
4. Updated final statement, accounting for final changes to the Contract Sum.
5. AIA Document G706.
6. AIA Document G706A.
7. AIA Document G707.
8. Evidence that claims have been settled.
9. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
10. Final liquidated damages settlement statement.
11. Proof that taxes, fees, and similar obligations are paid.
12. Waivers and releases.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 29 00

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SECTION 01 31 00
PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:

1. General coordination procedures.
2. Coordination drawings.
3. RFIs.
4. Digital project management procedures.
5. Web-based Project management software package.
6. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

1.3 DEFINITIONS

A. BIM: Building Information Modeling.

B. RFI: Request for Information. Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, in web-based Project software directory, and in prominent location in each built facility. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Coordination of Multiple Contracts: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its own operations with operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and scheduled activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.

5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

1.6 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:

    a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
    b. Coordinate the addition of trade-specific information to coordination drawings in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
    c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
    d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
    e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
    f. Indicate required installation sequences.
    g. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
3. Mechanical Rooms: Provide coordination drawings for mechanical rooms, showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.

5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Mechanical and Plumbing Work: Show the following:

    a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
    b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
    c. Fire-rated enclosures around ductwork.

7. Electrical Work: Show the following:

    a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
    b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
    c. Panel board, switchboard, switchgear, transformer, busway, generator, and motor-control center locations.
    d. Location of pull boxes and junction boxes, dimensioned from column center lines.

8. Fire-Protection System: Show the following:

    a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.

9. Review: Architect will review coordination drawings to confirm that, in general, the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make suitable modifications and resubmit.
10. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 01 33 00 "Submittal Procedures."

C. Coordination Drawing Process: Prepare coordination drawings in the following manner:

1. Schedule submittal and review of Fire Sprinkler, Plumbing, HVAC, and Electrical Shop Drawings to make required changes prior to preparation of coordination drawings.
2. Commence routing of coordination drawing files with HVAC Installer, who will provide drawing plan files denoting approved ductwork. HVAC Installer will locate ductwork and piping on a single layer, using orange color. Forward drawings to Plumbing Installer.
3. Plumbing Installer will locate plumbing and equipment on a single layer, using blue color.
4. Fire Sprinkler Installer will locate piping and equipment, using red color. Fire Sprinkler Installer shall forward drawing files to Electrical Installer.
5. Electrical Installer will indicate service and feeder conduit runs and equipment in green color. Electrical Installer shall forward drawing files to Communications and Electronic Safety and Security Installer.
6. Communications and Electronic Safety and Security Installer will indicate cable trays and cabling runs and equipment in purple color. Communications and Electronic Safety and Security Installer shall forward completed drawing files to Contractor.
7. Contractor shall perform the final coordination review. As each coordination drawing is completed, Contractor will meet with Architect to review and resolve conflicts on the coordination drawings.

D. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:

1. File Preparation Format: Same digital data software program, version, and operating system as original Drawings.
2. File Submittal Format: Submit or post coordination drawing files using PDF format.
3. Architect will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.

    a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
    b. Digital Data Software Program: Drawings are available in AutoCad DWG.
    c. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Owner and Architect.

1.7 REQUEST FOR INFORMATION (RFI)

A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
2. Coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Owner name.
3. Owner's Project number.
4. Name of Architect.
5. Architect's Project number.
6. Date.
7. Name of Contractor.
8. RFI number, numbered sequentially.
9. RFI subject.
10. Specification Section number and title and related paragraphs, as appropriate.
11. Drawing number and detail references, as appropriate.
12. Field dimensions and conditions, as appropriate.
13. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
14. Contractor's signature.
15. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Architect.

1. Attachments shall be electronic files in PDF format.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:

a. Requests for approval of submittals.
b. Requests for approval of substitutions.
c. Requests for approval of Contractor's means and methods.
d. Requests for coordination information already indicated in the Contract Documents.
e. Requests for adjustments in the Contract Time or the Contract Sum.
f. Requests for interpretation of Architect's actions on submittals.
g. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect of additional information.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 01 26 00 "Contract Modification Procedures."

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 5 days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log. Use software log that is part of web-based Project management software. Software log with not less than the following:

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number, including RFIs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1.8 DIGITAL PROJECT MANAGEMENT PROCEDURES

A. Architect's Data Files Not Available: Architect will not provide Architect's BIM model digital data files for Contractor's use during construction.

B. Use of Architect's Digital Data Files: Digital data files of Architect's CAD drawings will be provided by Architect for Contractor's use during construction.

1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project Record Drawings.
2. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
3. Digital Drawing Software Program: Contract Drawings are available in AutoCad DWG.
4. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Owner and Architect.

    a. Subcontractors and other parties granted access by Contractor to Architect's digital data files shall execute a data licensing agreement in the form of Agreement acceptable to Owner and Architect.

5. The following digital data files will be furnished for each appropriate discipline:

    a. Floor plans.
    b. Reflected ceiling plans.

C. Web-Based Project Management Software Package: Provide, administer, and use web-based Project management software package for purposes of hosting and managing Project communication and documentation until Final Completion.

1. Web-based Project management software includes, at a minimum, the following features:

    a. Compilation of Project data, including Contractor, subcontractors, Architect, Architect's consultants, Owner, and other entities involved in Project. Include names of individuals and contact information.
    b. Access control for each entity for each workflow process, to determine entity's digital rights to create, modify, view, and print documents.
    c. Document workflow planning, allowing customization of workflow between project entities.
    d. Creation, logging, tracking, and notification for Project communications required in other Specification Sections, including, but not limited to, RFIs, submittals, Minor Changes in the Work, Construction Change Directives, and Change Orders.
    e. Track status of each Project communication in real time, and log time and date when responses are provided.
    f. Procedures for handling PDFs or similar file formats, allowing markups by each entity. Provide security features to lock markups against changes once submitted.
    g. Processing and tracking of payment applications.
    h. Processing and tracking of contract modifications.
    i. Creating and distributing meeting minutes.
    j. Document management for Drawings, Specifications, and coordination drawings, including revision control.
    k. Management of construction progress photographs.
    l. Mobile device compatibility, including smartphones and tablets.

2. Provide up to seven Project management software user licenses for use of Owner, Architect, and Architect's consultants. Provide eight hours of software training at Architect's office for web-based Project software users.
3. At completion of Project, provide digital archive in format that is readable by common desktop software applications in format acceptable to Architect. Provide data in locked format to prevent further changes.

4. Provide one of the following Project management software packages under their current published licensing agreements:

    a. Autodesk; Constructware.
    b. Corecon Technologies, Inc.
    c. Meridian Systems; Prolog.
    d. Newforma, Inc.
    e. Procore Technologies, Inc.
    f. Viewpoint, Inc.

D. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare as follows:

1. Assemble complete submittal package into a single indexed file, incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.9 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times a minimum of 10 working days prior to meeting.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

    a. Responsibilities and personnel assignments.
    b. Tentative construction schedule.
    c. Phasing.
    d. Critical work sequencing and long lead items.
    e. Designation of key personnel and their duties.
    f. Lines of communications.
    g. Use of web-based Project software.
    h. Procedures for processing field decisions and Change Orders.
    i. Procedures for RFIs.
    j. Procedures for testing and inspecting.

k. Procedures for processing Applications for Payment.
l. Distribution of the Contract Documents.
m. Submittal procedures.
n. Preparation of Record Documents.
o. Use of the premises and existing building.
p. Work restrictions.
q. Working hours.
r. Owner's occupancy requirements.
s. Responsibility for temporary facilities and controls.
t. Procedures for moisture and mold control.
u. Procedures for disruptions and shutdowns.
v. Construction waste management and recycling.
w. Parking availability.
x. Office, work, and storage areas.
y. Equipment deliveries and priorities.
z. First aid.
aa. Security.
bb. Progress cleaning.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other Sections and when required for coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

a. Contract Documents.
b. Options.
c. Related RFIs.
d. Related Change Orders.
e. Purchases.
f. Deliveries.
g. Submittals.
h. Review of mockups.
i. Possible conflicts.
j. Compatibility requirements.
k. Time schedules.
l. Weather limitations.
m. Manufacturer's written instructions.
n. Warranty requirements.
o. Compatibility of materials.
p. Acceptability of substrates.
q. Temporary facilities and controls.
r. Space and access limitations.
s. Regulations of authorities having jurisdiction.
t. Testing and inspecting requirements.
u. Installation procedures.

v. Coordination with other work.
w. Required performance results.
x. Protection of adjacent work.
y. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 60 days prior to the scheduled date of Substantial Completion.

1. Conduct the conference to review requirements and responsibilities related to Project closeout.
2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

a. Preparation of Record Documents.
b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
c. Procedures for completing and archiving web-based Project software site data files.
d. Submittal of written warranties.
e. Requirements for preparing operations and maintenance data.
f. Requirements for delivery of material samples, attic stock, and spare parts.
g. Requirements for demonstration and training.
h. Preparation of Contractor's punch list.
i. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
j. Submittal procedures.
k. Coordination of separate contracts.
l. Owner's partial occupancy requirements.
m. Installation of Owner's furniture, fixtures, and equipment.
n. Responsibility for removing temporary facilities and controls.

4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

E. Progress Meetings: Conduct progress meetings at biweekly intervals.

1. Coordinate dates of meetings with preparation of payment requests.
2. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

        1) Review schedule for next period.

    b. Review present and future needs of each entity present, including the following:

        1) Interface requirements.
        2) Sequence of operations.
        3) Resolution of BIM component conflicts.
        4) Status of submittals.
        5) Deliveries.
        6) Off-site fabrication.
        7) Access.
        8) Site use.
        9) Temporary facilities and controls.
        10) Progress cleaning.
        11) Quality and work standards.
        12) Status of correction of deficient items.
        13) Field observations.
        14) Status of RFIs.
        15) Status of Proposal Requests.
        16) Pending changes.
        17) Status of Change Orders.
        18) Pending claims and disputes.
        19) Documentation of information for payment requests.

4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

    a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

F. Coordination Meetings: Conduct Project coordination meetings at regular intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.

1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.

c. Review present and future needs of each contractor present, including the following:

1) Interface requirements.
2) Sequence of operations.
3) Resolution of BIM component conflicts.
4) Status of submittals.
5) Deliveries.
6) Off-site fabrication.
7) Access.
8) Site use.
9) Temporary facilities and controls.
10) Work hours.
11) Hazards and risks.
12) Progress cleaning.
13) Quality and work standards.
14) Status of RFIs.
15) Proposal Requests.
16) Change Orders.
17) Pending changes.

3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 31 00

SECTION 01 32 00
CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Startup construction schedule.
2. Contractor's Construction Schedule.
3. Construction schedule updating reports.
4. Daily construction reports.
5. Material location reports.
6. Site condition reports.
7. Unusual event reports.

1.3 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum.

C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine the critical path of Project and when activities can be performed.

D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

E. Event: The starting or ending point of an activity.

F. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

G. Resource Loading: The allocation of manpower and equipment necessary for completing an activity as scheduled.

1.4 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file.
2. PDF file.
3. Two paper copies, of sufficient size to display entire period or schedule, as required.

B. Startup construction schedule.

1. Submittal of cost-loaded startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.

C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals.

E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.
3. Total Float Report: List of activities sorted in ascending order of total float.
4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.

F. Construction Schedule Updating Reports: Submit with Applications for Payment.

G. Daily Construction Reports: Submit at monthly intervals.

H. Material Location Reports: Submit at monthly intervals.

I. Site Condition Reports: Submit at time of discovery of differing conditions.

J. Unusual Event Reports: Submit at time of unusual event.

K. Qualification Data: For scheduling consultant.

1.5 QUALITY ASSURANCE

A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of Architect's request.

B. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's Construction Schedule, including, but not limited to, the following:

1. Review software limitations and content and format for reports.
2. Verify availability of qualified personnel needed to develop and update schedule.
3. Discuss constraints, including work stages, area separations, interim milestones and partial Owner occupancy.
4. Review delivery dates for Owner-furnished products.
5. Review schedule for work of Owner's separate contracts.
6. Review submittal requirements and procedures.
7. Review time required for review of submittals and resubmittals.
8. Review requirements for tests and inspections by independent testing and inspecting agencies.
9. Review time required for Project closeout and Owner startup procedures.
10. Review and finalize list of construction activities to be included in schedule.
11. Review procedures for updating schedule.

1.6 COORDINATION

A. Coordinate Contractor's Construction Schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities, and schedule them in proper sequence.

1.7 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

1. Use scheduling component of Project management software package specified in Section 01 31 00 "Project Management and Coordination," for current Windows operating system.

B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

C. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
2. Temporary Facilities: Indicate start and completion dates for the following as applicable:

    a. Securing of approvals and permits required for performance of the Work.
    b. Temporary facilities.
    c. Construction of mock-ups, prototypes and samples.
    d. Owner interfaces and furnishing of items.
    e. Interfaces with Separate Contracts.
    f. Regulatory agency approvals.
    g. Punch list.

3. Procurement Activities: Include procurement process activities for the following long lead-time items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
4. Submittal Review Time: Include review and resubmittal times indicated in Section 01 33 00 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
5. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
6. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
7. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and Final Completion.

D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Phasing: Arrange list of activities on schedule by phase.
2. Work under More Than One Contract: Include a separate activity for each contract.
3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 01 10 00 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
5. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 01 10 00 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
6. Work Restrictions: Show the effect of the following items on the schedule:

    a. Coordination with existing construction.
    b. Limitations of continued occupancies.
    c. Uninterruptible services.
    d. Partial occupancy before Substantial Completion.

e. Use-of-premises restrictions.
f. Provisions for future construction.
g. Seasonal variations.
h. Environmental control.

7. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

a. Subcontract awards.
b. Submittals.
c. Purchases.
d. Mockups.
e. Fabrication.
f. Sample testing.
g. Deliveries.
h. Installation.
i. Tests and inspections.
j. Adjusting.
k. Curing.
l. Building flush-out.
m. Startup and placement into final use and operation.

8. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:

a. Structural completion.
b. Temporary enclosure and space conditioning.
c. Permanent space enclosure.
d. Completion of mechanical installation.
e. Completion of electrical installation.
f. Substantial Completion.

E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.

1. Temporary enclosure and space conditioning.

F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.
2. Unanswered Requests for Information.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.
5. Pending modifications affecting the Work and the Contract Time.

G. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate Final Completion percentage for each activity.

H. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

I. Distribution: Distribute copies of approved schedule to Architect Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.8 STARTUP CONSTRUCTION SCHEDULE

A. Gantt-Chart Schedule: Submit startup, horizontal, Gantt-chart-type construction schedule within seven days of date established for the Notice to Proceed.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

1.9 GANTT-CHART SCHEDULE REQUIREMENTS

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for the Notice to Proceed.

1. Base schedule on the startup construction schedule and additional information received since the start of Project.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

1.10 CPM SCHEDULE REQUIREMENTS

A. Prepare network diagrams using AON (activity-on-node) format.

B. Startup Network Diagram: Submit diagram within 14 days of date established for the Notice to Proceed. Outline significant construction activities for the first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

C. CPM Schedule: Prepare Contractor's Construction Schedule using a time-scaled CPM network analysis diagram for the Work.

1. Develop network diagram in sufficient time to submit CPM schedule, so it can be accepted for use no later than 60 days after date established for the Notice to Proceed.

    a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates.

2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule to coordinate with the Contract Time.

D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.

1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:

    a. Preparation and processing of submittals.
    b. Mobilization and demobilization.
    c. Purchase of materials.
    d. Delivery.
    e. Fabrication.
    f. Utility interruptions.
    g. Installation.
    h. Work by Owner that may affect or be affected by Contractor's activities.
    i. Testing and inspection.
    j. Punch list and Final Completion.
    k. Activities occurring following Final Completion.

2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.

    a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.

E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall Project schedule.

F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:

1. Contractor or subcontractor and the Work or activity.
2. Description of activity.
3. Main events of activity.
4. Immediately preceding and succeeding activities.
5. Early and late start dates.
6. Early and late finish dates.
7. Activity duration in workdays.
8. Total float or slack time.
9. Average size of workforce.
10. Dollar value of activity (coordinated with the schedule of values).

G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:

1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
4. Changes in activity durations in workdays.
5. Changes in the critical path.
6. Changes in total float or slack time.
7. Changes in the Contract Time.

1.11 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions, including presence of rain or snow.
7. Testing and inspection.
8. Accidents.
9. Meetings and significant decisions.
10. Unusual events.
11. Stoppages, delays, shortages, and losses.
12. Meter readings and similar recordings.
13. Emergency procedures.
14. Orders and requests of authorities having jurisdiction.
15. Change Orders received and implemented.
16. Construction Change Directives received and implemented.
17. Services connected and disconnected.

18. Equipment or system tests and startups.
19. Partial completions and occupancies.
20. Substantial Completions authorized.

B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:

C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

D. Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

1. Submit unusual event reports directly to Owner within three day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 32 00

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SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Submittal schedule requirements.
2. Administrative and procedural requirements for submittals.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.4 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Initial Submittal Schedule: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
3. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.

    a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.

4. Format: Arrange the following information in a tabular format:

   a. Scheduled date for first submittal.
   b. Specification Section number and title.
   c. Submittal Category: Action; informational.
   d. Name of subcontractor.
   e. Description of the Work covered.
   f. Scheduled date for Architect's final release or approval.
   g. Scheduled dates for purchasing.
   h. Scheduled date of fabrication.
   i. Scheduled dates for installation.
   j. Activity or event number.

1.5 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:

1. Project name.
2. Date.
3. Name of Architect.
4. Name of Contractor.
5. Name of firm or entity that prepared submittal.
6. Names of subcontractor, manufacturer, and supplier.
7. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
8. Category and type of submittal.
9. Submittal purpose and description.
10. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
11. Drawing number and detail references, as appropriate.
12. Indication of full or partial submittal.
13. Location(s) where product is to be installed, as appropriate.
14. Other necessary identification.
15. Remarks.
16. Signature of transmitter.

B. Options: Identify options requiring selection by Architect.

C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

E. Submittals Utilizing Web-Based Project Software: Prepare submittals as PDF files or other format indicated by Project management software.

1.6 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Email: Prepare submittals as PDF package and transmit to Architect by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Architect.
   a. Architect will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.

2. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project management software website. Enter required data in web-based software site to fully identify submittal.
3. Paper: Prepare submittals in paper form and deliver to Architect.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.

   a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 15 days for review of each resubmittal.
4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.

   a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.

D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block, and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

1.7 SUBMITTAL REQUIREMENTS

A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams that show factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.
    d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before Shop Drawings, and before or concurrently with Samples.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data unless submittal based on Architect's digital data drawing files is otherwise permitted.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

    a. Identification of products.
    b. Schedules.
    c. Compliance with specified standards.
    d. Notation of coordination requirements.

e. Notation of dimensions established by field measurement.
f. Relationship and attachment to adjoining construction clearly indicated.
g. Seal and signature of professional engineer if specified.

2. Paper Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.

a. Three opaque copies of each submittal. Architect will retain two copies; remainder will be returned.

C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.

1. Transmit Samples that contain multiple, related components, such as accessories together in one submittal package.
2. Identification: Permanently attach label on unexposed side of Samples that includes the following:

a. Project name and submittal number.
b. Generic description of Sample.
c. Product name and name of manufacturer.
d. Sample source.
e. Number and title of applicable Specification Section.
f. Specification paragraph number and generic name of each item.

3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics and identification information for record.
4. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project software website. Enter required data in web-based software site to fully identify submittal.
5. Paper Transmittal: Include paper transmittal, including complete submittal information indicated.
6. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

7. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units, showing the full range of colors, textures, and patterns available.

a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

8. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

    a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record Sample.

        1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
        2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.
4. Location within room or space.

E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

G. Certificates:

1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
2. Installer Certificates: Submit written statements on manufacturer's letterhead, certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
4. Material Certificates: Submit written statements on manufacturer's letterhead, certifying that material complies with requirements in the Contract Documents.

5. Product Certificates: Submit written statements on manufacturer's letterhead, certifying that product complies with requirements in the Contract Documents.
6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.

H. Test and Research Reports:

1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for substrate preparation and primers required.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

    a. Name of evaluation organization.
    b. Date of evaluation.
    c. Time period when report is in effect.
    d. Product and manufacturers' names.
    e. Description of product.
    f. Test procedures and results.
    g. Limitations of use.

1.8 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file or three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.9 CONTRACTOR'S REVIEW

A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Contractor's Approval: Indicate Contractor's approval for each submittal with indication in web-based Project management software. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

1.10 ARCHITECT'S REVIEW

A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return.

1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action.
2. Submittals by Web-Based Project Management Software: Architect will indicate, on Project management software website, the appropriate action.

B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Architect will return without review submittals received from sources other than Contractor.

F. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 33 00

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).

D. Mockups: Full-size physical assemblies that are constructed either as freestanding temporary built elements or as part of permanent construction. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

1. In-Place Mockups: Mockups constructed on-site in their actual final location as part of permanent construction.

E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.

F. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

G. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" shall have the same meaning as the term "testing agency."

I. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

J. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect.

1.4 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Statement: Submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.5 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.6 ACTION SUBMITTALS

A. Mockup Shop Drawings: For mockups.

1. Include plans, sections, elevations, and details, indicating materials and size of mockup construction.
2. Indicate manufacturer and model number of individual components.
3. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.7 INFORMATIONAL SUBMITTALS

A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

B. Qualification Data: For Contractor's quality-control personnel.

C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:

1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.
2. Primary wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.

D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Entity responsible for performing tests and inspections.
3. Description of test and inspection.
4. Identification of applicable standards.
5. Identification of test and inspection methods.
6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

F. Reports: Prepare and submit certified written reports and documents as specified.

G. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.8 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities and to coordinate Owner's quality-assurance and quality-control activities. Coordinate with Contractor's Construction Schedule.

B. Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:

1. Contractor-performed tests and inspections, including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.
2. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
3. Owner-performed tests and inspections indicated in the Contract Documents.

E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring the Work into compliance with standards of workmanship established by Contract requirements and approved mockups.

F. Monitoring and Documentation: Maintain testing and inspection reports, including log of approved and rejected results. Include Work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming Work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.9 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, telephone number, and email address of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample-taking and testing and inspection.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement of whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement of whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

1.10 QUALITY ASSURANCE

A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged in the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented in accordance with ASTM E329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect, demonstrate, repair, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following Contractor's responsibilities, including the following:

1. Provide test specimens representative of proposed products and construction.
2. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.

3. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
4. Build site-assembled test assemblies and mockups, using installers who will perform same tasks for Project.
5. Build laboratory mockups at testing facility, using personnel, products, and methods of construction indicated for the completed Work.
6. When testing is complete, remove test specimens and test assemblies, and mockups; do not reuse products on Project.
7. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from the Contract Documents.

K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups of size indicated.
2. Build mockups in location indicated or, if not indicated, as directed by Architect.
3. Notify Architect seven days in advance of dates and times when mockups will be constructed.
4. Employ supervisory personnel who will oversee mockup construction. Employ workers who will be employed to perform same tasks during the construction at Project.
5. Demonstrate the proposed range of aesthetic effects and workmanship.
6. Obtain Architect's approval of mockups before starting corresponding Work, fabrication, or construction.

    a. Allow seven days for initial review and each re-review of each mockup.

7. Promptly correct unsatisfactory conditions noted by Architect's preliminary review, to the satisfaction of the Architect, before completion of final mockup.
8. Approval of mockups by the Architect does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
9. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
10. Demolish and remove mockups when directed unless otherwise indicated.

L. Integrated Exterior Mockups: Construct integrated exterior mockup according to approved Shop Drawings. Coordinate installation of exterior envelope materials and products for which mockups are required in individual Specification Sections, along with supporting materials. Comply with requirements in "Mockups" Paragraph.

1. Coordinate construction of the mockup to allow observation of air barrier installation, flashings, air barrier integration with fenestration systems, and other portions of the building air/moisture barrier and drainage assemblies, prior to installation of veneer, cladding elements, and other components that will obscure the work.

1.11 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Engage a qualified testing agency to perform quality-control services.

    a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 48 hours in advance of time when Work that requires testing or inspection will be performed.
4. Contractor shall cooperate with the independent testing laboratories, and provide access to the Work.
5. Contractor to provide shop drawings relating to the work to be tested and observed. Contractor to provide storage and curing of concrete test samples.
6. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
7. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
8. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

D. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform duties of Contractor.

E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 01 33 00 "Submittal Procedures."

F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

G. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspection equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's Construction Schedule. Update and submit with each Application for Payment.

1. Schedule Contents: Include tests, inspections, and quality-control services, including Contractor- and Owner-retained services, and other Project-required services paid for by other entities.
2. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.12 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures, and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.

5. Interpreting tests and inspections, and stating in each report whether tested and inspected Work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's authorities' having jurisdiction reference during normal working hours.

1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspection, sample-taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 73 00 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

1.3 USE CHARGES

A. Installation, removal, and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.

B. Sewer Service: Owner will pay sewer-service use charges for sewer usage by all entities for construction operations.

C. Water Service: Owner will pay water-service use charges for water used by all entities for construction operations.

D. Electric Power Service: Owner will pay electric-power-service use charges for electricity used by all entities for construction operations.

E. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

F. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.4 INFORMATIONAL SUBMITTALS

A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.

B. Implementation and Termination Schedule: Within 15 days of date established for commencement of the Work, submit schedule indicating implementation and termination dates of each temporary utility.

C. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.

D. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

E. Moisture- and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold. Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.

1. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and requirements for replacing water-damaged Work.
2. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
3. Indicate methods to be used to avoid trapping water in finished work.

F. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Include the following:

1. Locations of dust-control partitions at each phase of work.
2. HVAC system isolation schematic drawing.
3. Location of proposed air-filtration system discharge.
4. Waste-handling procedures.
5. Other dust-control measures.

G. Noise and Vibration Control Plan: Identify construction activities that may impact the occupancy and use of existing spaces within the building or adjacent existing buildings, whether occupied by others, or occupied by the Owner. Include the following:

1. Methods used to meet the goals and requirements of the Owner.
2. Concrete cutting method(s) to be used.
3. Location of construction devices on the site.
4. Show compliance with the use and maintenance of quieted construction devices for the duration of the Project.
5. Indicate activities that may disturb building occupants and that are planned to be performed during non-standard working hours as coordinated with the Owner.
6. Indicate locations of sensitive equipment areas or other areas requiring special attention as identified by Owner. Indicate means for complying with Owner's requirements.

1.5 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

C. Accessible Temporary Egress: Comply with applicable provisions in the United States Access Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1.6 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts, with 1-5/8-inch-OD top and bottom rails. Provide concrete bases for supporting posts.

B. Fencing Windscreen Privacy Screen: Polyester fabric scrim with grommets for attachment to chain-link fence, sized to height of fence, in color selected by Architect from manufacturer's standard colors.

C. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil minimum thickness, with flame-spread rating of 15 or less in accordance with ASTM E84 and passing NFPA 701 Test Method 2.

D. Dust-Control Adhesive-Surface Walk-Off Mats: Provide mats, minimum 36 by 60 inches.

E. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 TEMPORARY FACILITIES

A. Field Offices: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Field Offices: Provide conditioned interior space for field offices for duration of Project.

C. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:

1. Drinking water and private toilet.
2. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.

3. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.

D. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

1. Store combustible materials apart from building.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
2. Heating, Cooling, and Dehumidifying Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.
3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return-air grille in system and remove at end of construction and clean HVAC system as required in Section 01 77 00 "Closeout Procedures."

C. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

3.2 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

1. Locate facilities to limit site disturbance as specified in Section 01 10 00 "Summary."

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.3 TEMPORARY UTILITY INSTALLATION

A. Sanitary Facilities: Provide temporary toilets, wash facilities, safety shower and eyewash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

1. Use of Permanent Toilets: Use of Owner's existing or new toilet facilities is not permitted.

B. Temporary Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

1. Provide temporary dehumidification systems when required to reduce ambient and substrate moisture levels to level required to allow installation or application of finishes and their proper curing or drying.

C. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.

1. Prior to commencing work, isolate the HVAC system in area where work is to be performed according to coordination drawings.

    a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
    b. Maintain negative air pressure within work area, using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.

2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

D. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

E. Electronic Communication Service: Provide and pay for secure WiFi wireless connection to internet with provisions for access by Architect and Owner.

3.4 SUPPORT FACILITIES INSTALLATION

A. Comply with the following:

1. Provide construction for temporary field offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible in accordance with ASTM E136. Comply with NFPA 241.
2. Utilize designated area within existing building for temporary field offices.
3. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Coordinate access and haul routes. Provide and maintain access to fire hydrants. Provide means of removing mud from vehicle wheels before entering streets.

1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

C. Temporary Use of Planned Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.

1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
2. Recondition base after temporary use, including removing contaminated material, regrading, proofrolling, compacting, and testing.
3. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion.

D. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain, including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

E. Parking: Use designated areas of Owner's existing parking areas for construction personnel.

F. Storage and Staging: Use designated areas of Project site for storage and staging needs.

G. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

H. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs as indicated on Drawings.
2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.

a. Provide temporary, directional signs for construction personnel and visitors.

3. Maintain and touch up signs, so they are legible at all times.

I. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 01 73 00 "Execution."

J. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

K. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.

1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas, so no evidence remains of correction work.

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions specified in Section 01 10 00 "Summary."

C. Temporary Erosion and Sedimentation Control: Comply with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

D. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.
2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
4. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

E. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

F. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

G. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals, so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using materials approved by authorities having jurisdiction.

H. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.

1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.

I. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.

J. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

K. Temporary Egress: Provide temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction. Provide signage directing occupants to temporary egress.

L. Covered Walkway: Erect protective, covered walkway for passage of individuals through or adjacent to Project site. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction.

1. Provide overhead decking, protective enclosure walls, handrails, barricades, warning signs, exit signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
2. Paint and maintain appearance of walkway for duration of the Work.

M. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.

N. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.

1. Construct dustproof partitions with gypsum wallboard, with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.

2. Construct dustproof partitions with two layers of 6-mil polyethylene sheet on each side. Cover floor with two layers of 6-mil polyethylene sheet, extending sheets 18 inches up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant-treated plywood.

    a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches between doors. Maintain water-dampened foot mats in vestibule.

3. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
4. Insulate partitions to control noise transmission to occupied areas.
5. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
6. Protect air-handling equipment.
7. Provide walk-off mats at each entrance through temporary partition.

O. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.

1. Prohibit smoking in construction areas. Comply with additional limits on smoking specified in other Sections.
2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition in accordance with requirements of authorities having jurisdiction.
3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign, stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.6 MOISTURE AND MOLD CONTROL

A. Moisture and Mold Protection: Protect stored materials and installed Work in accordance with Moisture and Mold Protection Plan.

B. Exposed Construction Period: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:

1. Protect porous materials from water damage.
2. Protect stored and installed material from flowing or standing water.
3. Keep porous and organic materials from coming into prolonged contact with concrete.
4. Remove standing water from decks.
5. Keep deck openings covered or dammed.

C. Partially Enclosed Construction Period: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:

1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
2. Keep interior spaces reasonably clean and protected from water damage.

3. Periodically collect and remove waste containing cellulose or other organic matter.
4. Discard or replace water-damaged material.
5. Do not install material that is wet.
6. Discard and replace stored or installed material that begins to grow mold.
7. Perform work in a sequence that allows wet materials adequate time to dry before enclosing the material in gypsum board or other interior finishes.

D. Controlled Construction Period: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:

1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
2. Use temporary or permanent HVAC system to control humidity within ranges specified for installed and stored materials.
3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.

    a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective and require replacing.
    b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48 hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.
    c. Remove and replace materials that cannot be completely restored to their manufactured moisture level within 48 hours.

3.7 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace

street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.

3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 77 00 "Closeout Procedures."

END OF SECTION 01 50 00

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SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

1.3 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products, unless indicated otherwise.
3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in Part 2 "Comparable Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.

1. Evaluation of Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification. Manufacturer's published attributes and characteristics of basis-of-design product also establish salient characteristics of products for purposes of evaluating comparable products.

C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.

D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:

1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
2. Data indicating compliance with the requirements specified in Part 2 "Comparable Products" Article.

E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 01 33 00 "Submittal Procedures."

F. Substitution: Refer to Section 01 25 00 "Substitution Procedures" for definition and limitations on substitutions.

1.4 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1. Resolution of Compatibility Disputes between Multiple Contractors:

a. Contractors are responsible for providing products and construction methods compatible with products and construction methods of other contractors.
b. If a dispute arises between the multiple contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.
2. Equipment Nameplates: Provide a permanent nameplate on each item of service- or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:

a. Name of product and manufacturer.
b. Model and serial number.
c. Capacity.
d. Speed.
e. Ratings.

3. See individual identification Sections in Divisions 21, 22, 23, and 26 for additional equipment identification requirements.

1.5 COORDINATION

A. Modify or adjust affected work as necessary to integrate work of approved comparable products and approved substitutions.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and that products are undamaged and properly protected.

C. Storage:

1. Provide a secure location and enclosure at Project site for storage of materials and equipment.
2. Store products to allow for inspection and measurement of quantity or counting of units.
3. Store materials in a manner that will not endanger Project structure.
4. Store products that are subject to damage by the elements under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation and with adequate protection from wind.
5. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of the Owner or endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of the Owner or endorsed by manufacturer to Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 01 77 00 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

    a. Submit additional documentation required by Architect in order to establish equivalency of proposed products. Unless otherwise indicated, evaluation of "or equal" product status is by the Architect, whose determination is final.

B. Product Selection Procedures:

1. Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

a. Sole product may be indicated by the phrase "Subject to compliance with requirements, provide the following."

2. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

   a. Sole manufacturer/source may be indicated by the phrase "Subject to compliance with requirements, provide products by the following."

3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered unless otherwise indicated.

   a. Limited list of products may be indicated by the phrase "Subject to compliance with requirements, provide one of the following."

4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed or an unnamed product that complies with requirements.

   a. Non-limited list of products is indicated by the phrase "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following."
   b. Provision of an unnamed product is not considered a substitution, if the product complies with requirements.

5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered unless otherwise indicated.

   a. Limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, provide products by one of the following."

6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed or a product by an unnamed manufacturer that complies with requirements.

   a. Non-limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following."
   b. Provision of products of an unnamed manufacturer is not considered a substitution, if the product complies with requirements.

7. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

a. For approval of products by unnamed manufacturers, comply with requirements in Section 01 25 00 "Substitution Procedures" for substitutions for convenience.

C. Visual Matching Specification: Where Specifications require the phrase "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 01 25 00 "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or a similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with the following requirements:

1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes, such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects, with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

B. Architect's Action on Comparable Products Submittal: If necessary, Architect will request additional information or documentation for evaluation, as specified in Section 01 33 00 "Submittal Procedures."

1. Form of Approval of Submittal: As specified in Section 01 33 00 "Submittal Procedures."
2. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

C. Submittal Requirements, Two-Step Process: Approval by the Architect of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

D. Submittal Requirements, Single-Step Process: When acceptable to Architect, incorporate specified submittal requirements of individual Specification Section in combined submittal for comparable products. Approval by the Architect of Contractor's request for use of comparable product and of individual submittal requirements will also satisfy other submittal requirements.

PART 3 - EXECUTION (Not Used)

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SECTION 01 73 00
EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. Installation of the Work.
4. Cutting and patching.
5. Coordination of Owner's portion of the Work.
6. Coordination of Owner-installed products.
7. Progress cleaning.
8. Starting and adjusting.
9. Protection of installed construction.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.4 PREINSTALLATION MEETINGS

A. Cutting and Patching Conference: Conduct conference at Project site.

1. Prior to commencing work requiring cutting and patching, review extent of cutting and patching anticipated and examine procedures for ensuring satisfactory result from cutting and patching work. Inform Architect of scheduled meeting. Require representatives of each entity directly concerned with cutting and patching to attend, including the following:

a. Contractor's superintendent.
b. Trade supervisor responsible for cutting operations.
c. Trade supervisor(s) responsible for patching of each type of substrate.
d. Mechanical, electrical, and utilities subcontractors' supervisors, to the extent each trade is affected by cutting and patching operations.

2. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

B. Layout Conference: Conduct conference at Project site.

1. Prior to establishing layout of new and existing perimeter and structural column grid(s), review building location requirements. Review benchmark, control point, and layout and dimension requirements. Inform Architect of scheduled meeting. Require representatives of each entity directly concerned with Project layout to attend, including the following:

a. Contractor's superintendent.
b. Professional surveyor and Contractor's personnel responsible for performing Project surveying and layout.
c. Professional surveyor responsible for performing site survey serving as basis for Project design.

2. Review meanings and intent of dimensions, notes, terms, graphic symbols, and other layout information indicated on the Drawings.
3. Review requirements for including layouts on Shop Drawings and other submittals.
4. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For land surveyor and professional engineer.

B. Certified Surveys: Submit two copies signed by land surveyor and professional engineer.

C. Certificates: Submit certificate signed by land surveyor and professional engineer, certifying that location and elevation of improvements comply with requirements.

D. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:

1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
3. Products: List products to be used for patching and firms or entities that will perform patching work.
4. Dates: Indicate when cutting and patching will be performed.
5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.

a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.

E. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

1.6 CLOSEOUT SUBMITTALS

A. Final Property Survey: Submit 5 copies showing the Work performed and record survey data.

1.7 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

B. Professional Engineer Qualifications: Refer to Section 01 40 00 "Quality Requirements."

C. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, or when encountering the need for cutting and patching of elements whose structural function is not known, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:

    a. Primary operational systems and equipment.
    b. Fire separation assemblies.
    c. Air or smoke barriers.
    d. Fire-suppression systems.
    e. Plumbing piping systems.
    f. Mechanical systems piping and ducts.
    g. Control systems.
    h. Communication systems.
    i. Fire-detection and -alarm systems.
    j. Conveying systems.
    k. Electrical wiring systems.
    l. Operating systems of special construction.

3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:

    a. Water, moisture, or vapor barriers.
    b. Membranes and flashings.
    c. Exterior curtain-wall construction.
    d. Sprayed fire-resistive material.
    e. Equipment supports.
    f. Piping, ductwork, vessels, and equipment.
    g. Noise- and vibration-control elements and systems.

4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

D. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.

C. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work, including Specification Section number and paragraph, and Drawing sheet number and detail, where applicable.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect in accordance with requirements in Section 013100 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks and existing conditions. If discrepancies are discovered, notify Architect promptly.

B. Engage a land surveyor experienced in laying out the Work, using the following accepted surveying practices:

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish limits on use of Project site.

3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
4. Inform installers of lines and levels to which they must comply.
5. Check the location, level and plumb, of every major element as the Work progresses.
6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

A. Identification: Owner will identify existing benchmarks, control points, and property corners.

B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

E. Final Property Survey: Engage a land surveyor and professional engineer to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor and professional engineer, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.

1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.5 INSTALLATION

A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb, and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces, unless otherwise indicated on Drawings.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure satisfactory results as judged by Architect. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations, so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.

F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.

G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.

3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Architect. Fit exposed connections together to form hairline joints.

J. Repair or remove and replace damaged, defective, or nonconforming Work.

1. Comply with Section 01 77 00 "Closeout Procedures" for repairing or removing and replacing defective Work.

3.6 CUTTING AND PATCHING

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of Work to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements in Section 01 10 00 "Summary."

F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.

4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as practicable, as judged by Architect. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

    a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    b. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

    a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch, corner to corner of wall and edge to edge of ceiling. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 COORDINATION OF OWNER'S PORTION OF THE WORK

A. Site Access: Provide access to Project site for Owner's construction personnel.

1. Provide temporary facilities required for Owner-furnished, Contractor-installed products.
2. Refer to Section 01 10 00 "Summary" for other requirements for Owner-furnished, Contractor-installed products

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.

1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.8 PROGRESS CLEANING

A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

    a. Use containers intended for holding waste materials of type to be stored.

4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

B. Contractor to include minimum 15 dumpster pulls for the Material Handling Equipment vendors.

C. Site: Maintain Project site free of waste materials and debris.

D. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

E. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

F. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

G. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

H. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 01 50 00 "Temporary Facilities and Controls."

I. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

J. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

K. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.9 MANDATORY BUILDING CLEANING

A. Warehouse slab shall be cleaned utilizing floor scrubbers at the following milestones:

1. Prior to Early Occupancy
2. Prior to or as directed in advance of floor taping.
3. Prior to First Received turnover of building.

3.10 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: Comply with qualification requirements in Section 01 40 00 "Quality Requirements."

3.11 PROTECTION AND REPAIR OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.

C. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.

D. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 01 73 00

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SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.

1.3 DEFINITIONS

A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Architect's use prior to Architect's inspection, to determine if the Work is substantially complete.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.5 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest-control inspection.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items required by other Sections.

1.7 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number.

    a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Owner's signature for receipt of submittals.

5. Submit testing, adjusting, and balancing records.
6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 01 79 00 "Demonstration and Training."
6. Advise Owner of changeover in utility services.
7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.

8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements.
10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.8 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:

1. Submit a final Application for Payment in accordance with Section 01 29 00 "Payment Procedures."
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report.
5. Submit Final Completion photographic documentation.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.9 LIST OF INCOMPLETE ITEMS

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor, listed by room or space number.
2. Organize items applying to each space by major element, including categories for ceilings, individual walls, floors, equipment, and building systems.

3. Include the following information at the top of each page:

    a. Project name.
    b. Date.
    c. Name of Architect.
    d. Name of Contractor.
    e. Page number.

4. Submit list of incomplete items in the following format:

    a. MS Excel Electronic File: Architect will return annotated file.
    b. PDF Electronic File: Architect will return annotated file.
    c. Web-Based Project Software Upload: Utilize software feature for creating and updating list of incomplete items (punch list).
    d. Three Paper Copies: Architect will return two copies.

1.10 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

    1. Submit by uploading to web-based project software site.

E. Warranties in Paper Form:

    1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
    2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
    3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

F. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
d. Remove tools, construction equipment, machinery, and surplus material from Project site.
e. Remove snow and ice to provide safe access to building.
f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
g. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
h. Clean flooring, removing debris, dirt, and staining; clean according to manufacturer's recommendations.
i. Vacuum and mop concrete.
j. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
k. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
l. Remove labels that are not permanent.

m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
p. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.

1) Clean HVAC system in compliance with NADCA ACR. Provide written report on completion of cleaning.

q. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
r. Clean strainers.
s. Leave Project clean and ready for occupancy.

C. Pest Control: Comply with pest control requirements in Section 01 50 00 "Temporary Facilities and Controls." Prepare written report.

D. Construction Waste Disposal: Comply with waste-disposal requirements in Section 01 50 00 "Temporary Facilities and Controls."

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations required by Section 01 73 00 "Execution" before requesting inspection for determination of Substantial Completion.

END OF SECTION 01 77 00

SECTION 01 78 23
OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory manuals.
2. Emergency manuals.
3. Systems and equipment operation manuals.
4. Systems and equipment maintenance manuals.
5. Product maintenance manuals.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

1. Architect will comment on whether content of operation and maintenance submittals is acceptable.
2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operation and maintenance manuals in the following format:

1. Submit CD/DVD to Architect. Enable reviewer comments on draft submittals.

C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect will comment on whether general scope and content of manual are acceptable.

D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.

1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.

E. Comply with Section 01 77 00 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.5 FORMAT OF OPERATION AND MAINTENANCE MANUALS

A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.

1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

1.6 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name and contact information for Contractor.
6. Name and contact information for Architect.
7. Name and contact information for Commissioning Authority.
8. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
9. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.7 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY MANUAL

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals. List items and their location to facilitate ready access to desired information. Include the following:

1. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
2. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
3. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

1.8 EMERGENCY MANUALS

A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

B. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire.
2. Flood.
3. Gas leak.
4. Water leak.
5. Power failure.
6. Water outage.

7. System, subsystem, or equipment failure.
8. Chemical release or spill.

D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

E. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

1.9 SYSTEMS AND EQUIPMENT OPERATION MANUALS

A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
2. Performance and design criteria if Contractor has delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

C. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.

9. Complete nomenclature and number of replacement parts.

D. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

F. Piped Systems: Diagram piping as installed, and identify color coding where required for identification.

1.10 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.

C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:

1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training video recording, if available.

F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

J. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.

1. Do not use original project record documents as part of maintenance manuals.

1.11 PRODUCT MAINTENANCE MANUALS

A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

C. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

E. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 78 23

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SECTION 01 78 39
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record specifications.
3. Record Product Data.
4. Miscellaneous record submittals.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit one set(s) of marked-up record prints.
2. Number of Copies: Submit copies of Record Drawings as follows:

a. Initial Submittal:

1) Submit one paper-copy set(s) of marked-up record prints.
2) Submit PDF electronic files of scanned record prints and one set(s) of file prints.
3) Submit Record Digital Data Files and one set(s) of plots.
4) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

b. Final Submittal:

1) Submit one paper-copy set(s) of marked-up record prints.
2) Submit Record Digital Data Files and three set(s) of Record Digital Data File plots.
3) Plot each drawing file, whether or not changes and additional information were recorded.

B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and Contract modifications.

C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories of each submittal.

E. Reports: Submit written report monthly indicating items incorporated into Project Record Documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

1.4 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation, where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

    a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    b. Accurately record information in an acceptable drawing technique.
    c. Record data as soon as possible after obtaining it.
    d. Record and check the markup before enclosing concealed installations.
    e. Cross-reference record prints to corresponding photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

    a. Dimensional changes to Drawings.
    b. Revisions to details shown on Drawings.
    c. Depths of foundations.
    d. Locations and depths of underground utilities.
    e. Revisions to routing of piping and conduits.
    f. Revisions to electrical circuitry.
    g. Actual equipment locations.
    h. Duct size and routing.
    i. Locations of concealed internal utilities.
    j. Changes made by Change Order or Construction Change Directive.
    k. Changes made following Architect's written orders.
    l. Details not on the original Contract Drawings.
    m. Field records for variable and concealed conditions.
    n. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.

6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:

1. Format: Same digital data software program, version, and operating system as for the original Contract Drawings.
2. Format: Annotated PDF electronic file with comment function enabled.
3. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
4. Refer instances of uncertainty to Architect for resolution.
5. Architect will furnish Contractor with one set of digital data files of the Contract Drawings for use in recording information.

    a. See Section 01 31 00 "Project Management and Coordination" for requirements related to use of Architect's digital data files.
    b. Architect will provide data file layer information. Record markups in separate layers.

C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file with comment function enabled.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of Architect.
    e. Name of Contractor.

1.5 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation, where installation varies from that indicated in Specifications, addenda, and Contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

B. Format: Submit record specifications as annotated PDF electronic file.

1.6 RECORD PRODUCT DATA

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and revisions to Project Record Documents as they occur; do not wait until end of Project.

B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.

C. Format: Submit Record Product Data as annotated PDF electronic file.

1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

1.7 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as PDF electronic file.

1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

1.8 MAINTENANCE OF RECORD DOCUMENTS

A. Maintenance of Record Documents: Store Record Documents in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 78 39

SECTION 01 79 00
DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Instruction in operation and maintenance of systems, subsystems, and equipment.
2. Demonstration and training video recordings.

1.3 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

B. Qualification Data: For facilitator and videographer.

C. Attendance Record: For each training module, submit list of participants and length of instruction time.

D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.4 CLOSEOUT SUBMITTALS

A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.

1. Identification: On each copy, provide an applied label with the following information:

a. Name of Project.
b. Name and address of videographer.
c. Name of Architect.

d. Name of Contractor.
e. Date of video recording.

2. Transcript: Prepared and bound in format matching operation and maintenance manuals. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video recording. Include name of Project and date of video recording on each page.
3. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
4. At completion of training, submit complete training manual(s) for Owner's use prepared in same PDF file format required for operation and maintenance manuals specified in Section 01 78 23 "Operation and Maintenance Data."

1.5 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 01 40 00 "Quality Requirements," experienced in operation and maintenance procedures and training.

C. Videographer Qualifications: A professional videographer who is experienced photographing demonstration and training events similar to those required.

D. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:

1. Inspect and discuss locations and other facilities required for instruction.
2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
3. Review required content of instruction.
4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.6 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Architect.

1.7 INSTRUCTION PROGRAM

A. Contractor shall be responsible for demonstrating proper operation of the building systems and training designated personnel. Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.

B. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.

C. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

    a. System, subsystem, and equipment descriptions.
    b. Performance and design criteria if Contractor is delegated design responsibility.
    c. Operating standards.
    d. Regulatory requirements.
    e. Equipment function.
    f. Operating characteristics.
    g. Limiting conditions.
    h. Performance curves.

2. Documentation: Review the following items in detail:

    a. Emergency manuals.
    b. Systems and equipment operation manuals.
    c. Systems and equipment maintenance manuals.
    d. Product maintenance manuals.
    e. Project Record Documents.
    f. Identification systems.
    g. Warranties and bonds.
    h. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:

    a. Instructions on meaning of warnings, trouble indications, and error messages.
    b. Instructions on stopping.
    c. Shutdown instructions for each type of emergency.
    d. Operating instructions for conditions outside of normal operating limits.
    e. Sequences for electric or electronic systems.
    f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:

    a. Startup procedures.
    b. Equipment or system break-in procedures.
    c. Routine and normal operating instructions.
    d. Regulation and control procedures.
    e. Control sequences.

f. Safety procedures.
g. Instructions on stopping.
h. Normal shutdown instructions.
i. Operating procedures for emergencies.
j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:

a. Alignments.
b. Checking adjustments.
c. Noise and vibration adjustments.
d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

a. Diagnostic instructions.
b. Test and inspection procedures.

7. Maintenance: Include the following:

a. Inspection procedures.
b. Types of cleaning agents to be used and methods of cleaning.
c. List of cleaning agents and methods of cleaning detrimental to product.
d. Procedures for routine cleaning.
e. Procedures for preventive maintenance.
f. Procedures for routine maintenance.
g. Instruction on use of special tools.

8. Repairs: Include the following:

a. Diagnosis instructions.
b. Repair instructions.
c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
d. Instructions for identifying parts and components.
e. Review of spare parts needed for operation and maintenance.

1.8 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 01 78 23 "Operation and Maintenance Data."

B. Set up instructional equipment at instruction location.

1.9 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
2. Owner will furnish an instructor to describe Owner's operational philosophy.
3. Owner will furnish Contractor with names and positions of participants.

C. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner with at least seven days' advance notice.

D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

E. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of an oral performance-based test.

F. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

1.10 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.

1. At beginning of each training module, record each chart containing learning objective and lesson outline.

B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full HD modewith vibration reduction technology.

1. Submit video recordings on CD-ROM or thumb drive.
2. File Hierarchy: Organize folder structure and file locations according to Project Manual table of contents. Provide complete screen-based menu.
3. File Names: Utilize file names based on name of equipment generally described in video segment, as identified in Project specifications.
4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the equipment demonstration and training recording that describes the following for each Contractor involved on the Project, arranged according to Project Manual table of contents:

a. Name of Contractor/Installer.
b. Business address.
c. Business phone number.
d. Point of contact.
e. Email address.

C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.

1. Film training session(s) in segments not to exceed 15 minutes.

a. Produce segments to present a single significant piece of equipment per segment.
b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.

D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.

1. Furnish additional portable lighting as required.

E. Narration: Describe scenes on video recording by audio narration by microphone while video recording is recorded. Include description of items being viewed.

F. Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.

G. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

PART 2 - PRODUCTS

PART 3 - EXECUTION

END OF SECTION 01 79 00

Division 03

Concrete

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SECTION 03 11 00
CONCRETE FORMING

PART 1 - GENERAL

1.1 SUMMARY

A. The extent of formwork is indicated by the cast-in-place concrete structures shown on the Drawings.

B. The Work includes providing formwork and shoring for cast-in-place concrete and installation into formwork of items furnished by others, such as anchor bolts, setting plates, bearing plates, anchorages, inserts, frames, nosings, and other items to be embedded in concrete (but not including reinforcing steel).

1.2 SUBMITTALS

A. Product Data: Manufacturer's data and installation instructions for proprietary materials including form coatings, manufactured form systems, ties, accessories, and other items specified.

B. Concrete Shoring Formwork: Provide shop drawings and calculations signed and sealed by a Professional engineer registered in the State of Florida.

1.3 QUALITY ASSURANCE

A. Examine the substrate and the conditions under which concrete formwork is to be performed. Do not proceed with the work until unsatisfactory conditions have been corrected.

B. Codes and Standards: Unless otherwise shown or specified, design, construct, erect, maintain, and remove forms and related structures for cast-in-place concrete work in compliance with the American Concrete Institute Standard ACI 347, "Recommended Practice for Concrete Formwork."

C. Allowable Tolerances

1. Construct formwork to provide completed cast-in-place concrete surfaces complying with the tolerances specified in ACI 347 and as follows:

   a. Variation from plumb in lines and surfaces of columns, piers, walls, and arrises; 1/4 inch per 10 feet, but not more than one inch. For exposed corner columns, control joint grooves, and other conspicuous lines, 1/4 inch in a bay or 20 feet maximum; 1/2" maximum in 40 ft. or more.
   b. Variation in sizes and locations of sleeves, floor openings, and wall openings, 1/4 inch.
   c. Variations in footings plan dimensions, minus 1/2 inch and plus 2 inches; misplacement or eccentricity, 2 percent of the footing width in direction of misplacement but not more than 2 inches; thickness reduction, minus 5 percent.

2. Before concrete placement, check the lines and levels of erected formwork. Make corrections and adjustments to ensure proper size and locations of concrete members and stability of forming systems.

3. During concrete placement, check formwork and related supports to ensure that forms are not displaced and that completed work will be within specified tolerances.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

A. Forms for Exposed Finish Concrete

1. Unless otherwise shown or specified, construct formwork for exposed concrete surfaces metal, metal-framed plywood-faced, to provide continuous, straight, smooth as-cast surfaces. Furnish in largest practicable sizes to minimize number of joints to conform to joint system shown on Drawings. Provide form material with sufficient thickness to withstand pressure of newly placed concrete without bow or deflection.

a. Plywood: APA grade-trademarked "B-B Plyform Exterior," mill oiled.

B. Forms for Unexposed Finish Concrete: Form with plywood, lumber, metal, or other acceptable material. Provide lumber that is dressed on at least 2 edges and one side for tight fit.

C. Cylindrical Forms

1. Form round-section members of heavy glass-fiber reinforced plastic or galvanized steel sheets. Butt sections together with bolted or keyed joints. Finish interior joints of forms smooth so there is no visible seam on finished concrete surfaces.
2. Form round-section members with paper or fiber tubes, constructed of laminated plies using water-resistant type adhesive with wax impregnated exterior for weather and moisture protection.

a. Provide units with sufficient wall thickness to resist loads imposed by wet concrete without deformation.
b. Provide manufacturer's standard plastic-lined-interior units.

D. Form Units

1. Provide factory-fabricated, adjustable-length, removable, or snap-off metal form ties; design to prevent form deflection and to prevent spalling concrete surfaces upon removal.
2. Unless otherwise shown, provide ties so that portion remaining within concrete after removal of exterior parts is at least one inch from outer concrete surface. Unless otherwise indicated, provide form ties which will leave a hole not larger than one inch diameter in concrete surfaces.
3. Form ties fabricated on the project site and wire ties are not acceptable.

E. Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain, nor adversely affect concrete surfaces and will not impair subsequent treatment of concrete surfaces bond or adhesion, nor impede the wetting of surfaces to be cured with water or curing compounds.

F. Inserts

1. Provide metal inserts for anchorage of materials or equipment to concrete construction not supplied by other trades and as required for the Work.

2. Provide Fry original reglet as manufactured by Fry Reglet Corporation, Alhambra, California. Reglet shall be made of .050 polyvinylchloride, meeting ASTM Spec. D-1874. Provide steel spacer channel for positive alignment and barrier to grout.
3. Vinyl Chamfer Strips: Shall be Vinylex CSN-1/2 as manufactured by Vinylex Corporation, Knoxville, Tennessee.

2.2 DESIGN OF FORMWORK

A. Design, erect, support, brace, and maintain formwork so that it will safely support vertical and lateral loads that might be applied, until such loads can be supported by the concrete structure. Carry vertical and lateral loads to ground by formwork system and in-place construction that has attained adequate strength for that purpose. Construct formwork so that concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork and construction tolerances and surface irregularities complying with the following ACI 347 limits:

1. Provide Class A tolerances for concrete surfaces exposed to view.
2. Provide Class C tolerances for other concrete surfaces.

B. Design forms and falsework to include assumed values of live load, dead load, weight of moving equipment operated on formwork, concrete mix, height of concrete drop, vibrator frequency, ambient temperature, foundation pressures, stresses, lateral stability, and other factors pertinent to safety of structure during construction.

C. Design formwork to be readily removable without impact, shock, or damage to cast-in-place concrete surfaces and adjacent materials. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses and the like for easy removal.

D. Provide formwork sufficiently tight to prevent leakage of cement paste during concrete placement. Solidly butt joint and provide backup material at joints as required to prevent leakage and fins.

E. Side forms of footings may be omitted and concrete placed directly against excavation only when requested by Contractor and accepted by Architect. When omission of forms is accepted, provide additional concrete beyond the minimum design profiles and dimensions of the footings as detailed.

F. Side forms are not required at the sides of trench footings or other footings where specifically indicated.

G. Provide temporary openings for cleanouts and inspections where interior area of formwork is inaccessible before and during concrete placement. Securely brace temporary openings and set tightly to forms to prevent losing concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exposed corners and edges indicated using chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

I. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before placing concrete. Re-tighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper

alignment.

J. Provisions for other Trades: Coordinate openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.

PART 3 - EXECUTION

3.1 FORM CONSTRUCTION

A. Construct forms to sizes, shapes, and lines, and dimensions shown to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in the Work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent cement paste from leaking.

B. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where the slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and assure ease of removal.

C. Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Brace temporary closures and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings on forms in as inconspicuous location as possible, consistent with project requirements.

1. Form intersecting planes to provide true, clean-cut corners, with edge grain of plywood not exposed as form for concrete.

D. Provide formwork sufficiently tight to prevent leakage of cement paste during concrete placement. Solidly butt joints and provide backup material at joints as required to prevent leakage and fins.

E. Falsework

1. Erect falsework and support, brace and maintain it to safely support vertical, lateral, and asymmetrical loads applied until such loads can be supported by in-place concrete structures. Construct falsework so that adjustments can be made for take-up and settlement.
2. Provide wedges, jacks, or camber strips to facilitate vertical adjustments. Carefully inspect falsework and formwork during and after concrete placement operations to determine abnormal deflection or signs of failure; make necessary adjustments to produce work or required dimensions.
3. Support form facing materials by members spaced sufficiently close to prevent deflection. Fit forms placed in successive units for continuous surfaces to accurate alignment, free from irregularities and within allowable tolerances.
4. Provide camber in formwork as required for anticipated deflections due to weight and pressures of fresh concrete and construction loads for long span members without intermediate supports.
5. Carefully inspect falsework and formwork during and after concrete placement operations to determine abnormal deflection or signs of failure; make necessary adjustments to produce work of required dimension.

F. Forms for Exposed Concrete

1. Provide form coatings on forms for all exposed finished concrete. Plywood grain indentations or patterns left in the concrete as a result of the forms are not acceptable.
2. Drill forms to suit ties used and to prevent leakage of concrete mortar around tie holes. Do not splinter forms by driving ties through improperly prepared holes.
3. Do not use metal cover plates for patching holes or defects in forms.
4. Provide sharp, clean corners at intersecting planes without visible edges or offsets. Back joints with extra studs or girts to maintain true, square intersections.
5. Use extra studs, whalers, and bracing to prevent bowing of forms between studs and to avoid bowed appearance in concrete. Do not use narrow strips of form material which will produce bow.
6. Assemble forms so they may be readily removed without damage to exposed concrete surfaces.
7. Form molding shapes, recesses, and projections with smooth-finish materials and install in forms with sealed joints to prevent displacement.

G. Corner Treatment

1. Form chamfers with 3/4-inch x 3/4-inch strips, unless otherwise shown. Extend terminal edges to required limit and miter chamfer strips at changes in direction.
2. Unexposed corners may be formed either square or chamfered.

H. Provision for Other Trades: Provide openings in concrete formwork to accommodate work of other trades including those under separate prime contracts. Size and location of openings, recesses, and chases are the responsibility of the trade requiring such items. Accurately place and securely support items to be built into form.

I. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before concrete is to be placed. Retighten forms immediately after concrete placement as required to eliminate mortar leaks.

J. Construction Joints: Where footings and walls are divided by construction joints, joints shall have keyways formed. Keyways shall be 1/3 of the dimension of the element in both directions and shall be at least 2 inches thick.

3.2 FORM COATINGS

A. Coat form contact surfaces with form-coating compound before reinforcement is placed. Do not allow excess form coating material to accumulate in the forms or to come in contact with surfaces which will be bonded to fresh concrete. Apply in compliance with manufacturer's instructions.

B. Coat steel forms with a non-staining, rust-preventative form oil or otherwise protect against rusting. Rust-stained steel formwork is not acceptable.

3.3 INSTALLATION OF EMBEDDED ITEMS

A. Set and build into the Work anchorage devices and other embedded items required for other Work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of the items to be attached thereto.

B. Edge Forms and Screed Strips for Slabs: Set edge form or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in the finished slab surface. Provide and secure units to support types of screeds required.

1. Forms for concrete curbs and bases shall be rigidly held straight and tight so that finished concrete will be level and even.

3.4 REMOVAL OF FORMS

A. Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the Work, may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form-removal operations, and provided curing and protection operations are maintained.

B. Formwork supporting weight of concrete, such as beam soffits, joists, slabs, and other structural elements, may not be removed in less than 14 days or until concrete has attained at least 75 percent of design minimum compressive strength at 28 days. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of concrete location or members.

C. Form facing material may be removed 4 days after placement, only if shores and other vertical supports have been arranged to permit removal of form facing material without loosening or disturbing shores and supports.

3.5 REUSE OF FORMS

A. Clean and repair surfaces of forms to be reused in the work. Split, frayed, delaminated, or otherwise damaged form facing material will not be acceptable. Apply new form coating compound material to concrete contact surfaces as specified for new formwork.

B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close all joints. Align and secure joints to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to the Architect.

END OF SECTION 03 11 00

SECTION 03 20 00
CONCRETE REINFORCING

PART 1 - GENERAL

1.1 SUMMARY

A. The extent of concrete reinforcement is shown on the Drawings and in schedules.

B. The Work includes fabrication and placement of reinforcement for cast-in-place concrete including bars, welded wire fabric, ties, and supports.

1.2 SUBMITTALS

A. Product Data: Manufacturer's specifications and installation instructions for proprietary materials and reinforcement accessories.

B. Shop Drawings: fabrication, bending, and placement of concrete reinforcement. Comply with the ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures." Show bar schedules, stirrup spacing, diagrams of bent bars, arrangements, and assemblies as required for the fabrication and placement of concrete reinforcement. Show building plans with bar sizes, spacing, and quantities for all bent and straight reinforcing bars.

1.3 QUALITY ASSURANCE

A. Codes and Standards: Comply with requirements of the latest edition of the following codes and standards, except as herein modified:

1. American Welding Society, AWS D 1.4 - "Structural Welding Code - Reinforcing Steel."
2. Concrete Reinforcing Steel Institute, "Manual of Standard Practice."
3. American Concrete Institute, ACI 318 "Building Code Requirements for Structural Concrete."

1.4 DELIVERY, HANDLING, AND STORAGE

A. Deliver reinforcement to the project site bundled, tagged, and marked. Use metal tags indicating bar size, lengths, and other information corresponding to markings shown on placement diagrams.

B. Store concrete reinforcement materials at the site to prevent damage and accumulation of dirt or excessive rust.

PART 2 - PRODUCTS

2.1 MATERIAL

A. Reinforcing Bars (ReBar): ASTM A615, and as follows.

1. Provide Grade 60 for all bars unless noted otherwise in Structural Drawings.
2. Provide Grade 75 for bars if specified in Structural Drawings.

B. Steel Wire: ASTM A1064

C. Welded Wire Fabric (WWF): ASTM A1064, sheets only, no rolled fabric

D. Fibrous Reinforcement: Furnish either nylon or fibrillated polypropylene fibers for plaza wear layer only.

1. Nylon Fibers: 100 percent pure nylon filamentized with a minimum diameter of 23 microns, a length of 3/4 inch, a minimum specific gravity of 1.14 and a minimum tensile strength of 130 ksi. Nylon fibers shall be added to the concrete mix at a rate of one pound per cubic yard.

a. Subject to compliance with requirements, provide one of the following:

1) "Nylon": Nycon Inc., Indianapolis, Indiana
2) "Superiormesh 66": Superior Fiber Products, Mentor, Ohio
3) "Forta Nylon": Forta Corporation, Grove City, Pennsylvania

2. Polypropylene Fibers: 100 percent collated fibrillated polypropylene fibers with a length of 3/4 inch, a minimum specific gravity of 0.09 and a minimum tensile strength of 80 ksi. Polypropylene fibers shall be added to the concrete mix at a rate of one and one-half pounds per cubic yard.

a. Subject to compliance with requirements, provide on of the following:

1) "Fibermix Monofilament M.D.," Fibermesh Company, Chattanooga, Tennessee.
2) "Forta Econo-Net": Forta Corporation, Grove City, Pennsylvania.

E. Supports for Reinforcement (including welded wire fabric): Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcement in place.

1. Use wire bar type supports complying with CRSI recommendations, unless otherwise indicated. Do not use wood, brick, and other unacceptable materials.
2. For slabs on grade, use supports with sand plates or horizontal runners where base material will not support chair legs.
3. Over waterproof membranes, use precast concrete chairs to prevent penetration of the membrane
4. For footings, trench footings, and grade beams use precast concrete bricks (f'c = 3000 psi min. at 28 days). (Concrete masonry bricks not acceptable).
5. For concrete masonry bond beams use #2 bar laterally, tied to each longitudinal reinforcing bar below to hold bars apart and up from bottom. Space #2 bars at 48 inches o.c.

F. Rebar Ties: Nylon or annealed tie wire as recommended by the ACI.

2.2 FABRICATION

A. Fabricate reinforcing bars to conform to required shapes and dimensions, with fabrication tolerances complying with CRSI "Manual of Standard Practice." In case of fabricating errors, do not re-bend or straighten reinforcement in a manner that will injure or weaken the material.

B. Unacceptable Materials: Reinforcement with any of the following defects will not be permitted in the work.

6. Bar lengths, depths, and bends exceeding specified fabrication tolerances.
7. Bends of kinks not indicated on Drawings or final shop drawings.
8. Bars with reduced cross-section due to excessive rusting or other cause.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine the conditions under which concrete reinforcement is to be placed. Do not proceed with the Work until unsatisfactory conditions have been corrected.

B. Notify Architect when steel placement for a concrete pour is nearing a completion so that the Work may be observed.

3.2 INSTALLATION

A. Comply with the specified codes and standards and Concrete Reinforcing Steel Institute recommended practice for "Placing Reinforcing Bars," for details and methods of reinforcement placement and supports, and as herein specified.

B. Clean reinforcement to remove loose rust and mill scale, earth, and other materials which reduce or destroy bond with concrete.

C. Position, support, and secure reinforcement against displacement by formwork construction, or concrete placement operations. Locate and support reinforcing by precast concrete brick, metal chairs, runners, bolsters, spacers, and hangers as required.

D. Place reinforcement to obtain the minimum coverages for concrete protection. Arrange, space, and securely tie bars and bar supports together with 16-gauge wire to hold reinforcement accurately in position during concrete placement operations. Set wire ties so that twisted ends are directed away from exposed concrete surfaces.

E. Install welded wire fabric in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with 16-gauge wire. Do not make end laps midway between supporting beams or directly over beams of continuous structures. Offset end laps in adjacent widths to prevent continuous laps.

F. Provide sufficient numbers of supports and of strengths to carry reinforcement. Do not place reinforcing bars more than 2 inches beyond the last leg of continuous bar support. Do not use supports as bases for runaways for concrete conveying equipment and similar construction loads.

G. Provide standard reinforcing splices by lapping ends, placing bars in contact, and tightly tying wire. Comply with requirements of ACI 318 for minimum lap of spliced bars.

H. Reinforcing steel installed in continuous footings shall run continuous. This shall include specially shaped components with proper lap where corner reinforcing and step footings occur.

I. Provide additional reinforcing around required openings in footings, and slabs having at least a one-foot dimension.

J. Install and mix fiber reinforcement into concrete mix in strict accordance with the manufacturers written installation instructions and in strict accordance with the Structural Engineer's requirements.

END OF SECTION 03 20 00

SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes interior and exterior cast-in-place concrete, mix design, placement procedures, and finishes. Work includes, but is not necessarily limited to:

1. Exterior Concrete:

a. Walks, curbs, ramps, steps, and stoops
b. Tactile warning texture equipment pads and bases

2. Interior Concrete:
a. Floor slabs: on grade and elevated
b. Bases, curbs, risers, and steps
c. Footings, pads, piers, columns, beams
d. Recesses for floor finishes requiring same

3. Other Materials

a. Concrete admixtures
b. Waterstops
c. Expansion joint fillers
d. Curing materials
e. Self-leveling underlayment
f. Bonding agent

B. Provide other cast-in-place concrete and related work as shown on the Drawings and specified herein for complete and finished work, except concrete work specifically designated to be provided under the Work of other Sections of these Specifications.

C. The following is by other Sections, meeting the requirements of this Section (unless indicated otherwise).

1. Posts for chain link fencing
2. Bases for exterior equipment
3. Encasement of underground utilities or connections
4. Specifically excluded items
5. Flagpole base

1.2 SUBMITTALS

A. Product Data: Proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, dry-shake finish materials, and other specified items.

1. Include concrete curing materials product data and specification sheets

B. Samples: Include names, sources, and descriptions, as follows:

1. Normal weight aggregates
3. Fiber reinforcement
4. Reglets
5. Waterstops

C. Laboratory test reports for concrete materials and mix design tests.

D. Material certificates in lieu of material laboratory test reports when permitted by Architect. Material certificates shall be signed by manufacturer and Contractor, certifying that each material item complies with or exceeds specified requirements. Provide certification from admixture manufacturers that chloride content complies with specification requirements.

E. Minutes of pre-installation conference.

F. Proposed mix designs.

G. Statement from ready-mixed plant verifying conformance to specifications and proposed mix designs.

H. Written approval/certification of concrete curing materials as specified herein.

I. ISO 9001/9002 Registration Certificate for companies that are ISO registered.

1.3 QUALITY ASSURANCE

A. Refer to Division 1 for additional requirements.

B. Standards: Comply with the provisions of the following in accordance with the Florida Building Code 7th Edition (2020), except as otherwise shown or specified.

1. ACI 117 "Standard Tolerances for Concrete Construction and Materials"
2. ACI 211.1 "Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete"
3. ACI 301 "Specifications for Structural Concrete for Buildings"
4. ACI 302.1R "Guide for Concrete Floor and Slab Construction"
5. ACI 304R "Guide for Measuring, Mixing, Transporting, and Placing Concrete"
6. ACI 311.4R "Guide for Concrete Inspection"
7. ACI 318-02 "Building Code Requirements for Reinforced Concrete and Commentary"
8. Concrete Reinforcing Steel Institute, "Manual of Standard Practice"
9. Comply with building code requirements which are more stringent than the above.
10. ACI 305 - “Hot Weather Concreting”
11. ACI 306 - “Cold Weather Concreting”

C. Materials may require testing and re-testing, as directed by the Architect, at any time during the

progress of the Work. Allow free access to material stockpiles and facilities. Tests shall be done at the Contractor's expense.

D. Concrete curing materials shall be approved by the manufacturer of the product for the final finish material on the concrete slabs. Submit written approval/certification if requested by the Architect.

E. Material manufacturers shall be ISO 9001/9002 registered or provide proof of documented quality assurance system. Quality system must be registered by an independent registrar who is accredited by the American National Standards Institute (ANSI-RAB) or by another internationally recognized body. ISO 9001/9002 certification or proof of documented quality assurance system shall be included with the material submittals.

1.4 PROJECT CONDITIONS

A. Coordinate installation of inserts and sleeves for other trades. Time delivery so as note to cause delay in the progress of this Work.

B. Installation requirements within this Section are not intended to be restrictive and the Contractor is allowed, when reviewed with the Architect's field representative, to adjust the means and methods used to meet required tolerances. Compliance with required tolerances is the responsibility of the Contractor and adjustment required to meet these shall not be unduly restricted by the Architect or his representative.

1.5 FIELD QUALITY CONTROL

A. Floor Tolerance Measurements: Floor flatness and levelness tests on floor slabs shall be conducted in accordance with the provisions set forth in ASTM E 1155-96 (Reapproved 2001), with the exception of Subparagraphs 7.2.3 and 7.3.2 which may be waived at the Owner's option, also Zi calculation to be used shall be N min. = A/10. Floor tolerance measurements shall be made by the independent testing laboratory within 24 hours after completion of the final troweling operation, and before forms and shores have been removed, measurement shall be taken using a Dipstick Auto-Read Floor Profiler as manufactured by The Edward W. Face Company, Inc. of Norfolk, VA. Results of floor tolerance tests, including a formal notice of acceptance or rejection of the work, shall be provided to the Contractor within 24 hours after data collection.

B. Remedy for Out-of-Tolerance Work: Slab sections measuring at or above both of the specified minimum local F-numbers shall be accepted for tolerance compliance as constructed. Floor slab sections measuring below either (or both) of the specified minimum local F-numbers shall be removed and replaced (in the case of slabs-on-grade), or ground or re-topped (in the case of elevated slabs). No remedies for sub-minimum local F-number sections other than replacement of slabs-on-grade, and grinding or re-topping of elevated slabs will be permitted. For the purposes of this paragraph, a floor section shall be a rectangular area bound by column or half-column lines (i.e. minimum sections area - approximately 100 sq. ft.).

C. Special Conditions (Exceptions): Where room sizes (areas receiving concrete flooring) are restricted to smaller areas due to bearing walls or existing construction making finishing difficult, the Architect's Field Representative will determine acceptable deviations/exceptions in testing requirements.

1. Architect's Field Representative may at his discretion:

    a. Waive entirely testing of small rooms, storage areas, and similar spaces.
    b. Reduce the number and select the location of tests.
    c. Waive penalties between specified and minimum locals.
    d. Require that tolerances exceed minimum locals only.
    e. Waive the requirement for removal of concrete not meeting minimum locals if, in his opinion, repairs can bring floors into acceptable/serviceable tolerances.

1.6 CONCRETE TESTING

A. Cooperate and coordinate with the testing laboratory to perform field quality control testing during concrete work under Division 3 in accordance with the current FBC. Refer to the general notes on the structural drawings.

B. Quality Control Testing During Construction: Perform sampling and testing for field quality control during the placement of concrete, as follows:

1. Sampling Fresh Concrete: ASTM C172, except modified for slump to comply with ASTM C94.
2. Slump: ASTM C143, one test for each concrete load at point of discharge, and one for each set of compressive strength test specimens.
3. Concrete Temperature: Test hourly when air temperature is 40 degrees F. and below and when 80 degrees F. and above, and each time a set of compressive test specimens is made.
4. Compression Test Specimens: ASTM C31
5. Compressive Strength Tests: ASTM C39, make 5 (4x8 cylinders) laboratory-cured specimens. One specimen shall be broken at 7 days and three specimens shall be broken at 28 days, and one retained in reserve for later testing if required.

    a. One set for each 100 cubic yards or fraction thereof, of each mix design placed in a day or for each 5,000 sq. ft. of surface area for slab on grade.
    b. One set for each 50 cubic yards or fraction thereof, of each mix design placed in a day or for each 2500 sq. ft. of surface area for elevated slabs (formed or on metal deck) or walls.

C. Report test results in writing to the Architect, Contractor, and ready-mix supplier on the same day that tests are made. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of Contractor, name of concrete supplier and truck number, name of concrete testing service, concrete type and class, location of concrete batch in the structure (specific locations are required), design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength and type and amount of fibrous reinforcement, compressive breaking strength, and type of break for both 7 day tests and 28 day tests.

D. Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate the specified concrete strengths and other characteristics have not been attained in the structure, as directed by the Architect. The testing service shall conduct tests to determine the strength and other characteristics of the in-place concrete by compression tests on cored cylinders complying with ASTM C42 or by load testing specified in ACI 318 or other acceptable nondestructive testing methods, as directed. The Contractor shall pay for such tests conducted

and other additional testing as may be required, when unacceptable concrete is verified.

E. Evaluation of Quality Control Tests: Do not use concrete delivered to the final point of placement which has slump or total air content outside the specified values.

1. Compressive strength tests for laboratory-cured cylinders will be considered satisfactory if the averages of all sets of 3 consecutive compressive strength tests results equal or exceed the 28 day design compressive strength of the type or class of concrete; and no individual strength test (average of two cylinders) falls below the required compressive strength by more than 500 psi when f'c is 5000 psi or less; or by more than 0.10f'c when f'c is more than 5000 psi.
2. Strength tests of specimens cured under field conditions may be required by the Architect to check the adequacy of curing and protecting of the concrete placed. Specimens shall be molded by the field quality control laboratory at the same time and from the same samples as the laboratory cured specimens.

    a. Provide improved means and procedures for protecting concrete when the 28-day compressive strength of field cured cylinders is less than 85 percent of companion laboratory cured cylinders.
    b. When laboratory cured cylinder strengths are appreciably higher than the minimum required compressive strength, field cured cylinder strengths need not exceed the minimum required compressive strength by more than 500 psi even though the 85 percent criterion is not met.
    c. If individual tests of laboratory cured specimen produce strengths more than 500 psi below the required minimum compressive strength or if tests of field cured cylinders indicate deficiencies in protection and curing, provide additional measures to assure that the load-bearing capacity of the structure is not jeopardized. If the likelihood of low-strength concrete is confirmed and computations indicate the load-bearing capacity may have been significantly reduced, tests of cores drilled from the area in question may be required.

3. If the compressive strength tests fail to meet the minimum requirements specified, the concrete represented by such tests will be considered deficient in strength.

F. Deficient concrete shall be removed as directed by the Architect and replaced by the Contractor without additional cost to the Owner.

1.7 CONCRETE MATERIALS AND MIX DESIGN

A. Concrete Materials and Mix Design:

1. Ready-mixed concrete shall be mixed and delivered in accordance with ASTM C94.
2. Product Data: Submit 2 copies of manufacturer's specifications with application and installation instructions for proprietary materials and items, including admixtures, bonding agents, waterstops, joint systems, chemical floor hardeners, and dry shake finish materials.
3. Laboratory Test Reports: Submit 2 copies of laboratory test reports for concrete materials and mix design tests. The Architect's review will be for general information only. Production of concrete to comply with specified requirements is the Contractor's responsibility.

B. Tests for Concrete Materials

1. Normal Weight Concrete: Test aggregates by the methods of sampling and testing of ASTM C33.
2. Portland Cement: Sample cement and determine the properties by the methods of test ASTM C33.
3. Submit written reports for each material sampled and tested, prior to the start of Work. Provide the project identification name and number, date of report, name of Contractor, name of concrete testing service, source of concrete aggregates material manufacturer and brand name for manufactured materials, values specified in the referenced specification for each material, and test results. Indicate whether or not material is acceptable for intended use.

C. Submit signed statement form ready-mix plant that concrete furnished for the Project will exactly conform to the approved design mixes.

D. For slabs that are to receive moisture sensitive flooring:

1. Contractor shall work with the ready mix supplier to provide a mix design that will be at or below 75% relative humidity at the time the flooring is scheduled to be installed.
2. Do not use lightweight aggregates.
3. Provide a mix with good self-desiccating properties. Consider adding 2%-4% Silica Fume.
4. Do not hard trowel the surface but instead provide a lightly troweled surface.

1.8 PREINSTALLATION CONFERENCE

A. At least 35 days prior to the start of the concrete construction schedule, conduct a preinstallation conference at the project site to review the proposed mix designs and to discuss the required methods and procedures to achieve the required concrete construction.

B. Require representatives of every party who is concerned with the concrete work to attend the conference, including, but not limited to, the following:

1. Contractor’s superintendent.
2. Testing laboratory.
3. Concrete subcontractor.
4. Ready-mix concrete producer.
5. Admixture manufacturer(s).
6. Owner.
7. Architect.
8. Structural Engineer.

C. Meeting Minutes: Record, type and distribute within three (3) days of the meeting.

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150

1. Use one brand of cement throughout project.

B. Fly Ash: ASTM C 618, Type F, may be substituted for up to 25 percent of the portland cement in all concrete mixes unless noted otherwise.

C. Normal-Weight Aggregates: ASTM C 33 and as specified. Provide aggregates from a single source for exposed concrete.

1. For exposed exterior surfaces, do not use fine or coarse aggregates that contain substances that cause spalling.
2. Local aggregates not complying with ASTM C 33 that have been shown to produce concrete of adequate strength and durability by special tests or actual service may be used when acceptable to Architect.
3. Fine Aggregate: Clean, sharp, natural sand free from loam, clay lumps, or other deleterious substances.
4. Coarse Aggregate: Clean, un-coated, processed aggregate containing no clay, mud, loam, or foreign matter, as follows:

    a. Crushed stone, processed from natural rock or stone.
    b. Washed gravel, either natural or crushed. Use of pit or bankrun gravels not permitted.
    c. Maximum Aggregate Size: Not larger than one-fifth of narrowest dimension between sides of forms, one-third of depth of slabs, nor three-fourths of minimum clear spacing between individual reinforcing bars or bundles of bars.

5. Aggregate Supply: Provide aggregates from one source of supply to ensure uniformity in color, size, and shape.

D. Water: Potable.

2.2 CONCRETE ADMIXTURES

A. Provide admixtures produced by established reputable manufacturers and use in compliance with manufacturer's printed directions. Do not use admixtures which have not been incorporated and tested in accepted mixes, unless otherwise authorized specifically in writing by Architect.

6. Air-Entraining Admixture: ANSI/ASTM C260
7. Water-Reducing Admixture: ANSI/ASTM C494, Type A.
8. Set-Control Admixture: ANSI/ASTM C494
9. Super Plasticizer: ANSI/ASTM C494, Type F.

B. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.

1. Subject to compliance with requirements, provide one of the following:

    a. “AEA-92 and Air Mix 200”, Euclid Chemical Co.
    b. “MB-VR or MB-AE”, Master Builders, Inc.
    c. “Sika AER”, Sika Corp.

2. Air-Entraining admixtures shall not be used in slab mixes, on-grade or elevated.

C. Water-Reducing Admixture: ASTM C 494, Type A, and containing not more than 0.05 percent chloride ions.

1. Subject to compliance with requirements, provide one of the following:

a. “Eucon WR-75 or Eucon WR-91”, Euclid Chemical Co.
b. “Pozzolith Normal”, Master Builders, Inc.
c. “Plastocrete 160”, Sika Corp.

D. High-Range Water-Reducing Admixture (Superplasticizer): ASTM C 494, Type F or Type G and containing not more than 0.05 percent chloride ions.

1. Subject to compliance with requirements, provide one of the following:

a. “Eucon 37”, Euclid Chemical Co.
b. “Rheobuild 1000”, Master Builders, Inc.
c. “Sikament 300”, Sika Corp.

E. Water-Reducing, Accelerating Admixture: Non-chloride, non-corrosive per ASTM C 494, Type C or E, and not contain more chloride ions than are present in municipal drinking water. The admixture manufacturer must have long-term non-corrosive test data from and independent testing laboratory (of at least a year’s duration) using an acceptable accelerated corrosion test method such as that using electrical potential measures.

1. Subject to compliance with requirements, provide one of the following:

a. “Accelguard 80”, Euclid Chemical Co.
b. “Pozzutec 20”, Master Builders, Inc.

F. Water-Reducing, Retarding Admixture: ASTM C 494, Type D and contain not more than 0.05 percent chloride ions.

1. Subject to compliance with requirements, provide one of the following:

a. “Eucon Retarder 75”, Euclid Chemical Co.
b. “Pozzolith Retarder”, Master Builders, Inc.
c. “Plastiment”, Sika Corporation.

G. Shrinkage Compensating Cement: ASTM C845, Type K, M, or S.

1. Contractor may substitute shrinkage compensating cement concrete for slabs, on grade or elevated, and eliminate all control joints. Design mixes shall be submitted for approval.

H. Certification: Written conformance to the above-mentioned requirements and the chloride ion content of admixtures will be required from the admixture manufacturer prior to mix design review by the Architect.

I. Prohibited Admixtures: Calcium chloride or admixtures containing more than 0.05 percent

chloride ions are not permitted.

2.3 PROPORTIONING AND DESIGN MIXES

A. Proportion mixes by either laboratory trial batch or field experience methods as specified in ACI 301, using materials to be employed on the project for each class of concrete required.

B. Submit written reports to Architect of each proposed mix for each type of concrete at least 15 days prior to start of Work. Indicate with each mix design the items or structures for which it is to be used. Do not begin concrete production until mixes have been reviewed by Architect. Submit the following information:

1. Complete identification of aggregate source of supply.
2. Tests of aggregate for compliance with specified requirements.
3. Scale weight of each aggregate.
4. Absorbed water in each aggregate.
5. Brand, type, and composition of cement.
6. Brand, type, and amount of each mixture.
7. Amounts of water used in trial mixes.
8. Proportions of each material per cu. yd. including fibrous secondary reinforcement.
9. Gross weight and yield per cu. yd. of trial mixtures.
10. Measured slump.
11. Measured air content.
12. Compressive strength developed at 7 days and 28 days, from not less than 3 test cylinders cast for each 7 and 28 day test, and for each design mix. These test reports may be from previous projects within the past 6 months.
13. Identification number or name of mix to verify agreement with compression test reports.

C. Water-Cement Ratio Methods: Concrete proportions may be established by use of Water-Cement Ratio Limits Table 5.4 and limiting restrictions in ACI 301.

D. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, at no additional cost to Owner and as accepted by Architect. Laboratory test data for revised mix designs and strength results must be submitted to and accepted by Architect before using in work.

E. Maximum Water Cement Ratio: Concrete mixes shall be limited to those shown on the contract documents. Mixes shall comply with chapters 3, 4 and 5 of ACI 318 latest building code adopted edition.

Super plasticizers, flyash, and water reducers shall be used to obtain required slump while maintaining maximum water-cement ratio.

F. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:

1. Ramps, slabs, and sloping surfaces: Not more than 4 inches
2. Reinforced foundation systems: 4 inches, +/- 1 inch
3. Concrete containing high-range water-reducing admixture (superplasticizer): Not more than 8 inches after adding admixture to site-verified 2-to-3-inch slump concrete.

4. Other concrete: Per Structural Drawings
5. Other concrete: Slump for regular concrete subject to vibratory compaction should be 4" plus/minus 1". Refer to see ACI 301-96, Section 4.2.2.2; also, ACI A-117, Section 2.5.1.

G. Adjustment to Concrete Mixes: Mix design adjustments may be requested when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in Work. Adjustments must be made in writing to the Architect. Only proceed when approval is granted.

H. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. For the trial batch method, use an independent testing agency acceptable to the Architect for preparing and reporting proposed mix designs. Trial batch and field experience tests shall have been performed within 12 months of submittal date.

2.4 RELATED MATERIALS

A. Rubber Waterstops: Corps of Engineers CRD-C 513.

5. Manufacturers: Subject to compliance with requirements, provide products of one of the following:

a. Progress Unlimited.
b. Williams Products, Inc.
c. Synko Flex, Henry Products

B. Sand Cushion: Clean, manufactured or natural sand.

C. Preformed Expansion Joint Fillers: Reflex by The JD Russell Company or other expansion joint filler made of Recycled rubber (tires).

2.5 CONCRETE CURING MATERIALS

A. Moisture-Retaining Cover: One of the following, complying with ANSI-ASTM C171 for concrete floors that are to be exposed or to receive floor sealer. Contractor's option to obtain specified requirements for concrete slabs-on-grade. Coordinate uses with finish material manufacturer's specifications.

1. Waterproof paper.
2. Polyethylene film.
3. Polyethylene-coated burlap.

B. Water Based Acrylic Liquid Membrane-Forming Curing Compound: Liquid-type membrane-forming curing compound complying with ASTM C 309, Type I, Class B, with 18 to 20 percent minimum solids.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Safe Cure and Seal (J-18), Dayton Superior Corp.

b. Aqua-Cure VOX, Euclid Chemical Co.
c. Kure-N-Seal, WB, Degussa Building Systems
d. Spartan Coate WBII, The Burke Group.

C. Evaporation Control: Monomolecular film-forming compound applied to exposed concrete slab surfaces for temporary protection from rapid moisture loss.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Eucobar, Euclid Chemical Co.
b. E-Con, L&M Construction Chemicals, Inc.
c. Confilm, Degussa Building Systems
d. Finishing Aid, The Burke Group.

D. Concrete curing materials shall be approved by the manufacturer of the product for the final finish on the concrete slabs. Submit written approval/certification.

2.6 SELF-LEVELING UNDERLAYMENT

A. Free-flowing, self-leveling, pumpable, cement-based compound for applications from 1 inch thick to feathered edges. (If required for patching and repairing).

1. Compressive strength: 4100 psi minimum at 28 days
2. Flexural strength: 1300 psi at 28 days
3. Tensile strength: 750 psi at 28 days
4. Shrinkage: .025 after 7 days

B. Manufacturers:

1. "Thoro Underlayment": Thoro System Products, Centerville, Indiana.
2. "Ardex K-15": Ardex, Inc. Pittsburgh, Pennsylvania.
3. “300 Premium Underlayment”: The Burke Group, Converse, Texas.

2.7 CONCRETE UNDERLAYMENT

A. One-component, cement-based trowel grade underlayment. (If required for patching and repairing).

1. Compressive strength: 4250 psi minimum at 28 days
2. Flexural strength: 1000 psi minimum at 28 days
3. Tensile strength: 650 psi minimum at 28 days

B. Manufacturer:

1. "Thoro Underlayment Trowel Grade": Thoro System Products, Centerville, Indiana.
2. “Burke Feather Patch”: The Burke Group, Converse, Texas.

2.8 BONDING AGENT

A. Chemical Bonding Agent: Film-forming, freeze-thaw resistant compound suitable for brush or spray application complying with MIL-B-19235. Subject to compliance with requirements, provide one of the following:

1. Adbond (J40); Dayton Superior Corp.
2. Eucoweld; Euclid Chemical
3. Everbond; L & M Construction Chemicals
4. Thorobond; Degussa Building Systems
5. Intralok; W.R. Meadows, Inc.
6. Acrylic Bondcrete, The Burke Group

2.9 CONCRETE PATCHING COMPOUND

A. Single-component, cement based, polymer modified patching mortar with low slump properties.

B. Chemical Bonding Agent: Film-forming, freeze-thaw resistant compound suitable for brush or spray application complying with MIL-B-19235. Subject to compliance with requirements, provide one of the following:

1. V/O Patch CI – US MIX Co. 112 South Santa Fe Dr. Denver, CO 80223 www.usspec.com
2. Cement All – CTS Cement Manufacturing Corp. 12442 Knot St. Garden Grove, CA 92841 www.CTScement.com
3. MasterEmaco N 425 – BASF 889 Valley Park Dr. Shakopee, MN 55379 www.master-builders-solutions.basf.us

2.10 ADMIXTURES, GENERAL

A. Use air-entraining admixture in exterior concrete, unless otherwise indicated. Add air-entraining admixture at the manufacturer's prescribed rate to result in concrete at the point of placement having air content within the following limits:

1. Concrete structures and slabs exposed to freezing and thawing or subjected to hydraulic pressure:

   a. 3 to 15 percent for maximum 2 inches aggregate.
   b. 4-1/2 percent to 6-1/2 percent for maximum 1-inch aggregate.
   c. 5 to 7 percent for maximum 3/4-inch aggregate.
   d. 6 to 8 percent for maximum 1/2-inch aggregate.

2. Other Exterior Concrete: 2 to 4 percent

B. Use of admixtures for water-reducing and set-control shall be permitted only with prior approval of the Architect for each condition and shall be in strict compliance with the manufacturer's directions.

1. Design mix submittals shall include these admixtures and shall indicate for which types of concrete structures they are to be used.

C. Use amount of admixtures s recommended by manufacturer for climatic conditions prevailing at

time of placing. Adjust quantities and types of admixtures as required to maintain quality control.

2.11 CONCRETE MIXING

A. Ready-Mixed Concrete: Comply with requirements of ASTM C 94, and as specified.

1. When air temperature is between 85 deg F and 95 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 95 deg F, reduce mixing and delivery time to 60 minutes.
2. Delete the references for allowing additional water to be added to the batch for material with sufficient slump. Addition of water to the batch will not be permitted.
3. During hot weather or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C94 may be required.

PART 3 - EXECUTION

3.1 GENERAL

A. Coordinate the installation of joint materials, vapor retarder/barrier, and other related materials with placement of forms and reinforcing steel.

3.2 PREPARATION

A. Pre-placement Inspection: Before placing concrete, inspect and complete the formwork installation, reinforcing steel, and items to be embedded or cast-in. Notify other crafts to permit the installation of their work; cooperate with other trades in setting such work, as required.

1. Inspect soil at bottom of foundation systems which will be subject to testing for soil bearing value by the testing laboratory, as directed by the Architect. Place concrete immediately after approval of foundation excavations.
2. Inspect underslab drainage course areas that were subject to testing for soil bearing value by the testing laboratory as required by Architect. Place concrete immediately after approval of underslab compaction tests.

B. Material placement for interior slabs on grade and exterior concrete stoops.

1. Under building slabs at wood floor areas, use satisfactory excavated or borrow material to 6 inches below concrete then use drainage fill material and moisture barrier to bottom concrete.
2. Under remaining building slabs use satisfactory excavated or borrow material to 8 inches below concrete; then place and compact 4 inches of drainage fill material; then place vapor barrier, lapping joints and 6 inches minimum and seal with tape or mastic, lap and fold joints and turn membrane up on walls to top of floor. Do not puncture membrane. Vapor barrier not required for walks and slabs. Then place and compact top 4 inches of drainage to fill bottom of concrete.
3. Install and properly anchor the slab reinforcing mesh.
4. Position waterstops and expansion joint fillers where indicated on the Drawings and as recommended by manufacturer. Special precautions shall be taken to avoid collapse

during installation.

3.3 JOINTS

A. Construction Joints: Locate and install construction joints so they do not impair strength or appearance of the structure, as acceptable to Architect.

1. Construction joints to be per FBC and ACI 318; cleaned, laitance removed, wetted, standing water removed.

B. Provide keyways at least 1-1/2 inches deep in construction joints in walls and slabs and between walls and footings. Bulkheads designed and accepted for this purpose may be used for slabs.

C. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints except as indicated otherwise. Do not continue reinforcement through sides of strip placements.

D. Use bonding agent on existing concrete surfaces that will be joined with fresh concrete.

E. Waterstops: Provide waterstops in construction joints as indicated. Install waterstops to form continuous diaphragm in each joint. Support and protect exposed waterstops during progress of Work. Field-fabricate joints in waterstops according to manufacturer's printed instructions.

F. Isolation Joints in Slabs-on-Grade: Construct isolation joints in slabs-on-grade at points of contact between slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Joint fillers and sealants are specified in Division 07.

G. Contraction (Control) Joints in Slabs-on-Grade: Construct contraction joints in slabs-on-grade to form panels of patterns as shown. Use saw cuts 1/8-inch-wide by one-fourth of slab depth or inserts 1/4-inch-wide by one-fourth of slab depth, unless otherwise indicated.

1. Form contraction joints by inserting pre-molded plastic, hardboard, or fiberboard strip into fresh concrete until top surface of strip is flush with slab surface. Tool slab edges round on each side of insert. After concrete has cured, remove inserts and clean groove of loose debris.
2. Contraction joints in unexposed floor slabs may be formed by saw cuts as soon as possible after slab finishing as may be safely done without dislodging aggregate.
3. If joint pattern is not shown, provide joints not exceeding 12 feet in either direction and located to conform to bay spacing wherever possible (at column centerlines, half bays, third bays).
4. Joint fillers and self-leveling sealants are specified in Division 07.

H. Expansion Joints

1. Provide pre-molded joint filler for expansion joints abutting concrete curbs (except in integral walk and curb), catch basins, manholes, inlets, structures, masonry walls, and other fixed objects.
2. Set and secure continuous expansion joint strips where edge of slab abuts vertical surfaces.
3. Locate expansion joints at 30 feet o.c. for walks and curbs, unless otherwise shown.

4. Extend joint fillers full-width and depth of joint, flush with finished surface. Furnish joint fillers in one-piece lengths for the full width being placed, wherever possible. Where more than one length is required, lace or clip joint filler sections together. Form top edge of filler to conform to top profile of concrete.

3.4 INSTALLING EMBEDDED ITEMS

A. Set and build into formwork anchorage devices and other embedded items required for other work that is attached to or supported by cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached.

B. Install reglets to receive top edge of foundation sheet waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, relieving angles, and other conditions.

C. Install dovetail anchor slots in concrete structures as indicated on drawings.

D. Forms for Slabs: Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and contours in finished surfaces. Provide and secure units to support screed strips using strike-off templates or compacting-type screeds.

3.5 PREPARING FORM SURFACES

A. Coat contact surfaces of forms with an approved, non-residual, low-VOC, form-coating compound before placing reinforcement.

B. Do not allow excess form-coating material to accumulate in forms or come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply according to manufacturer's instructions.

1. Coat steel forms with a non-staining, rust-preventative material. Rust-stained steel formwork is not acceptable.

3.6 CONCRETE PLACEMENT

A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.

B. Comply with ACI 304, "Guide for Measuring, Mixing, Transporting, and Placing Concrete," and as specified.

C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened sufficiently to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation at its final location.

1. Concreting shall be carried on at such a rate that at all times the concrete is at all times plastic and flows readily into spaces between reinforcement.
2. Prohibit the following concrete

a. Partially hardened concrete
b. Contaminated concrete
c. Re-tempered concrete
d. Concrete that has been re-mixed after it has taken its initial set

D. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers no deeper than 24 inches and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.

1. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete complying with ACI 309.
2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix to segregate.

E. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until completing placement of a panel or section.

1. Consolidate concrete during placement operations so that concrete is thoroughly worked around reinforcement, other embedded items and into corners.
2. Bring slab surfaces to correct level with a straightedge and strike off. Use bull floats or darbies to smooth surface free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.

    a. Depth of concrete on composite metal deck elevated slabs shall be performed or checked by dip stick method only. Use of lasers is not allowed and strictly prohibited.
3. Maintain reinforcing in proper position on chairs during concrete placement.
4. Use of self-propelled power (laser) screed equipment is not acceptable on elevated slabs on metal deck, and is strictly prohibited.

F. Cold-Weather Placement: Comply with provisions of ACI 306 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

G. When air temperature has fallen to or is expected to fall below 40 deg F (4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.

1. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
2. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.

H. Hot-Weather Placement: When hot weather conditions exist that would impair quality and strength of concrete, place concrete complying with ACI 305 and as specified.

1. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 95 deg F. Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.
3. Fog spray forms, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without puddles or dry areas.
4. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions, as acceptable to Architect.

3.7 FINISHING FORMED SURFACES

A. Rough-Formed Finish: Provide a rough-formed finish on formed concrete surfaces not exposed to view in the finished Work or concealed by other construction. This is the concrete surface having texture imparted by form-facing material used, with tie holes and defective areas repaired and patched, and fins and other projections exceeding 1/4 inch in height rubbed down or chipped off.

B. Smooth-Formed Finish: Provide a smooth-formed finish on formed concrete surfaces exposed to view or to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, painting, or another similar system. This is an as-cast concrete surface obtained with selected form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch defective areas with fins and other projections completely removed and smoothed.

C. Smooth-Rubbed Finish: Provide smooth-rubbed finish on scheduled concrete surfaces that have received smooth-formed finish treatment not later than 1 day after form removal.

1. Moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.

D. Grout-Cleaned Finish: Provide grout-cleaned finish on scheduled concrete surfaces that have received smooth-formed finish treatment.

1. Combine one part portland cement to one and one-half parts fine sand by volume, and a 50:50 mixture of acrylic or styrene butadiene-based bonding admixture and water to form the consistency of thick paint. Blend standard portland cement and white portland cement in amounts determined by trial patches so that final color of dry grout will match adjacent surfaces.
2. Thoroughly wet concrete surfaces, apply grout to coat surfaces, and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Keep damp by fog spray for at least 36 hours after rubbing.

E. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike-off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.8 MONOLITHIC SLAB FINISHES

A. General Information (Slabs on Grade): The requirements indicated are based upon the latest FF/FL method. Bids for this work shall reflect these requirements and enforcement thereof can be expected.

B. Typical Corridors, Normal Sized Rooms:

1. Specified Overall Value: FF 30/FL 23
2. Minimum Local Value: FF 25/FL 20
3. Apply trowel finish to slab surfaces that are to be covered with resilient flooring, paint, or other thin film finish coating system.

C. Large Rooms and Public Areas:

1. Specified Overall Value: FF 36/FL 25
2. Minimum Local Value: FF 30/FL 22
3. Apply trowel finish to monolithic slab surfaces that are to receive resilient flooring, carpet, or other thin finish system.

D. High Tolerance Floors where indicated:

1. Specified Overall Value: FF 50/FL 30
2. Minimum Local Value: FF 40/FL 25
3. Apply trowel finish to slab surfaces that are to be covered with wood flooring, paint, or other thin finish coating system.

E. Nonslip Broom Finish (NsBrm-Fn): Apply nonslip broom finish to exterior concrete with fiber bristle broom, perpendicular to main traffic route. Coordinate required final finish with the Architect before application.

F. Elevated slabs shall have a specified overall value of FF 22 to FF 27 and a minimum local of FF 20 with no FL number defined.

3.9 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as specified to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.

3.10 CONCRETE CURING AND PROTECTION

A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. In hot, dry, and windy weather protect concrete from rapid moisture loss before and during finishing operations with an evaporation-control material. Apply according to manufacturer's instructions after screeding and bull floating, but before power floating and troweling.

B. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing.

C. Curing Methods: Cure concrete by curing compound, by moist curing, by moisture-retaining cover curing, or by combining these methods, as specified. Curing methods are contractor’s option to obtain finishes as required. Coordinate curing method with floor finish manufacturer. Do not use certain methods as may be required by the floor finish manufacturer. Moist cure methods are highly recommended.

D. Provide moisture curing by the following methods:

1. Keep concrete surface continuously wet by covering with water for not less than 72 hours.
2. Use continuous water-fog spray.
3. Cover concrete surface with specified absorptive cover, thoroughly saturate cover with water, and keep continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with a 4-inch lap over adjacent absorptive covers.

E. Provide moisture-retaining cover curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3 inches and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

F. Apply curing compound on exposed interior slabs and on exterior slabs, walks, and curbs as follows:

1. Apply curing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours and after surface water sheen has disappeared). Apply uniformly in continuous operation by power spray or roller according to manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.
2. Use membrane curing compounds that will not affect surfaces to be covered with finish materials applied directly to concrete.

G. Curing Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces, by moist curing with forms in place for the full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.

H. Curing Unformed Surfaces: Cure unformed surfaces, including slabs, floor topping, and other flat surfaces, by applying the appropriate curing method.

1. Final cure concrete surfaces to receive finish flooring with a moisture-retaining cover,

unless otherwise directed.

2. Concrete floor surfaces scheduled to receive tile installations shall have been moist cured; curing of these surfaces by sprayed chemical curing compounds is not permitted.

3.11 SHORES AND SUPPORTS

A. Comply with ACI 347 for shoring and reshoring in multistory construction, and as specified.

B. Extend shoring from ground to roof for structures four stories or less, unless otherwise permitted.

C. Extend shoring at least three floors under floor or roof being placed for structures over four stories. Shore floor directly under floor or roof being placed, so that loads from construction above will transfer directly to these shores. Space shoring in stories below this level in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members where no reinforcing steel is provided. Extend shores beyond minimums to ensure proper distribution of loads throughout structure.

D. Remove shores and re-shore in a planned sequence to avoid damage to partially cured concrete. Locate and provide adequate re-shoring to support work without excessive stress or deflection.

E. Keep re-shores in place a minimum of 15 days after placing upper tier, or longer, if required, until concrete has attained its required 28-day strength and heavy loads due to construction operations have been removed.

3.12 REMOVING FORMS

A. Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the Work, may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form-removal operations, and provided curing and protection operations are maintained.

B. Formwork supporting weight of concrete, such as beam soffits, joists, slabs, and other structural elements, may not be removed in less than 14 days or until concrete has attained at least 75 percent of design minimum compressive strength at 28 days. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of concrete location or members.

C. Form-facing material may be removed 4 days after placement only if shores and other vertical supports have been arranged to permit removal of form-facing material without loosening or disturbing shores and supports.

3.13 REUSING FORMS

A. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-coating compound as specified for new formwork.

B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not

use patched forms for exposed concrete surfaces except as acceptable to Architect.

3.14 CONCRETE SURFACE REPAIRS

A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removing forms, when acceptable to Architect.

B. Mix dry-pack mortar, consisting of one part portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing.

1. Cut out honeycombs, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts down to solid concrete but in no case to a depth less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with bonding agent. Place patching mortar before bonding agent has dried.
2. For surfaces exposed to view, blend white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Provide test areas at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

C. Repairing Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes and fill with dry-pack mortar or precast cement cone plugs secured in place with bonding agent.

1. Repair concealed formed surfaces, where possible, containing defects that affect the concrete's durability. If defects cannot be repaired, remove and replace the concrete.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface tolerances specified for each surface and finish. Correct low and high areas as specified. Test unformed surfaces sloped to drain for trueness of slope and smoothness by using a template having the required slope.

1. Repair finished unformed surfaces containing defects that affect the concrete's durability. Surface defects include crazing and cracks in excess of 0.01-inch-wide or that penetrate to the reinforcement or completely through non-reinforced sections regardless of width, spalling, pop-outs, honeycombs, rock pockets, and other objectionable conditions.
2. Correct high areas in unformed surfaces by grinding after concrete has cured at least 14 days.
3. Correct low areas in unformed surfaces during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete. Proprietary underlayment compounds may be used when acceptable to Architect.
4. Repair defective areas, except random cracks and single holes not exceeding 1 inch in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose reinforcing steel with at least 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, and finish to blend with adjacent finished

concrete. Cure in same manner as adjacent concrete.

E. Repair isolated random cracks and single holes 1 inch or less in diameter by dry-pack method. Groove top of cracks and cut out holes to sound concrete and clean of dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Place dry-pack before bonding agent has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

F. Perform structural repairs with prior approval of Architect for method and procedure, using specified epoxy adhesive and mortar.

G. Repair methods not specified above may be used, subject to acceptance of Architect.

3.15 UNDERLAYMENTS

A. Install in strict accordance with manufacturer's written installation instructions and provide primers as recommended.

END OF SECTION 03 30 00

SECTION 03 35 43
POLISHED CONCRETE FINISHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Concrete Densifier.
2. Concrete Sealer.
3. Concrete Repair and protection materials.
4. Concrete Polishing.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with polished concrete to attend, including the following:

a. Contractor's superintendent.
b. Independent testing agency responsible for concrete design mixtures.
c. Ready-mix concrete manufacturer.
d. Cast-in-place concrete subcontractor.
e. Polished concrete finishing Subcontractor.

2. Review cold- and hot-weather concreting procedures, curing procedures, construction joints, concrete repair procedures, concrete finishing, and protection of polished concrete.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Polishing Schedule: Submit plan showing polished concrete surfaces and schedule of polishing operations for each area of polished concrete before start of polishing operations. Include locations of all joints, including construction joints.

C. Samples for Initial Selection: For each type of product requiring color selection.

D. Samples for Verification: For each type of exposed color.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Material Certificates: For each of the following, signed by manufacturers:

1. Repair materials.
2. Liquid floor treatments.

1.6 QUALITY ASSURANCE

A. Field Sample Panels for polished concrete: After approval of verification sample and before casting concrete, produce field sample panels to demonstrate the approved range of selections made under Sample submittals. Produce a minimum of three sets of full-scale panels, approximately 48 by 48 inches minimum, to demonstrate the expected range of finish, color, and appearance variations, sample panel shall include repair materials installed and finished to show final finished appearance where repair of concrete is required.

1. Locate panels as indicated or, if not indicated, as directed by Architect.
2. Maintain field sample panels during construction in an undisturbed condition as a standard for judging the completed Work.
3. Demolish and remove field sample panels when directed.

B. Mockups for polished concrete: Before casting concrete, build mockups to verify selections made under Sample submittals and to demonstrate typical joints, surface finish, tolerances, and standard of workmanship, Mock-up shall include repair materials installed and finished to show final finished appearance where repair of concrete is required. Build mockups to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in the location and of the size indicated or, if not indicated, as directed by Architect.
2. Demonstrate curing, finishing, and protecting of polished concrete.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

PART 2 - PRODUCTS

2.1 FLOOR TREATMENTS

A. Lithium Based Densifier, liquid Floor Treatments for Polished Concrete.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Scofield Formula One Lithium Densifier MP, or a comparable product by one of the following:

a. Advanced Floor Products.
b. Euclid Chemical Company (The); an RPM company.

B. Waterborne Concrete Sealer Floor Treatments for Polished Concrete.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Scofield Formula One Guard-W, or a comparable product by one of the following:

    a. Advanced Floor Products.
    b. Euclid Chemical Company (The); an RPM company.

2.2 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109/C 109M.

B. FLOOR PROTECTION

1. Multi-ply, textured membrane laminated with non-woven polypropylene geotextile.

    a. Basis of Design (BOD) Product: Subject to compliance with requirements, provide Scofield “Proguard Duracover” Floor Protection system or comparable product by one of the following manufacturers:

        1) Pro-Tech.
        2) Surface Protection International.
        3) Shield n Peel.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prepare concrete in accordance with Manufacturer’s requirements.

B. Repair concrete surfaces with repair materials as specified so concrete can be ground flush to level as specified. Install repair materials in accordance with Manufacturers requirements.

C. Grind or open the surface of concrete to a level 2 for Cut Depth/ Grind.

D. Remove dust by Vacuum.

3.2 DENSIFIER APPLICATION

A. Newly placed concrete shall be at least 28 days old before applying densifier.

B. Prepare surfaces according to manufacturer's written instructions.

C. Allow concrete surface to dry before applying densifier.

D. Apply densifier as a flood coat to wet film as recommended by the Manufacturer, to concrete surfaces according to manufacturer's written instructions for the period of time as recommended.

E. Remove excess densifier by means as recommended by the Manufacturer once cure time has elapsed.

3.3 SEALER APPLICATION

A. Prepare surfaces according to manufacturer's written instructions and as follows:

B. Allow concrete surface to dry before applying sealer.

C. Apply sealer as a flood coat to wet film as recommended by the Manufacturer, to concrete surfaces according to manufacturer's written instructions for the period of time as recommended.

D. Remove excess sealer by means as recommended by the Manufacturer once cure time has elapsed.

3.4 POLISHING

A. Polish: Level 3: Semi-Polished, 800 grit.

B. Apply polished concrete finish system to cured and prepared slabs to match accepted mockup.

1. Machine grind floor surfaces to receive polished finishes level and smooth and to depth required to reveal aggregate to match approved mockup.
2. Apply penetrating liquid floor treatment for polished concrete in polishing sequence and according to manufacturer's written instructions, allowing recommended drying time between successive coats.
3. Continue polishing with progressively finer-grit diamond polishing pads to gloss level, to match approved mockup.
4. Control and dispose of waste products produced by grinding and polishing operations.
5. Neutralize and clean polished floor surfaces.

3.5 FLOOR PROTECTION

A. Protect floors in accordance with Manufacturers requirements with product specified.

END OF SECTION 03 35 43

SECTION 03 39 35
INTEGRALLY COLORED CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Provisions established within General and Supplementary Conditions of Contract, Division 01 - General Requirements, and Drawings collectively applicable to this Section.

1.2 SUMMARY

A. Section Includes:

1. Integrally colored concrete slabs-on-grade.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer’s complete technical data sheets for the following:

1. Colored admixture.
2. Curing and sealing compound.

B. Design Mixes: For each type of integrally colored concrete.

C. Samples for Initial Selection:

1. Manufacturer's color charts showing full range of colors available.
2. Submit 2 samples 12-inches by 12-inches by 1-inch-thick demonstrating finish system using actual design mix of concrete proposed for finished work.
3. Samples will be reviewed for appearance, color, and texture.

D. Qualification Data: For firms indicated in "Quality Assurance" Article, including list of completed projects.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer with 10-years experience in the production of specified products.

B. Installer Qualifications: An installer with 5 years experience with work of similar scope and quality.

C. Comply with the requirements of ACI 301.

D. Obtain each specified material from same source and maintain high degree of consistency in workmanship throughout Project.

E. Notification of manufacturer's authorized representative shall be given at least 1-week before start of Work.

F. Integrally Colored Concrete Mockups:

1. Provide under provisions of Division 01 Section "Mock-Up Assemblies."
2. At location on Project selected by Architect, place and finish 10 feet by 10 feet area.
3. For accurate color, the quantity of concrete mixed to produce the sample should not be less than 3 cubic yards (or not less than 1/3 the capacity of the mixing drum on the ready-mix truck) and should always be in full cubic yard increments. Excess material shall be discarded according to local regulations.
4. Construct mock-up using processes and techniques intended for use on permanent work, including curing and sealing procedures. Include samples of control, construction, and expansion joints in sample panels. Mock-up shall be produced by the individual workers who will perform the work for the Project.
5. Test sealer adhesion for manufacturer acceptable results.
6. Retain samples of cements, sands, aggregates and color additives used in mock-up for comparison with materials used in remaining work.
7. Accepted mock-up provides visual standard for work of Section.
8. Mock-up shall remain through completion of work for use as a quality standard for finished work.
9. If Architect determines mock-ups do not meet requirements, demolish and remove from site and re-cast until mock-ups approved.

G. Manufacturer’s Certification: Provide a letter of acknowledgement from both the equipment and chemical manufacturer stating that the installer is a trained applicator and is familiar with proper procedures and installation requirements recommended by the manufacturer.

1.5 PROJECT CONDITIONS

A. Integrally Colored Concrete Environmental Requirements:

1. Schedule placement to minimize exposure to wind and hot sun before curing materials are applied.
2. Avoid placing concrete if rain, snow, or frost is forecast within 24-hours. Protect fresh concrete from moisture and freezing.
3. Comply with professional practices described in ACI 305R and ACI 306R.

B. Schedule delivery of concrete to provide consistent mix times from batching until discharge. Mix times shall meet manufacturer’s written recommendations.

1.6 PRE-JOB CONFERENCE

A. One week prior to placement of integrally colored concrete a meeting shall be held at project site to discuss the Project and application materials.

1. Agenda Items:

a. Environmental conditions such as application temperatures, humidity, moisture, etc.
b. Scheduling and coordinating of or trades and phasing of work.
c. Protection of adjacent and non-application as and surfaces.

d. Disposal procedures of waste water from equipment.
e. Debris resulting for surface preparation and application process.
f. Repair of blemishes, voids, cracks, joints, defects and defective concrete substrate prior to polishing installation.
g. Steps of installation process of polished floor system and protective finish including liquid densifier, and protective finish.
h. Protection of finished surface.
i. Maintenance schedule for post application service.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

A. Manufacturer, Basis of Design (BOD): Sika Corporation.

2.2 MATERIALS

A. Colored Admixture for Integrally Colored Concrete: Chromix® Admixtures for Color-Conditioned Concrete including Chromix P Admixtures, Chromix G Admixtures, or Chromix L Admixtures; Sika Corporation.

1. Product, Basis of Design (BOD): Chromix L Admixtures.
2. Admixture shall be a colored, water-reducing, admixture containing no calcium chloride with coloring agents that are lime-proof and ultra-violet resistant.
3. Colored admixture shall conform to the requirements of ACI 303.1, ASTM C979, ASTM C494 and ASSHTO M194.
4. Raw pigments are not an equivalent and may not be substituted.

B. Materials:

1. Products shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers”.

C. Certificate of compliance from material manufacturer stating that proposed products meet or exceed requirements of this Section, including standards ACI 303.1, ASTM C979, ASTM C494 and AASHTO M194.

1. Documented proof that proposed materials have a 10-year proven record of performance, confirmed by at least 5 local projects that Architect can examine.

2.3 COLORS

A. Concrete Colors:

1. Colored Admixture: As selected by Architect from manufacturers full range.

2.4 CONCRETE MIX DESIGN

A. Coordinate with Division 03 concrete specification by Structural engineer.

B. Slump of concrete shall be consistent throughout Project at 4-inches or less. At no time shall slump exceed 5-inches. If super plasticizers or mid-range water reducers are allowed, slump shall not exceed 8- inches.

C. Do not add calcium chloride to mix as it causes mottling and surface discoloration.

D. Supplemental admixtures shall not be used unless approved by manufacturer.

E. Do not add water to the mix in the field.

F. Add colored admixture to concrete mix according to manufacturer's written instructions.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install concrete according to requirements of Division 03 Section "Cast-In-Place Concrete."

B. Examine substrate, with installer present, for conditions affecting performance of finish. Correct conditions detrimental to timely and proper work. Do not proceed until unsatisfactory conditions corrected.

C. Do not add water to concrete mix in the field.

D. Newly placed concrete comply with following:

1. Minimum Concrete Compressive Strength: 3000 psi.
2. Normal Weight Concrete: No lightweight aggregate.
3. Non-air entrained.
4. Flatness Requirements:

    a. Overall FF 40.
    b. Local FF 30.

E. Use ASTM E1155, Standard Test Method for Determining Floor Flatness and Levelness using F number system.

F. Hard-Steel Troweled Finished Concrete with no burn marks finish to ACI 302.1R for Class 5 floor.

G. Cure concrete minimum 28 days, or as recommended by manufacturer, prior to polishing.

3.2 PREPARATION

A. Use planetary machine to remove coatings or open dense substrates.

B. Test concrete hardness to determine level of abrasive need to begin project.

3.3 CURING

A. Integrally Colored Concrete: Cure integrally colored concrete according to manufacturer's instructions using manufacturer’s recommended application techniques to maintain close color consistency.

B. Precautions shall be taken in hot weather to prevent plastic cracking resulting from excessively rapid drying at surface as described in CIP 5 Plastic Shrinkage Cracking published by the National Ready Mixed Concrete Association.

C. Do not cover concrete with plastic sheeting.

3.4 TOLERANCES

A. Minor variations in appearance of integrally colored concrete, which are similar to natural variations in color and appearance of uncolored concrete, are acceptable.

3.5 CLEANING

A. Keep premises clean and free of debris at all times.

B. Remove spatter from adjoining surfaces, as necessary.

C. Repair damages to surface caused by cleaning operations.

D. Remove debris from jobsite.

1. Dispose of materials in separate, closed containers in accordance with local regulations.

3.6 PROTECTION

A. Protect finished work with floor protection membrane until fully cured in accordance with manufacturers written recommendations.

B. No satisfactory chemical or cleaning procedure is available to remove petroleum stains from concrete surface as prevention essential.

1. Diaper hydraulic powered equipment to avoid staining concrete.
2. No trade park vehicles on slab. If necessary, to complete scope of Work, place drop cloths under vehicles.
3. No pipe cutting machine used on floor slab.
4. Do not place Steel on polished concrete surface to avoid rust staining.
5. Do not permit acids and acidic detergents in contact with slab.
6. Inform trades that slab be protected at all times.

END OF SECTION 03 39 35

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SECTION 03 45 00
ARCHITECTURAL PRECAST SHAPES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes, but not limited to the following:

1. Wall Caps.
2. Other Shapes as indicated on the drawings.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's specifications, data and instructions for manufactured materials and products. Include manufacturer's certifications and laboratory test reports as required.

B. Shop Drawings: Submit shop drawings showing complete information for fabrication and installation of precast concrete units.

1. Indicate member dimensions and cross-section; location, size and type of reinforcement, including special reinforcement and lifting devices necessary for handling and erection.
2. Indicate anchoring methods, anchors and attachment including spacing.

C. Samples for initial selection: Submit one Architectural precast sample 1' -0" long for each product.

1. Quality, color, and texture of surface finish.
2. Edge details including chamfers.

D. Samples for Verification: Submit one Architectural precast sample 1' -0" long for each product.

1. Quality, color, and texture of surface finish.
2. Edge details including chamfers.

E. Test Results

1. Manufacturer shall furnish test results attesting that materials meet specification requirements.

1.4 TEST REPORTS

A. Test Reports: test results prepared by an independent testing agency, indicating tested material characteristics as part of a source quality control program, current within the past five (5) years.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: manufacturer having sufficient plant facilities to produce the shapes, quantities and size of Products required in accordance with the project schedule.

B. Mock-up: Supply sufficient quantity of full-size units for use in constructing mock-up panel.

1. Size: 48” x 48”.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packaging and Shipping: precast concrete to be palletized, shrink wrapped and marked with legible manufacturer identification, including piece number and quantities.

B. Storage and Protection precast concrete to be stored in secure area in original packaging.

C. Protect from damage by other trades.

1.7 WARRANTY

A. For a period of two (2) years from delivery of precast concrete, manufacturer warrants the precast concrete products against defects in workmanship and materials per industry standards.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Compressive Strength 5,000 p.s.i. minimum.

B. Air Content 6-8%.

C. Water-Cement Ration .45.

D. Deflection Max: L/720.

2.2 MANUFACTURERS

A. Basis of Design Manufacturer; Wausau Tile, Inc., or subject to compliance with requirements a comparable product by one of the following:

1. Continental Cast Stone.
2. CDI Concrete Designs, Inc.

2.3 MATERIAL REQUIREMENTS

A. Portland Cement: ASTM C-150 Specifications for Portland Cement.

B. Aggregates: Aggregate shall be blended to meet individual project requirements.

C. Coloring; Pigments used shall be inorganic, resistant to alkalinity and used per manufacturer's recommendations.

D. Reinforcement and Hardware:

1. Reinforce precast with deformed rods as recommended by precast concrete manufacturer.

E. Abrasive Inserts: Shall consist of silica sand and epoxy.

1. Abrasive Color: Match Architect’s sample.

F. Setting Materials, Sealants

1. Color(s) to be selected by Architect.
2. Sealer: Colorless, pure acrylic water repellent sealer. Sealer to maintain natural look of concrete surface with no glaze or gloss, darkening or color change.

a. Acceptable Supplier: Custom Building Products/Aqua Mix.

2.4 MANUFACTURED UNITS

A. Sizing Tolerances

1. All units to conform to shop drawings with a (+/-) 1/8" tolerance in dimension.

B. Precast Surfaces and Edges:

1. All exposed edges to have minimum of 1/8" radius to prevent chipping.
2. All finished surfaces to match approved control sample.
3. All precast concrete finished surfaces to be factory sealed.

2.5 FINISHES

A. Exposed Surfaces: fine-grained texture similar to natural stone, color as selected by Architect, free of cracks, chips or other defects that would affect the strength or serviceability of the unit or become exposed once installed and visible when viewed from a distance of not less than 15 feet under diffused light.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine substrates for the following:

1. Defects or cracks in existing work or substrate.
2. Deviations beyond allowable tolerances for the substrate.

B. Continue with installation of precast units only when all defects have been corrected.

C. Project Conditions

D. Do not install products under environmental conditions outside setting material manufacturer's absolute limits.

3.2 INSTALLATION

A. Thin Set Application

1. Substrate of concrete or steel (steel at interior application only). Must be within a tolerance of 1/8"in all dimensions.
2. Latex modified thin set mortar used over concrete substrate.

    a. Setting bed must be continuous under the entire length of the tread and behind the entire riser. Setting materials utilized per manufacture's recommended instruction.

3. Epoxy thin set is used over steel substrate.

    a. Setting bed must be continuous under the entire length of the tread and behind the entire riser. Setting materials utilized per manufacture's recommended instruction.

4. Set treads level and plumb to meet finished nosing layout.

B. Mortar Set Application

1. Substrate of concrete or steel (steel at interior application only). Must be within a tolerance of 1/8" in all dimensions.
2. The height of the mortar bed is established based on tread nosing layout marks and precast thickness. The mortar bed is then placed or screeded over primed substrate.

    a. Setting bed must be continuous under the entire length of the tread and behind the entire riser. Setting materials utilized per manufacture's recommended instruction.

3. Set treads level and plumb to meet finished nosing layout.

C. Tab Set Application

1. Substrate of concrete or steel (steel at interior application only) must be within a tolerance of 1/8"in all dimensions.
2. Tabs to be set at front and back of tread every 12" O.C. minimum.

3. Set treads level and plumb to established nosing layout.

D. Joints

1. Joints between adjacent precast should be a minimum of 1/8”-1/4”.

E. Caulking of Precast

1. Clean all joints thoroughly, removing all debris.
2. Wipe all joints with caulk manufacturer's recommended cleaner prior to application.
3. Use urethane caulk. (Color match caulk to precast per architect selection.)
4. Clean up after caulking as per caulk manufacturer's recommendations.

F. Precast Concrete products setting or installation methods are to be reviewed by the manufacturer and setting materials supplier.

G. Final Cleaning of Precast Concrete

1. Check all surfaces and caulking, make repairs as necessary.
2. Clean treads with a pH balanced soap.

H. Finish:

1. Overall match to approved sample and per industry standards.
2. All products to be factory sealed.

3.3 PROTECTION

A. Protect units from damage resulting from subsequent construction operations.

B. Use protection materials and methods which will not stain or damage units.

C. Remove protection materials upon Substantial Completion, or when risk of damage is no longer present.

END OF SECTION 03 45 00

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Division 04

Masonry

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SECTION 04 05 13
MASONRY MORTARING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies the mortar for unit masonry materials specified in the following Sections:

1. Concrete masonry units, Section 04 22 00.

1.2 SUBMITTALS

A. All required submittals shall be approved prior to the start of masonry construction.

B. Product Data: Proposed prepared masonry cement.

C. Proposed mortar mix design(s) including identities and proportions of ingredients as well as adherences to standards where specified.

D. Test results from mortar cube breaks reporting compressive strength of mortar.

E. Provide certification, in writing, that materials meet requirements of ASTM C1142.

1.3 QUALITY ASSURANCE

A. Codes and Specifications: Comply with the provisions of the following codes specifications, and standards, except as otherwise shown or specified.

1. ACI 530/ASCE 5/TMS 402-14 Building Code Requirements for Masonry Structures
2. ACI 530.1/ASCE 6/TMS 602-14 Specifications for Masonry Structures
3. NCMA-TEK 20B Mortars for Concrete Masonry
4. ASTM C144, Aggregate for Masonry Mortar
5. ASTM C150, Portland Cement
6. ASTM C207, Hydrated Lime for Masonry Purposes
7. ASTM C270, Mortar for Unit Masonry

B. Field Quality Control.

1. Materials may require testing and re-testing, as directed by the Architect, during the progress of the Work. Allow free access to material stockpiles and facilities. Tests shall be performed at the Owner's expense.
2. Do not change source or brands of masonry mortar material during the course of the Work. If changes become necessary, resubmit data for material being changed and for tests of materials in which the changed material is and ingredient.

1.4 TESTS FOR MORTAR

A. Test for compressive strength by the methods of sampling and testing of ASTM C109 and ASTM C780.

1. Provide a minimum of one set of cubes for testing per 5,000 sq. ft. of masonry wall construction and as directed by Architect.

B. Submit written reports for each material sampled and tested. Provide Project name and number, date of report, name of contractor, name of testing service, source of aggregates, material manufacturer and brand name for manufactured materials, values specified in the referenced specification for each material, and test results. Indicate whether or not material is acceptable for intended use.

C. If the compressive strength tests fail to meet the minimum requirements specified, the mortar represented by such tests will be considered deficient in strength.

1. Removed and replaced deficient mortar.

1.5 MATERIAL STORAGE, DELIVERY, AND HANDLING

A. Store mortar materials off the ground, under cover, using tarpaulins, felt paper, or polyethylene sheets in a dry location.

B. Deliver and store manufactured products in original unopened containers.

C. Store cementitious ingredients in weather-tight enclosures and protect against contamination.

D. Stock piles and handle aggregates to prevent contamination form foreign materials.

1.6 ENVIRONMENTAL REQUIREMENTS

A. To assure mortar temperatures between 40 degrees F and 120 degrees F until used heat mixing water or aggregates when air temperature is between 32 degrees F and 40 degrees F. When the air temperature is between 25 degrees F and 32 degrees F, heat both water and aggregate.

B. Produce subsequent mortar batches within plus or minus 10 degrees of first batch.

C. Do not heat water or sand above 160 degrees F.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portland Cement: ASTM C150, Type I, non-staining, without air entertainment and of natural color or white, to produce the required color of mortar or grout.

B. Masonry Cement: Current ASTM C91, non-staining, with 12 to 22 percent air content by volume.

C. Hydrated Lime: ASTM C207, Type S

D. Aggregates: ASTM C144, except for joint less than 1/4 inch, use aggregate graded with 100 percent passing the No. 16 sieve.

E. Water: Clean, free of deleterious materials which would impair strength or bond.

F. Ready Mixed Mortar: ASTM C270 Standard Specification for ready mixed mortar for unit masonry.

G. Integral Water Repellent Admixture: “Dry-Block Water Repellent Mortar Admixture” as manufactured by Grace Construction Products, Cambridge, MA.

2.2 MORTAR MIXES

A. Do not lower the freezing point of mortar by use of admixture or anti-freeze agents.

1. Do not use calcium chloride in mortar.

B. Mortar for Unit Masonry: Comply with ASTM C270, Property Specification, Proportion Specifications, or ASTM C1142.

1. Type M: 2500 psi average compressive strength at 28 days for masonry in contact with the earth.
2. Type S: 1800 psi average compressive strength at 28 days for other masonry conditions.

C. Use gray (non-colored) mortar for interior and non-exposed concrete block masonry.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Refer to Section 04 22 00, Concrete Unit Masonry.

END OF SECTION 04 05 13

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SECTION 04 05 16
MASONRY GROUTING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies the masonry grout for unit masonry materials specified in the following Sections:

1. Concrete masonry units, Section 04 22 00.

B. The types of masonry grout required include the following:

1. Fine grout
2. Coarse grout
3. Grout for use in hollow metal frames

1.2 SUBMITTALS

A. Product Data: Proposed portland cement

B. Proposed grout mix designs for both fine and coarse grouts including complete identities and proportions of ingredients as well as adherences to standards where specified. All grout shall be plant-mix.

C. Compression test results from an independent certified testing laboratory from grout samples made from the proposed grout mix design. Test reports may be from previous Projects within the previous 6 months.

1.3 QUALITY ASSURANCE

A. Standards: Comply with the provisions of the following in accordance with the current Florida Building Code (with applicable supplements), except as otherwise shown or specified.

1. ACI 530/ASCE 5 Building Code Requirements for Masonry Structures.
2. ACI 530.1/ASCE 6 Specifications for Masonry Structures.
3. NCMA-TEK 23-A Grouting for Concrete Masonry Walls.

A. Field Quality Control

1. Materials may require testing and re-testing, as directed by the Architect, during the progress of the Work. Allow free access to material stockpiles and facilities. Tests will be performed at the Owner's expense.
2. Do not change source or brand of masonry grout materials during the course of the Work. If changes become necessary, resubmit data for material being changed and for tests of materials in which the changed material is an ingredient.

1.4 MATERIAL STORAGE

A. Store grout materials off the ground, under cover, using tarpaulin, felt paper, or polyethylene sheets and in a dry location.

1.5 TESTS FOR GROUT

A. Provide a minimum of one set of 3 test specimens for testing per 5000 square feet of masonry wall construction and as directed by the Architect.

B. Submit written reports for each material sampled and tested. Provide Project name and number, date of report, name of contractor, name of testing service, source of aggregates, material manufacturer and brand name for manufactured materials, values specified in the referenced specification for each material, and test results. Indicate whether or not material is acceptable for intended use.

C. If the compressive strength tests fail to meet the minimum requirements specified, the grout represented by such tests shall be considered deficient in strength.

1. Removed and replaced deficient mortar.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portland Cement: ASTM C150, Type I, unless otherwise acceptable to Architect.

B. Flyash: ASTM C618-97, Type C or F may be substituted for up to 20 percent of the portland cement in the grout mix.

C. Fine Aggregates: Clean, sharp, natural sand free from loam, clay lumps, or other deleterious substances.

D. Coarse Aggregates: Clean, uncoated, pea gravel containing no clay, mud, loam, or foreign matter. Maximum aggregate size 3/4-inch.

E. Water: Clean, free of deleterious materials which may impair strength or bond.

2.2 GROUT MIXES

A. Do not use calcium chloride in grout

B. Grout, comply with ASTM C476.

1. Fine Grout: 2500 psi average compressive strength at 28 days.
2. Coarse Grout: 2500 psi average compressive strength at 28 days.
3. Use fine grout in all hollow metal frames.

C. Grout Proportions (by volume): Comply with Table 1, ASTM C476.

1. Fine Grout: 1 part portland cement, 0 to 1/10 part hydrated lime or lime putty, 2-1/4 to 3 parts fine aggregate.
2. Coarse Grout: 1 part portland cement, 0 to 1/10 part hydrated lime or lime putty, 2-/1/4 parts fine aggregate, 1 to 2 parts coarse aggregate.

D. Grout Slump: 9 to 11 inches.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Refer to Section 04 22 00, Concrete Unit Masonry.

B. Grout all steel frames installed in concrete and CMU walls. Do not install until asphaltic emulsion back coating has dried. Refer to Section 08 11 01- Steel Doors and Frames.

3.2 SAMPLING AND TESTING

A. Sampling and Testing of Grout: NCMA-TEK 107.

1. Place a piece of wood 1-5/8-inch-thick and 3 inches by 3 inches on a level surface. Four masonry units with permeable paper, such as absorptive paper toweling, taped to one face shell are placed around the wood block to form the mold. The resulting mold is approximately 3 inches square by 6 inches high. Pour grout into the mold in two layers. Rod each layer 25 times with a 1 x 2 wood puddling stick to eliminate air bubbles. Puddle the bottom layer throughout its depth. Distribute the strokes uniformly over the cross-section of the mold. For the upper layer, allow the stick to penetrate about 1/2 inch into the underlying layer. After the second lift has been puddled, level the top of the prism with a trowel and immediately cover the prism with wet burlap or similar material to keep it damp. Protect the prisms against extreme changes in temperature, and after 48 hours, remove the masonry units and carefully pack the samples for transport to the laboratory where they will be stored in a moist room until tested.
2. Cap the specimens in accordance with the applicable provisions of "Method of Capping Cylindrical Concrete Specimens," ASTM C617. The sample should be tested in a damp condition in accordance with the applicable provisions of ASTM C39 "Methods of Test Compressive Strength of Molded Concrete Cylinders."
3. Three test samples shall be made and tested for each type of grout to be used in the work.

END OF SECTION 04 05 16

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SECTION 04 05 23
MASONRY ACCESSORIES

PART 1- GENERAL

1.1 SUMMARY

A. Section includes masonry accessories for unit masonry materials specified in:

1. Concrete Masonry Units, Section 04 22 00

B. The types of masonry accessories required include the following:

1. Continuous horizontal wire reinforcing and ties.
2. Individual metal ties.
3. Anchoring devices.
4. Neoprene expansion joint filler.
5. Rubber control joints.
6. Concealed and through-wall flashings built into masonry work.
7. Reinforcing bars in masonry lintel block and hollow metal door frame heads.
8. Vertical bars for concrete masonry.
9. Caging devices and centering clips for alignment of vertical reinforcing bars.
10. Grouted anchor bolts.
11. Preformed expansion joint material.
12. Column isolation.

1.2 SUBMITTALS

A. All submittals shall be approved prior to the start of masonry construction.

B. Product Data, with particular items to be provided, clearly marked, for:

1. Masonry joint reinforcement
2. Masonry in-wall flashing
3. Neoprene expansion joint filler
4. Rubber control joint

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Provide masonry reinforcing as manufactured by one of the following;

1. Heckmann Building Products, Inc., Chicago, Illinois; http://www.heckmannbuildingprods.com
2. Masonry Reinforcing Corp. of America, Charlotte, North Carolina; http://www.wirebond.com
3. Hohmann & Barnard, Inc., Hauppauge, New York; http://www.h-b.com

2.2 MATERIALS

A. Continuous Wire Reinforcing and Ties for Masonry

1. Provide welded wire units prefabricated in straight lengths of not less than 10 foot, with matching pre-fabricated corner ("L") and intersection ("T") units.
2. Fabricate from cold-drawn steel wire complying with ASTM A1064, with deformed or embossed continuous side rods and plain cross-rods, with unit width of 1-1/2 to 2 inches less than thickness of wall partition.
3. Wire shall be galvanized in accordance with the following:

    a. Joint reinforcement, interior walls: Mill galvanized wire ASTM A641 Class 1 (0.40 oz. per sq. ft.)
    b. Wire ties or anchors in exterior walls completely embedded in mortar or grouts: Mill galvanized ASTM A641 Class 3 (0.80 oz. per sq. ft.)
    c. Wire ties or anchors in exterior walls not completely embedded in mortar or grout (includes cavity walls): Hot dip galvanized ASTM A153 Class B2 (1.50 oz. per sq. ft.)
    d. Joint reinforcement in exterior walls or interior walls exposed to moist environments such as showers, food service areas, and toilet rooms: Hot dip galvanized ASTM A153-B2 (1.50 oz. per sq. ft.)
    e. Sheet metal ties or anchors exposed to weather metal: Hot dip galvanized ASTM A153 B2 (0.60 oz. per sq. ft.)
    f. Sheet metal ties or anchors completely embedded in mortar or grout: ASTM 653 (0.60 oz. per sq. ft.)

4. For single wythe interior CMU walls, provide truss ladder type joint reinforcing fabricated with two 9 gage steel side rods and 9 gage cross rods. Joint reinforcing shall be placed in every other CMU joint or not more than 16 inches o.c.
5. For single wythe foundation walls, provide truss ladder type joint reinforcing fabricated with two 9 gage steel rods and 9 gage cross rods. Joint reinforcing shall be placed in every CMU joint or no more than 8 inches o.c.

B. Adjustable Masonry Wall Ties: Shall be fabricated from 3/16 inch cold-drawn galvanized steel wire, complying with ASTM A1064, of the length required for proper embedment in wythes of masonry shown, or crimped if used in cavity wall construction. Provide either "rectangular" or "Z" ties for proper anchorage in mortar joint.

C. Anchoring Devices for Masonry

1. Rigid Anchors: Where masonry is to be rigidly anchored to structural steel beams, such as lintel beams, provide galvanized steel straps, bars, or rods welded to the steel beam and extending into the mortar joint. Straps shall be not less than 14 gage in thickness. Bars and rods shall be not less than 1/4 inch in diameter.
2. Flexible Anchors: Where masonry is to be laterally supported from structural steel, while permitting only vertical movement or both vertical and horizontal movement, provide flexible anchors consisting of 2 different components as follows:

    a. Web Ties or Beam Ties: Shall be 3/16-inch galvanized steel wire, ASTM A1064, 12 inches long with width being approximately 2 inches less than nominal wall thickness. Provide ties with blunt end when used with strap anchors, and provide

ties with tapered end when used with rod anchors. This type tie shall permit only vertical movement and shall be installed parallel to masonry walls that abut steel columns.

b. Triangular Ties: Shall be 3/16-inch galvanized steel wire, ASTM A1064, lengths as required to extend to within 5/8 inch of opposite face of masonry. Closed end shall be 1 inch wide, and split-end opening shall be 1/2 inch. This type tie shall permit both vertical and horizontal movement and shall be installed where masonry by-passes steel columns and where masonry is parallel and adjacent to steel beams and joists.

c. Flexible anchors: Where masonry is to be laterally supported from cast-in-place or precast concrete, provide 22 gage galvanized dovetail slots with 3/16-inch diameter galvanized triangular ties.

3. Dowels on Lintels: Where masonry is supported on the top of lintels and plates provide #4 reinforcing bar by 6 inch rods or 1/2 inch diameter by 6 inch headed studs at 32 inch spacing, unless otherwise noted, welded to top of steel and extending into cores or cavity of masonry above. Grout cores or cavity at rods.

D. Neoprene Expansion Joint Filler (for face brick)

1. Provide expansion joints in exterior brick masonry conforming to ASTM D-1056 where indicated on the Drawings. The following products are acceptable:

a. "Neo-Seal IV 2218-3" as manufactured by Williams Products, Inc., Troy, Michigan; or Architect approved equal; http://www.sweets.com/index/mfg.htm?site=undefined&id=624

E. Rubber Control Joints

1. Provide rubber control joints designed for standard sash block in CMU walls where control joints (CJ) are indicated on the Drawings or as specified in Section 04200. The following products are acceptable. Rubber control joints shall conform to ASTM D2000.

a. Basis of Design: “Everlastic Slot Seal Std. 2015-3” as manufactured by Williams Products, Inc., Troy, Michigan. http://www.sweets.com/index/mfg.htm?site=undefined&id=624

b. Other equal products as manufactured by Dur-o-wal or Heckman are acceptable.

F. Through-Wall Flashing:

1. Provide flashings, shown to be built into masonry, extended, exposed beyond the exterior surface of the wall.

a. Firestone FLASHGUARD, EPDM Rubber Membrane, 40mil thickness
b. Stainless steal: 0.0156 thick, ASTM A 240, Type 304

2. All masonry wall flashings are to be set in a bed of mortar and covered with a bed of mortar.
3. All seams shall be welded and watertight.

a. Solder for Stainless Steel: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer

G. Reinforcing Bars

1. Size, length, and spacing shall be as indicated on the Drawings.
2. Where No.3 and larger are indicated, they shall be deformed steel, conforming to ASTM A615, Grade 60.

H. Intersecting Masonry Wall Joint Reinforcing: Horizontal bed joint reinforcement for conditions where interior non-load-bearing masonry walls intersect exterior or interior load-bearing walls at 90 degrees shall be wire mesh wall ties made of 1/2-inch mesh by 16 gage hot dip mill-galvanized wire, 1 inch less in width than width of wall.

I. Column Isolation: Around all columns in masonry walls, provide 3/8 inch “Ceramar Flexible Foam” expansion joint filler as manufactured by W.R. Meadows, Inc.: http://wrmeadows.com, or Architect approved equal.

J. Caging Devices and Centering Clips

1. In hollow concrete masonry cores or brick cavities to be reinforced with vertical reinforcing steel bars and filled with grout, provide 9 gage galvanized steel caging devices. The following products are acceptable:

   a. Rebar Positioner AA239, AA Wire Products Company, Chicago, Illinois; or Architect approved equal.
   b. Rebar Positioner 3400, Masonry Reinforcing of America, Charlotte, North Carolina; or Architect approved equal.
   c. Spider Type Rebar Positioner, National Wire Products Industries, Baltimore, Maryland; or Architect approved equal.

K. Grouted Anchor Bolts

1. In hollow concrete masonry units: HILTI HY 70 Renovation Anchors, Hilti, Inc., Tulsa, Oklahoma; http://www.us.hilti.com; or Architect approved equal.
2. In solid or grouted masonry units: HILTI HY 100 System, Hilti, Inc., Tulsa, Oklahoma; http://www.us.hilti.com; or Architect approved equal.

L. Preformed Expansion Joint Material: Provide closed cell polyethylene expansion joints equal to "Expansion-Joint Filler" by Sonneborn Building Products; or Architect approved equal. http://www.chemrex.com/sonneborn/index.htm

PART 3 - EXECUTION

3.1 INSTALLATION

A. See Section 04 22 00, Concrete Unit Masonry, for installation of masonry accessories specified under this Section.

END OF SECTION 04 05 23

SECTION 04 22 00
CONCRETE UNIT MASONRY

PART 1 – GENERAL

1.1 SUMMARY

A. Provide labor, materials, and equipment necessary for complete installation of unit masonry as shown on the Drawings and specified herein.

B. Work installed under this Section, but materials or products furnished under the following Divisions or Sections:

1. Masonry mortar furnished under the Work of Section 04 05 13.
2. Masonry grout furnished under the Work of Section 04 05 16.
3. Masonry accessories furnished under the Work of Section 04 05 23.
4. Anchor bolts, steel plates, and steel lintels; refer to Division 5

    a. Installation of lintels in masonry walls shall be included under the Work of this Section.

5. Wood bucks and nailing blocks in masonry construction; refer to Division 06.

C. Work installed under this Section, but materials or products furnished under the following Divisions or Sections:

1. Architectural Concrete Unit Masonry furnished under the work of Section 04 22 23.

D. Cooperate with other trades requiring items of equipment or services to be installed within or in conjunction with Unit Masonry Work.

E. Other Materials provided and installed by this Section:

1. Integral color
2. Integral water repellent additive
3. Masonry cleaners

1.2 SUBMITTALS

A. Test report from independent laboratory showing result of efflorescent test conducted per ASTM C67 for each provided face brick type.

B. Upon regular presentation within past 6 months of representative units by approved manufacturer, a test report from an independent laboratory showing resultant weight, compressive strength (based on net area), and water absorption properties, as well as adherences to standards where so specified, for:

Name of Manufacturer

Date of Manufacture of Test Specimen
Dimension Measurements (in.)
Calculated Gross Area (sq.in.)
Calculated Net Area (sq.in.)
Total Load (lbs.)
Net Unit Load (psi)
Sample Weight (lbs.)
Dry Weight (lbs.)
Wet Weight (lbs.)
Immersed Weight (lbs.)
Density (pcf)
Moisture Content (%)
Absorption (%)

C. Letter from approved manufacturer certifying that provided units will meet or exceed qualities of tested representative units for:

1. Each proposed type of concrete masonry unit.

D. Mock-up panels as erected on site grounds are only samples required.

E. Approved manufacturer's published complete product data, with particular items to be provided clearly marked thereon, for:

1. Proposed masonry cavity wall insulation.
2. Integral color.
3. Integral water repellant additive.

F. A test report from an independent testing laboratory showing compressive strength of concrete masonry prisms constructed from the concrete masonry units and mortar to be used in the masonry work for:

1. Each proposed type and size of concrete masonry unit as required on the Reinforced Masonry Plans in the Drawings.

G. Submit minutes from preinstallation conference.

H. Fire-rated CMU certification.

I. Installer’s examination report.

J. Submit written masonry inspection reports as specified in 1.3.C herein.

1.3 QUALITY ASSURANCE

A. Standards: Comply with the provisions of the following in accordance with the Florida Building Code 7th Edition (2020), except as otherwise shown or specified.

1. ACI 530/ASCE 5/TMS 402-14 Building Code Requirements for Masonry Structures
2. ACI 530.1/ASCE 6/TMS 602-14 Specifications for Masonry Structures
3. NCMA-TEK 70A Concrete Masonry Prism Strength.
4. NCMA-TEK 132

5. NCMA-TEK 23A Grouting for Concrete Masonry Walls.
6. NCMA-TEK 65 Field Inspection of Engineered Concrete Masonry.
7. ASTM C140 Standard Methods of Sampling and Testing Concrete Masonry Units.
8. Comply with ALL NCMA-TEK Standards.

B. Changes in the source or brand of masonry materials during construction will require resubmission and re-testing at the Contractor's expense.

C. Job Mock-Up (if required by Archited)

1. Prior to installation of masonry work, erect sample wall panel mock-up using materials, bond, and joint tooling shown or specified for final work. Provide special features as directed for caulking and contiguous work. Build mock-up at the site, where directed, of full thickness and approximately 4'x4', unless otherwise shown, indicated the proposed range of color, texture, and workmanship to be expected in the completed work. Erect panels with finish face of panels facing south. Obtain Architect's acceptance of visual qualities of the mock-up before start of masonry work. Retain mock-up during construction as a standard for judging completed masonry work. Do not alter, move, or destroy mock-up until work is completed. Provide mock-up panel for the following:

a. Typical exterior CMU wall indicating all of the different types of CMU and finishes as specified herein.
b. Typical interior partition of concrete masonry units.

D. Fire Performance Characteristic: Where indicated, provide materials and construction identical to those of assemblies whose fire resistance has been determined per ASTM E119 by a testing and inspection organization, by equivalent concrete masonry thickness, or by other means acceptable to authorities having jurisdiction.

1.4 TESTS OF CONCRETE MASONRY PRISMS

A. For grout filled and reinforced or un-reinforced concrete masonry or brick masonry wall construction tests for the compressive strength of prisms as described in ASTM C 1314.

1. Provide a minimum of one set of 3 masonry prisms for testing per each 5000 square feet of masonry wall construction as required on the Structural Masonry Plan in the Drawings.

B. Submit written reports for each prism tested Provide the project identification name and number, date of report, name of Contractor, name of Testing service, name of material suppliers, specific location where masonry represented by the prism is used, test results, and values specified in the referenced specification. Indicate whether or not tested prism is acceptable for intended use.

C. If the compressive strength tests fail to meet the minimum requirements specified, the concrete masonry represented by such tests shall be considered deficient in strength.

D. Deficient masonry construction shall be removed and replaced by the Contractor without additional cost to the Owner. In lieu or removal and replacement, additional cores may be grouted as required and directed by the Architect without additional cost to the Owner.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver masonry materials to project in undamaged condition.

B. Store and handle masonry units off the ground, under cover, and in a dry location to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion, and other causes. If units become wet, do not place until units are in an air-dried condition.

C. Store cementitious materials off the ground, under cover, and in dry location.

D. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

E. Store masonry accessories including metal items to prevent corrosion and accumulation of dirt and oil.

1.6 PROJECT CONDITIONS

A. Protect partially complete masonry against weather, when Work is not in progress, by covering top of walls with strong, waterproof, non-staining membrane. Extend membrane at least 2 foot down both sides of walls and anchor securely in place.

B. Protect partially complete masonry walls against wind damage by bracing as required until support of walls is integral with the building structure.

C. Protect masonry against freezing when the temperature of the surrounding air is 40 degrees F and falling. Heat materials and provide temporary protection of complete portions of masonry work. Comply with the requirements of the governing code and with the "Construction and Protection Recommendations for Cold Weather Masonry Construction" of the Technical Notes of Brick and Tile Construction by the Brick Institute of America (BIA).

D. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Remove immediately any grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and mortar splatter by means of coverings spread on ground and over wall surface.
2. Protect sills, ledges, and projections from mortar droppings.
3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes from mortar droppings.

E. Cold-Weather Construction: Comply with referenced unit masonry standard for cold-weather construction and the following:

1. Do not lay masonry units that are wet or frozen.
2. Remove masonry damaged by freezing conditions.

F. Hot-Weather Construction: Comply with referenced unit masonry standard.

G. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Comply with referenced unit masonry standard and other requirements specified in this Section applicable to each material indicated.

2.2 MASONRY UNITS

A. Obtain masonry units from one manufacturer for uniform texture and color for each kind required, for each continuous area and visually related areas.

B. Concrete Masonry Units (CMU):

1. Manufacturer: Shall be member of the National Concrete Masonry Association
2. Size: Manufacturer's standard units with face dimensions of 15-5/8 by 7-5/8 inches (actual), 15-5/8 inches by 3-5/8 inches (actual), 7-5/8 inches by 7-5/8 inches.
3. Special Shapes: Provide, where shown and where required, lintels, inside and outside corners, jambs, sash, control joints, headers, bond beams, bullnoses, and other special conditions.

    a. Provide bullnose corners at all exposed external corners (except at heads), and sills.
    b. Not required at exterior columns, planters, and seat walls.

4. Hollow Load-Bearing (HL) CMU: Provide units complying with ASTM C90, 2N Class Designation for the aggregates, with a minimum compressive strength of (2420 psi) (1900 psi) on the net section.
5. Solid Loadbearing CMU (Solid CMU): Provide units complying with ASTM C90, 2N Class Designation for the aggregates, with a minimum compressive strength of (2420 psi) (1900 psi) on the gross section.
6. Lightweight Units: ASTM C331 aggregate, except that aggregate material shall be limited to blast furnace slag, clay, shale, or slate. Dry net weight shall be not more than 105 lbs. per cu. ft. Strength shall be indicated above.
7. Medium Weight Units: ASTM C33 concrete aggregates for a net weight between 105 pounds and 125 pounds per cu. ft. Strength shall be as indicated above.
8. Normal Weight Units: ASTM C33 concrete aggregates for a dry net weight of not less than 125 pounds per cu. ft. Strength shall be as indicated above.
9. Curing: Cure units in a moisture-controlled atmosphere or in an autoclave at normal pressure and temperature to comply with ASTM C90, Type I. (Linear drying shrinkage shall be 3 percent or less).
10. Curing: Cure units in a non-moisture-controlled atmosphere to comply with ASTM C90, Type II.
11. Exposed Face:

    c. Manufacturer's standard color and texture. Smooth (Sand) face. No open textured block will be accepted.
    b. Split-face CMU where indicated. Provide heavy weight classification of over 125 lbs. per cu. ft. of concrete.
    c. Open textured face CMU made with gap-graded aggregates.

    d. Smooth face scored CMU where indicated.

12. Where CMU walls are indicated as fire-rated, provide materials and construction identical to those of assemblies whose fire resistance has been determined per ASTM E119 by a testing and inspection organization, by equivalent concrete masonry thickness, or by other means as acceptable to authorities having jurisdiction.
13. Fire Rated CMU shall meet requirements of the UL 618 and may be lightweight block manufactured with 100% rotary kiln produced expanded shale, clay, or slate. Blending of screenings or any other deleterious substance which impairs the fire rating is prohibited. The producer of the CMU shall furnish a one page certification showing conformance with all requirements of UL 618.
14. Provide masonry lintels at all openings greater than 1’-0” in width that occur in CMU walls.

2.3 MASONRY CLEANERS

A. Job-Mixed Detergent Solution: Solution of trisodium phosphate (1/2-cup dry measure) and laundry detergent (1/2-cup dry measure) dissolved in one gallon of water.

B. Job-Mixed Muriatic Solution: Solution of 1 part muriatic acid and 10 parts clean water, mixed in a nonmetallic container with acid added to water.

C. Proprietary Acidic Cleaner: Manufacturer's standard-strength, general-purpose cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry surfaces of type indicated below without discoloring or damaging masonry surfaces; expressly approved for intended use by manufacturer of masonry units being cleaned:

1. For masonry not subject to metallic oxidation stains, use formulation consisting of a concentrated blend of surface-acting acids, chelating, and wetting agents.
2. For dark colored masonry not subject to metallic oxidation stains, use formulation consisting of a liquid blend of surface-acting acids and special inhibitors.
3. For masonry subject to metallic oxidation stains, use formulation consisting of a liquid blend of organic and inorganic acids and special inhibitors.
4. Available Products: Subject to compliance with requirements, a product that may be used to clean unit masonry surfaces includes, but is not limited to, the following:
5. Products: Subject to compliance with requirements, provide the following:

    d. "Sure Klean No. 600 Detergent," ProSoCo, Inc.
    e. "Sure Klean No. 101 Lime Solvent," ProSoCo., Inc.
    f. "Sure Klean Vana Trol," ProSoCo, Inc.

2.4 INTEGRAL WATER REPELLANT ADDITIVE

A. Acceptable Manufacturers: “Dry-Block” by W.R. Grace and Company; or Architect approved equal.

B. Install the integral waterproofing additive in all smooth face CMU, split-face CMU and ground face CMU installed in exterior walls.

C. Integral water repellent additive shall comply with ASTM E514, extended to 72 hours, ASTM C1357, ASTM C1314, and ASTM C1148.

D. Description: Integral liquid polymeric admixture for CMU added during block production.

E. Water Permeance of Masonry: Capable of achieving a Class E Rating when evaluated using ASTM E 514 with the test extended to 72 hours, using the rating criteria specified in ASTM E 514-74.

F. Flexural Bond Strength of Masonry: An increase of minimum 10% in masonry flexural bond strength shall occur as a result of adding integral water-repellent CMU and mortar admixtures when compared to a control (containing no admixtures) CMU and mortar when tested according to ASTM C 1357.

G. Compressive Strength of Masonry Prisms: Maximum 5% decrease in compressive strength of prisms shall occur as a result of adding integral water-repellent CMU and mortar admixtures when compared to a control (containing no admixtures) CMU and mortar when tested according to ASTM C 1314.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other specific conditions, and other conditions affecting performance of unit masonry.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of unit masonry.

B. Examine rough-in and built-in construction to verify actual locations of piping connections prior to installation.

C. Do not proceed until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with referenced unit masonry standard and other requirements indicated applicable to each type of installation included in Project.

B. Thickness: Build cavity and composite walls and other masonry construction to the full thickness shown. Build single-wythe walls to the actual thickness of the masonry units, using units of nominal thickness indicated.

C. Build chases and recesses as shown or required to accommodate items specified in this and other Sections of the Specifications. Provide not less than 8 inches of masonry between chase or recess and jamb of openings and between adjacent chases and recesses.

D. Leave openings for equipment to be installed before completion of masonry. After installation of equipment, complete masonry to match construction immediately adjacent to the opening.

E. Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide continuous pattern and to fit adjoining construction. Use full-size units

without cutting where possible.

F. Matching Existing Masonry: Match coursing, bonding, color, and texture of new masonry with existing masonry.

G. Frozen Materials and Work: Do not use frozen materials mixed or coated with ice or frost. For masonry which is specified to be wetted, comply with the BIA recommendations. Do not build on frozen work. Remove and replace masonry work damaged by frost or freezing.

3.3 CONSTRUCTION TOLERANCES

A. Comply with construction tolerances of referenced unit masonry standard.

B. Variation from Plumb: For vertical lines and surfaces of columns, walls and arises do not exceed1/4" in 10", or 3/8" in a story height not to exceed 20', nor 1/2" in 40' or more. For external corners, expansion joints, control joints and other conspicuous lines, do not exceed 1/4" in any story or 20' maximum, nor 1/2" in 40' or more. For vertical alignment of head joints do not exceed plus or minus 1/4" in 10', 1/2" maximum.

C. Variation from Level: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines, do not exceed 1/4" in any bay or 20' maximum, nor 1/2" in 40' or more. For top surface of bearing walls do not exceed 1/8" between adjacent floor elements in 10' or 1/16" within width of a single unit.

D. Variation of Linear Building Line: For position shown in plan and related portion of columns, walls and partitions, do not exceed 1/2" in any bay or 20' maximum, nor 3/4" in 40' or more.

E. Variation in Cross-Sectional Dimensions: For columns and thicknesses of walls, from dimensions shown, do not exceed minus 1/4" nor plus 1/2".

F. Variation in Mortar Joint Thickness: Do not exceed bed joint thickness indicated by more than plus or minus 1/8", with a maximum thickness limited to 1/2". Do not exceed head joint thickness indicated by more than plus or minus 1/8"

3.4 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint widths and for accurate locating of openings, movement-type joints, returns, and offsets. Avoid the use of less-than-half-size units at corners, jambs, and where possible at other locations.

B. Lay up walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other construction.

1. For the first and second block courses above and below apertures, run reinforcing continuous or extend two feet back from aperture edge. Refer to notes on Structural drawings.

C. Lay-up walls plumb and true and with courses level, accurately spaced and coordinated with other work. Do not wedge partitions tight against structural ceiling or beams, but provide a caulk or insulation filled joint between top of masonry and the structural roof deck, structural steel framing or structural floor deck. Stop masonry a minimum of 1/2 inch from vertical, horizontal and

sloped steel surfaces.

D. Stopping and Resuming Work: In each course, rack back 1/2-unit length for one-half running bond or 1/3-unit length for one-third running bond; do not tooth. Clean exposed surfaces of set masonry, wet clay masonry units lightly (if required), and remove loose masonry units and mortar prior to laying fresh masonry.

E. Built-In Work: As construction progresses, build-in items specified under this and other Sections of the Specifications. Fill in solidly with masonry around built-in items.

1. Fill space between hollow metal frames and masonry solidly with mortar, unless otherwise indicated.
2. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core.
3. Fill cores in hollow concrete masonry units with grout 3 courses (24 inches) under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.
4. Install adjustable hollow metal frame anchors, locating anchors on jambs in horizontal bed courses near the top and bottom of each frame and at intermediate points not over 24 inches apart.
5. Fill jambs and heads of all hollow metal door and window frames installed in CMU or concrete walls solid with grout.
6. Rake joints around exterior side of exterior hollow metal door frames for sealant under Division 7.
7. Where hollow metal frames do not wrap around masonry jambs and heads, rub exposed corners of block to remove sharp, irregular edges.

F. Intersecting Masonry Walls: Where interior nonload-bearing masonry partition or wall intersects an exterior or interior load-bearing masonry wall at 90 degrees, stop horizontal joint reinforcing in interior partition 4 inches short of intersection. Horizontal joint reinforcing in exterior or interior load-bearing wall shall run continuous. In the same courses as horizontal reinforcing, install wire mesh extending 8 inches minimum into interior partition and projecting into the exterior wall to within 2 inches of exterior face of wall. Install wire mesh reinforcing in horizontal joints 16 inches o.c. vertically.

G. Intersecting Masonry Walls: Where interior CMU walls intersect other CMU walls located in all Cells and areas accessible to inmates, or jail population, all intersecting walls shall be of “toothed” construction. Interlock every other course by “toothing” every other course.

H. Grout masonry walls where indicated on drawings.

3.5 MORTAR BEDDING AND JOINTING

A. Mix mortar ingredients for a minimum of 5 minutes in a mechanical batch mixer. Use water clear and free of deleterious materials which would impair the work. Each mortar batch is allowed only one retempering. Do not use mortar which has begun to set after the first re-tempering or if more than 2-1/2 hours has elapsed since initial mixing.

B. Lay solid masonry units with completely filled bed and head joint; butter ends with sufficient mortar to fill head joints and shove into place. Butter ends of brick in hand and in the wall at closures. Do not slush head joints.

C. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells; also bed webs in mortar in starting course on footings and foundation walls and in all courses of piers, columns and pilasters, and where adjacent to cells or cavities to be reinforced or to be filled

with concrete or grout.

D. Joints: Maintain joint widths shown, except for minor variations required, to maintain joint alignment. Lay walls with 3/8-inch joints. Cut joints flush for masonry walls which are to be concealed or to be covered by other materials. For exposed masonry, provide joints as follows:

1. All Exposed Joints: Concave tooled.
2. All Concealed Joints: Struck flush.

E. Remove masonry units disturbed after laying; clean and relay in fresh mortar. Do not pound corners at jams to fit stretcher units which have been set in position. If adjustments are required, remove units, clean off mortar, and reset in fresh mortar.

3.6 HORIZONTAL JOINT REINFORCEMENT

A. Provide continuous horizontal joint reinforcing as shown and specified. Fully embed longitudinal side rods in mortar for their entire length with a minimum cover of 5/8 inch on exterior side of walls and 1/2 inch at other locations. Lap reinforcement a minimum of 6 inches at ends of units. Do not bridge control and expansion joints with reinforcing.

B. Space continuous horizontal reinforcing as specified in Section 04 05 24.

C. Reinforce masonry openings greater than 1 foot wide, with horizontal joint reinforcing placed in 2 horizontal joints approximately 8 inches apart, both immediately above the lintel and immediately below the sill. Extend reinforcing a minimum of 2 foot beyond jambs of the opening except at control joints.

D. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.

E. Provide continuity at corners and wall intersections by use of prefabricated "L" and "T" sections. Cut and bend reinforcement units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.7 ANCHORING MASONRY TO STRUCTURAL MEMBERS

A. Anchor masonry to structural members where masonry abuts or faces structural members to comply with the following:

1. Provide an open space not less than 1 inch in width between masonry and structural member, unless otherwise indicated. Keep open space free of mortar or other rigid materials.
2. Anchor masonry to structural members with flexible anchors embedded in masonry joints and attached to structure.
3. Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

3.8 ANCHORING SINGLE-WYTHE MASONRY VENEER

A. Anchor single-wythe masonry veneer to metal studs with masonry veneer anchors to comply with the following requirements:

1. Fasten each anchor section through sheathing to metal studs with 2 metal fasteners of type indicated.
2. Embed tie section in masonry joints. Provide not less than 2-inch air space between back of masonry veneer wythe and face of sheathing.
3. Locate anchor section relative to course in which tie section is embedded to allow maximum vertical differential movement of tie up and down.
4. Space anchors as indicated but not more than 16 inches o.c. vertically and 16 inches o.c. horizontally with not less than one anchor for each 2 sq. ft. of wall area. Install additional anchors within 1'-0" of openings and at intervals around perimeter not exceeding 8 inches.

B. Install vents at the top of each continuous air space in masonry veneer walls.

3.9 MOVEMENT (CONTROL AND EXPANSION) JOINTS

A. Install control and expansion joints in unit masonry where indicated, or if not indicated, space at a maximum of 1 1/2 times the wall height not to exceed 25’ o.c. Build in related items as the masonry progresses. Do not form a continuous span through movement joints unless provisions are made to prevent in-plane restraint of wall or partition movement.

B. Form control joints in concrete masonry as follows:

1. Fit bond breaker strips into hollow contour in ends of block units on one side of control joint. Fill the resultant core with grout and rake joints in exposed faces.
2. Install preformed control joint gaskets designed to fit standard sash block.
3. Install special shapes designed for control joints. Install bond breaker strips at joint. Keep head joints free and clear of mortar or rake joint

C. Build in horizontal pressure-relieving joints where indicated; construct joints by either leaving an air space or inserting nonmetallic 50 percent compressible joint filler of width required to permit installation of sealant and backer rod specified in Division 7 Section "Joint Sealers."

1. Locate horizontal pressure-relieving joints beneath shelf angles supporting masonry veneer and attached to structure behind masonry veneer.

D. Control Joint Locations: If control joints are not shown on the Drawings, provide as follows:

1. Not to exceed 25 feet between joints in CMU walls, unless otherwise noted.
2. At change from wall setting on foundation to wall setting on floor slab.
3. At change from exterior wall to interior wall.
4. At walls setting on floors, that cross floor construction and control joints.
5. At columns within masonry walls.
6. At changes in wall thickness.

E. Column Isolation from Masonry: Continuously wrap steel columns or structural supports within masonry walls with 3/8-inch expansion joint filler sheets (column isolation). Secure with light gage wire. Refer to Section 04 05 24 for column isolation specifications.

3.10 LINTELS

A. Install steel lintels where indicated and/or as required for masonry openings.

B. Provide masonry lintels where shown and wherever openings of more than 1'-0" for brick size units and 2'-0" for block size units are shown without structural steel or other supporting lintels. Provide formed-in-place masonry lintels. Temporarily support formed-in-place lintels.

1. For hollow concrete masonry unit walls, use specially formed bond beam units with reinforcement bars placed as indicated and filled with coarse grout.

C. Provide minimum bearing of 8 inches at each jamb, unless otherwise indicated.

D. For all openings in non-load bearing CMU or brick, with lintels not shown on Structural Drawings, provide the following lintels:

1. CMU Lintel: Use bond beam lintel block. Fill with concrete or grout. All lintel block shall be 8” nominal height by the wall thickness. Extend lintel 24” into wall on each side of opening. Concrete or grout shall have a minimum of f’c = 4000 psi. Provide 2 - #5 rebar top and bottom. Lintel shall be shored in the center for 28 days. Maximum lintel clear span = 10’-0”.

3.11 INSTALLATION OF REINFORCED UNIT MASONRY

A. Install reinforced unit masonry to comply with requirements of referenced unit masonry standard.

B. Temporary Formwork: Construct formwork and shores to support reinforced masonry elements during construction.

1. Construct formwork to conform to shape, line, and dimensions shown. Make sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.

C. Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist grout pressure.

D. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.

3.12 GROUTED FOUNDATION WALLS

A. Where concrete masonry foundations are required by the Drawings, reinforcing and grouting shall be completed within 72 hours after the completion of the wall and prior to backfilling on either side of the foundation wall.

3.13 VERTICAL REINFORCED CONCRETE MASONRY

A. Where grout filled or steel reinforced concrete block masonry foundations or masonry walls are called for on the Drawings, they shall be reinforced and grouted in accordance with the Drawings and details. All cells to be grouted shall be clean and free of mortar protrusions and droppings in the cells.

B. The low-lift grouting procedure shall be used as described in the Drawings and in NCMA-TEK 23A Grouting for Masonry Walls. Maximum height of grouting shall be 5 feet.

C. Grout to completely fill each cavity with homogenous grout, extending from the lowest course to the top of the reinforced portion of the foundation or wall. Concrete or mortar shall not be used as grout for CMU.

1. Aggregate used in the grout shall be small enough not to interfere with placement and plasticity.

D. After the grout is placed, it shall be consolidated with a small vibrator. The top of the grout filling shall be stopped 1-1/2 inches below the top of the concrete block, except for the top course in the wall where the grout shall be struck flush with the top. If highly absorptive masonry units are used, the grout shall be re-vibrated after it has begun to stiffen.

E. Caging devices and centering clips shall be spaced vertically such that every section of vertical reinforcing steel bar is restrained by 2 clips or devices, one near its top and one near its bottom.

3.14 ANCHORING MASONRY WORK

A. Provide anchoring devices of the type shown and as specified.

B. Anchor masonry to structural members where masonry abuts or faces such members to comply with the following:

1. Provide an open space not less than 1/2-inch width between masonry and structural member, unless other types of anchoring devices are shown. Keep open space free of mortar or other rigid materials.
2. Anchor masonry to structural members with metal ties embedded in masonry joints and attached to structure. Provide anchors with flexible tie sections, unless other types of anchoring devices are shown.
3. Space anchors as shown, but not more than 16 inches o.c. vertically and 24 inches o.c. horizontally.
4. The ends of wall ties shall be embedded in mortar joints. Wall tie ends shall engage outer face shells of hollow units by at least 1/2 inch. Wire wall ties shall be embedded at least 1-1/2 inch into the mortar bed of solid masonry units or solid grouted hollow units.
5. Unless otherwise required, wythes not bonded by headers shall be bonded with wall ties as follows:

    a. Size - Minimum number of ties required
    b. #9 gage - One wall tie wire per 2.67 sq.ft.
    c. 3/16-inch diameter - One wall tie wire per 4.50 sq.ft.

6. Unless accepted by the Architect/Engineer, reinforcement shall not be bent after being embedded in grout or mortar.
7. Unless otherwise required adjustable ties shall meet the following requirements:

    a. Use one tie for each 1.77 sq.ft. of wall area.
    b. Neither horizontal nor vertical spacing shall exceed 16 inches.
    c. Maximum misalignment of bed joints from one wythe to the other shall be 1-1/4 inch.

d. Maximum clearance between connecting parts of the ties shall be 1/16 inch.

3.15 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or if units do not match adjoining units. Install new units to match adjoining units and in fresh mortar or grout, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point-up all joints including corners, openings, and adjacent construction to provide a neat, uniform appearance, prepared for application of sealants.

C. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample wall panel; leave 1/2 panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
3. Protect adjacent stone and non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
4. Wet wall surfaces with water prior to application of cleaners; remove cleaners promptly by rinsing thoroughly with clear water.
5. Clean concrete masonry by means of cleaning method indicated in NCMA TEK 8-2A applicable to type of stain present on exposed surfaces.
6. Clean all exposed concrete masonry of efflorescence in strict accordance with NCMA TEK 8-3A.

D. Protection: Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure unit masonry is without damage and deterioration at time of Substantial Completion.

END OF SECTION 04 22 00

Division 05

Metals

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SECTION 05 12 00
STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. The Work required under this Section consists of structural steel, steel erection, shop painting, field touch-up painting, and related items necessary to complete the Work.

B. Miscellaneous angles, channels, anchor bolts, bent plates, sleeves, sag rods, leveling plates, bearing plates for structural steel and steel joists, and other incidental items of structural steel required to be built into concrete or masonry shall be provided as indicated or specified and be furnished to respective trades at proper time; including instructions and templates for their installation.

C. Provide, where specifically called for; steel shelf angles, perimeter angle closure, and accessories.

D. For openings in metal deck 12 by 12 inches and larger, provide steel reinforcing members. Reinforcing shall be not less than 4 by 4 inches by 1/4-inch angles, unless noted otherwise on Drawings. Openings in deck shall be cut under Section 05 31 00.

1.2 SUBMITTALS

A. Product data or manufacturer's specifications and installation instructions for following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards).

1. High-strength bolts (each type), including nuts and washers.
2. Structural steel primer paint.
3. Shrinkage-resistant grout.

B. Shop drawings shall be prepared under supervision of a licensed Structural Engineer, in the State in which the Project is located. The shop drawings shall include complete details and schedules for fabrication and assembly of structural steel members, procedures, and diagrams.

1. Include details of cuts, connections, camber, holes, and other pertinent data. Indicate welds by standard AWS symbols and show size, length, and type of each weld.
2. Provide setting drawings, templates, and directions for installation of anchor bolts and other anchorages to be installed as work of other sections.
3. Complete shop drawings by approved fabricator including plan layouts of columns and anchor bolt locations, erection diagrams, and shop detail drawings. Symbols and indications used for structural components on design drawings must appear identically on submitted shop drawings. Types of electrodes proposed for welding processes must also appear thereon.

    a. The fabricator must review and check shop drawings prior to submission to the Architect.

C. Test reports conducted on shop- and field-bolted and welded connections. Include data on

type(s) of tests conducted and test results.

D. Shop drawing packages shall be by building submitted in sequence corresponding to Construction Manager's building construction schedule.

1.3 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of the following:

1. AISC "Code of Standard Practice for Steel Buildings and Bridges."
2. AISC "Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings" and including the "Commentary of the AISC Specification," and the current supplements.
3. AISC "Specifications for Structural Joints using ASTM A325 Bolts" approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation.
4. AWS "Structural Welding Code," AWS D1.1 and its latest revision.
5. ASTM A6 "General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piping, and Bars for Structural Use."

B. Qualifications for Welding Work: Qualify welding procedures and welding operators in accordance with AWS "Qualification" requirements.

1. Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests. Documentation of current certification is required.
2. If re-certification of welders is required, retesting will be Contractor's responsibility.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site at such intervals to ensure uninterrupted progress of work.

B. Deliver anchor bolts and anchorage devices, which are to be embedded in cast-in-place concrete or masonry, in ample time to not to delay work.

C. Store materials to permit easy access for inspection and identification. Keep steel members off ground by using pallets, platforms, or other supports. Protect steel members and packaged materials from erosion and deterioration. If bolts and nuts become dry or rusty, clean and re-lubricate before use.

1. Do not store materials on structure in a manner that might cause distortion or damage to members or supporting structures. Repair or replace damaged materials or structures as directed.

1.5 INSPECTION

A. The materials and workmanship to be furnished under this Specification shall be subject to inspection in the mill, shop, and field by the Architect/Engineer. Inspection will be conducted without expense to the Contractor; however, inspection in the mill or shop shall not relieve the Contractor of his responsibility to furnish materials and workmanship in accordance with Contract Documents.

PART 2 - PRODUCTS

2.1 ACCEPTABLE FABRICATORS

A. Firms acceptable as fabricators for structural steel Work under this Section shall be members of The American Institute of Steel Construction **(or)** shall be certified by an approved independent professional testing agency as being qualified for Category I Conventional Steel Structures in conformance to the requirements of the AISC Quality Certification Program.

2.2 MATERIALS

A. Metal Surfaces, General: For fabrication of work that will be exposed to view, use only materials that are smooth and free of surface blemishes including pitting, rust and scale seam marks, roller marks, rolled trade names, and roughness. Remove such blemishes by grinding, or by welding and grinding, prior to cleaning, treating, and applying surface finishes.

B. Rolled Structural Steel Shapes

1. W Shapes: ASTM A992, Fy = 50 ksi
2. Channels, Angles, C, M, HP Shapes, Plates, and Bars: ASTM A 36.

C. Structural Steel Tubular Products

1. Square, Rectangular, and Special Shapes: ASTM A500, Grade B.
2. Round, Structural Steel Pipe: ASTM A53, Type E or S, Grade B.

D. Headed Stud-Type Shear Connectors: ASTM A 108, Grade 1015 or 1020, cold-finished carbon steel with dimensions complying with AISC Specifications.

E. Anchor Bolts: ASTM F1554, Grade 36, nonheaded type unless otherwise indicated.

F. Unfinished Threaded Fasteners: ASTM A 307, Grade A, regular low-carbon steel bolts and nuts.

3. Provide hexagonal heads and nuts for all connections.
4. Provide either hexagonal or square heads and nuts, except use only hexagonal units for exposed connections.

G. High-Strength Threaded Fasteners: Heavy hexagon structural bolts, heavy hexagon nuts, and hardened washers, as follows:

1. Quenched and tempered medium-carbon steel bolts, nuts, and washers, complying with ASTM A 325. Use 3/4-inch bolts, unless noted otherwise on Drawings. Use bearing type connections with threads included in the shear plane.

a. Where indicated as galvanized, provide units that are zinc coated, either mechanically deposited complying with ASTM B 695, Class 50, or hot-dip galvanized complying with ASTM A 153.

2. High-strength fasteners shall be domestically manufactured.

H. Electrodes and Flux for Submerged Arc Welding: AWS Code and ASTM A588, Series A233, Series E60 or E70 as required.

I. Structural Steel Primer Paint: Steel Structures Painting Council (SSPC) - Paint 15.

J. Nonmetallic Shrinkage-Resistant Grout: Premixed, nonmetallic, noncorrosive, nonstaining product containing selected silica sands, Portland cement, shrinkage compensating agents, plasticizing and water-reducing agents, complying with CE-CRD-C621-89A.

1. Products: Subject to compliance with requirements, provide one of the following:

b. Sure-Grip High Performance Grout; Dayton Superior.
c. Euco N.S.; Euclid Chemical Co.
d. Crystex; L & M Construction Chemicals, Inc.
e. Set Grout; Master Builders.
f. Sealtight 588 Grout; W. R. Meadows.
g. Five Star Grout; U.S. Grout Corp.

K. Masonry Bearing Plates:

1. All joists shall bear on masonry bearing plates with anchor rods embedded in the masonry below. Weld joists to bearing plates in accordance with SJI Specifications. See Framing Details and Plans for bearing plate sizes.
2. All beams shall bear on masonry bearing plates with anchor rods embedded in the masonry below. Weld beams to bearing plates unless otherwise noted.
3. Bearing plates are to be set under Work of Section 04 20 00.

L. Where trusses are indicated with continuous members, they shall be full length without splices or welded with full-penetration shop welds ground flush with grinding in the direction of applied stress and with weld soundness established by radiographic or ultrasonic inspection in accordance with the requirements of 9.2.5.2 or 9.2.5.3 of AWS D1.1 Splices will not be permitted at points of maximum stress. Field splices of tension members shall be designed to develop 110 percent of the spliced sections.

2.3 FABRICATION

A. Shop Fabrication and Assembly: Fabricate and assemble structural assemblies in shop to greatest extent possible. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on final shop drawings. Provide camber in structural members as shown.

1. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence that will expedite erection and minimize field handling of materials.
2. Where finishing is required, complete assembly, including welding of units, before start of finishing operations. Provide finish surfaces of members exposed in final structure free of markings, burrs, and other defects.

B. Connections: Weld or bolt shop connections, as shown.

1. Bolt field connections, except where welded connections or other connections are indicated.

a. Provide high-strength threaded fasteners for principal bolted connections, except where unfinished bolts are indicated.
b. Provide unfinished threaded fasteners for only bolted connections of secondary framing members to primary members (including purlins, girts, and other framing members taking only nominal stresses) and for temporary bracing to facilitate erection.

C. High-Strength Bolted Construction: Install high-strength threaded fasteners in accordance with AISC "Specifications for Structural Joints using ASTM A 325 or A 490 Bolts."

D. Welded Construction: Comply with AWS Code for procedures, appearance and quality of welds, and methods used in correcting welding work.

1. Assemble and weld built-up sections by methods that will produce true alignment of axes without warp.
2. Welders to be certified under AWS D1.1 or D1.3 (whichever is applicable) for the position they are welding. An independent CWI to perform the required tests. The CWI shall not be employed or associated with the welding co. Certifications must be current showing passing test with the past 5 years.

E. Built-up welded door frames attached to structural steel framing. Weld exposed joints continuously and grind smooth. Plug-weld steel bar stops to frames, except where shown removable. Secure removable stops to frames with countersunk, cross-recessed head machine screws, uniformly spaced not more than 10 inches o.c., unless otherwise indicated.

F. Holes for Other Work: Provide holes required for securing other work to structural steel framing and for passage of other work through steel framing members, as shown on final shop drawings.

G. Provide threaded nuts welded to framing and other specialty items as indicated to receive other work.

H. Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame-cut holes or enlarge holes by burning. Drill holes in bearing plates.

I. Expansion Joints: Provide expansion joints in steel shelf angles when part of structural steel frame; locate at vertical brick expansion joints.

2.4 SHOP PAINTING

A. Shop-paint all structural steel work, except those members or portions of members to be embedded in concrete or mortar. Paint embedded steel that is partially exposed; paint exposed portions and initial 2 inches of embedded areas only.

1. Do not paint surfaces to be welded or high-strength bolted with friction-type connections.
2. Do not paint surfaces scheduled to receive sprayed-on fireproofing.
3. Coat with tar all steel encased in concrete.

B. Surface Preparation for Exterior Exposed Steel (SSPC - SP 6): After inspection and before shipping, clean all steel work to be painted.

1. Clean all steel scheduled to be exposed and installed in the exterior walls and all steel scheduled to be exposed and installed on the exterior of the building in accordance with

SSPC - SP 6, Commercial Blast Cleaning.

2. Prior to commercial blast cleaning, remove visible oil, grease, soluble welding residue and salts in accordance with SSPC - SP 1, Solvent Cleaning.
3. After commercial blast cleaning and prior to shop painting, remove dirt, dust, and all similar contaminants from the surface.
4. All steel lintels installed in exterior walls shall be hot-dipped galvanized, refer to requirements as specified herein.

C. Surface Preparation for Interior Steel (SSPC - SP 3): After inspection and before shipping, clean steel work to be painted.

1. Clean all steel installed in the interior of the building in accordance with SSPC - SP 3, Power Tool Cleaning.
2. Prior to power tool cleaning, remove visible oil, grease, soluble welding residue and salts in accordance with SSPC - SP 1, Solvent Cleaning.
3. After power tool cleaning and prior to shop painting, remove dirt, dust, and all similar contaminants from the surface.

D. Shop Prime Painting: Immediately after surface preparation, apply structural steel rust inhibited primer paint in accordance with manufacturer's instructions and at rates as specified. Use painting methods that result in full coverage of joints, corners, edges, and exposed surfaces.

1. Exterior exposed steel receiving the SP 6, Commercial Blast Cleaning, shall be prime painted with primer as follows:

a. Tnemec “90-97 Tneme-Zinc” two-component aromatic urethane zinc-rich primer. Color 90G97 Green. Metallic zinc content shall be 83% by weight in dried film. Lead content shall be less than 0.06% by weight in the dried film as defined in Part 1303 of the Consumer Product Safety Act Regulations. Apply at a rate to achieve a dry film thickness of 2.5 to 3.5 mils.

2. Interior steel receiving the SP 3, Power Tool Cleaning, shall be prime painted with primer as follows:

a. Tnemec “Series 10” primer. Chemically active, rust-inhibitive modified alkyd primer. Color 99G Green. Apply at a rate to achieve a dry film thickness of 2.0 to 3.5 mils.

E. Galvanizing: All steel lintels exposed to the exterior or installed in exterior walls shall be hot-dipped galvanized with a G-90 coating.

2.5 SOURCE QUALITY CONTROL

A. Design of Members and Connections: Details shown are typical; similar details apply to similar conditions, unless otherwise indicated. Verify dimensions at site whenever possible without causing delays in the work.

1. Promptly notify Architect/Engineer whenever design of members and connections for any portion of structure are not clearly indicated.

B. Shop Welding: Inspect and test during fabrication of structural steel assemblies, as follows:

1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
2. Perform visual inspection of all welds.
3. Perform tests of welds as follows. Inspection procedures listed are to be used at Contractor's option.

    a. Liquid Penetrant Inspection: ASTM E 165.
    b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration not acceptable.
    c. Radiographic Inspection: ASTM E 94 and ASTM E 94; minimum quality level "2-2T."
    d. Ultrasonic Inspection: ASTM E 164.

PART 3 - EXECUTION

3.1 INSPECTION

A. Erector must examine the areas and conditions under which structural steel work is to be installed and notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Erector.

3.2 ERECTION

A. Comply with the AISC Specifications and Code of Standard Practice and with specified requirements.

B. Surveys: Employ a licensed land surveyor for accurate erection of structural steel. Check elevations of concrete and masonry bearing surfaces, and locations of anchor bolts and similar devices, before erection work proceeds, and report discrepancies to Architect. Do not proceed with erection until corrections have been made or until compensating adjustments to structural steel work have been agreed upon with Architect.

C. Temporary Shoring and Bracing: Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads. Remove temporary members and connections when permanent members are in place and final connections are made. Provide temporary guy lines to achieve proper alignment of structures as erection proceeds.

D. Temporary Planking: Provide temporary planking and working platforms as necessary to effectively complete work.

E. Setting Bases and Bearing Plates: Clean concrete and masonry bearing surfaces of bond-reducing materials and rough-in to improve bond to surfaces. Clean the bottom surface of base and bearing plates.

1. Setting Plate Procedure:

    a. Set loose and attached base plates and bearing plates for structural members on

wedges or other adjustable devices.

b. Tighten the anchor bolts after the supported members have been positioned and plumbed. Do not remove wedges or shims, but if protruding, cut off flush with the edge of the base or bearing plate prior to packing with grout.

c. Pack bedding grout solidly between bearing surfaces and bases or plates to ensure that no voids remain. Finish exposed surfaces, protect installed materials, and allow to cure in strict compliance with the manufacturer's instructions, or as otherwise required.

2. Double Nut Procedure

a. Install lower nuts and washers to required elevation.
b. Erect column and install upper nuts and washers.
c. After structure has been erected and plumbed, adjust lower nuts to relieve racking, adjust elevation, and distribute load equally to all anchor bolts.
d. Tighten nuts.
e. Pack bedding grout solidly between bearing surfaces and bases or plates to ensure that no voids remain. Finish exposed surfaces, protect installed materials, and allow to cure in strict compliance with the manufacturer's instructions, or as otherwise required.

F. Field Assembly: Set structural frames accurately to lines and elevations indicated. Align and adjust various members forming part of complete frame or structure before permanently fastening. Clean bearing surfaces and other surfaces that will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

G. Level and plumb individual members of structure within specified AISC tolerances.

H. Splice members only where indicated and accepted on shop drawings.

I. Erection Bolts: On exposed welded construction, remove erection bolts, fill holes with plug welds, and grind smooth at exposed surfaces.

1. Comply with AISC Specifications for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.
2. Do not enlarge unfair holes in members by burning or by using drift pins, except in secondary bracing members. Ream holes that must be enlarged to admit bolts.

J. Gas Cutting: Do not use gas cutting torches in field for correcting fabrication errors in primary structural framing. Cutting will be permitted only on secondary members that are not under stress, as acceptable to Architect. Finish gas-cut sections equal to a sheared appearance when permitted.

K. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint. Apply paint to exposed areas using same material as used for shop painting.

1. Apply by brush or spray to provide minimum dry film thickness of 1.5 mils.

L. Touch-Up Painting: Cleaning and touch-up painting of field welds, bolted connections, and abraded areas of shop paint on structural steel is included in Division 9 under painting work.

M. Lintels and Shelf Angles: Weld, bolt, or rivet members together where so indicated.

1. Lintels shall have 8-inch bearing at each end, minimum, unless shown otherwise. Bearing pressures shall not exceed the allowable stress for masonry.
2. Where shelf angles are attached to concrete with bolts and adjustable inserts, provide slotted holes in proper size and spacing in the vertical leg of shelf angles.
3. Loose lintels are not acceptable.

3.3 HIGH STRENGTH STEEL BOLTS

A. Structural joints using high strength bolts, hardened washers, and nuts shall be tightened to a high tension; the materials, methods of installation and tension control, type of wrenches to be used, and inspection methods shall conform to specifications for "Structural Joints using ASTM A325 or A490 Bolts," as approved by the Research Council on Structural Connections of the Engineering Foundation, November 13, 1985.

B. The high strength bolts used shall have a suitable identifying mark placed on top of the head before leaving the factory.

C. Tightening of nuts shall be done by the turn-of-nut method, according to the specifications for "Structural Joints using ASTM A325 or A490 bolts," unless direct tension indicator washers are used, in which case tightening will terminate when proper gap is attained.

D. For turn of the nut method, bolts that have been "Snug-Tight" shall be marked with identifying symbol and then given an additional 1/2 turn. Marks shall be such that visual inspection can be made of finished connections. Snug tight is defined as the tightness developed by the full effort of a man using a spud wrench on all bolts in the connections.

E. High-strength fasteners shall be domestically manufactured.

3.4 ERECTION ALIGNMENT

A. Framing: The framing shall be carried up true, plumb, and level within a tolerance of 1:500; and temporary bracing shall be introduced, wherever necessary, to take care of loads to which the structure may be subjected, including erection equipment and its operation. Such bracing shall be left in place as long as may be required for safety. It shall finally be removed by the Contractor as part of his equipment. As erection progresses, the Work shall be securely connected to take care of dead load, wind, and erection stresses.

3.5 FIELD QUALITY CONTROL

A. Correct deficiencies in structural steel work that inspections and laboratory test reports have indicated to be not in compliance with requirements. Perform additional tests, at Contractor's expense, as necessary to reconfirm any noncompliance of original work and to show compliance of corrected work.

B. Shop-Bolted Connections: Inspect or test in accordance with AISC specifications.

1. Verify that gaps of installed Direct Tension Indicators are less than gaps specified in ASTM F 959, Table 2.

C. Field-Bolted Connections: Inspect in accordance with AISC specifications.

1. For Direct Tension Indicators, comply with requirements of ASTM F 959. Verify that gaps are less than gaps specified in Table 2.

D. Field Welding: Inspect and test during erection of structural steel as follows:

1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
2. Perform visual inspection of all welds.
3. Perform tests of welds as follows:

    a. Liquid Penetrant Inspection: ASTM E 165.
    b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration not acceptable.
    c. Radiographic Inspection: ASTM E 94, minimum quality level "2-2T."
    d. Ultrasonic Inspection: ASTM E 164.

END OF SECTION 05 12 00

SECTION 05 21 00
STEEL JOIST FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes steel joists and joist girders for floor and roof framing. Types of joists required include the following:

1. K-Series Open Web Steel Joists.
2. LH-Series Longspan Steel Joists.
3. Top Chord Double Pitch

B. When outriggers, angles, or other components are attached to the open web steel joists in the shop in such a way that they actually are a component part of the joists, they are to be provided under this Section.

C. The Work includes bridging anchors, sag rods, wall anchors, and beam anchors.

D. Related Work: Ends of joists resting on masonry require steel bearing plates furnished under Section 05 50 00 and installed under Section 04 20 00 over a leveling bed of mortar.

1. Include manufacturer's certification that joists comply with SJI "Specifications."

1.2 SUBMITTALS

A. Product data and installation instructions for each type of joist and accessories.

1. Include manufacturer's certification that joists comply with SJI "Specifications."
2. Certification from joist manufacturer that joists are properly designed and will be furnished to meet live loads, dead loads, wind loads (including uplift), and slope conditions indicated on the Drawings.

B. Complete shop drawings by approved fabricator including plan layouts of columns and anchor bolt locations, erection diagrams, and shop detail drawings. Symbols and indications used for structural components on design drawings must appear identically on submitted shop drawings. Types of electrodes proposed for welding processes must also appear thereon.

1. Provide templates or location drawings for installation of anchor bolts and metal bearing plates.
2. Shop drawing packages shall be by building submitted in sequence corresponding to Construction Manager’s building construction schedule.

C. Letter from a Professional Engineer licensed within the State of construction activities certifying that he has carefully studied the design drawings, that shop drawings have been prepared under his direct guidance and supervision, and that provided components and connections will meet or exceed loading requirements. Such letter of certification must be evidenced by Engineer's full signature and seal of authenticity. Architect/Engineer's review of shop drawings will not begin

until such certification has been received.

1.3 QUALITY ASSURANCE

A. Provide joists fabricated in compliance with the following and as herein specified.

1. SJI "Standard Specifications and Load Tables" for K, LH, and DLH Series Open Web Steel Joists, latest edition, sizes as indicated on the Drawings.
2. Comply with Factory Mutual requirements.

B. Qualifications for Welding Work: Qualify welding procedures and welding operators in accordance with AWS "Qualification" requirements.

1. Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests. Documentation of current certification is required.
2. If re-certification of welders is required, retesting will be Contractor's responsibility.

C. Inspection: Inspect joists and girders in accordance with SJI "Specifications."

D. The deflection of floors and roofs with plaster ceiling or soffits suspended or attached, due to the design live load, shall not exceed 1/360 of the span; other roofs, not to exceed 1/240 of the span.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle steel joists as recommended in SJI and AISC "Standard Specifications," in a manner to avoid excessive stresses deforming members.

B. Bent joist members or broken welds shall be cause for joist rejection. Rejected joists shall be replaced without delay.

1.5 JOB CONDITIONS

A. During the construction period, Contractors shall provide means for the adequate distribution of concentrated loads so that the carrying capacity of any joist is not exceeded.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Member firms of the Steel Joist Institute will be acceptable manufacturers of steel joist specified herein.

2.2 MATERIALS

A. Steel: Comply with SJI and AISC "Standard Specifications."

1. Yield strength used as a basis for the design stresses shall be as follows:

   - Chords = 50,000 psi
   - Webs = 36,000 psi or 50,000 psi

2. Evidence that the steel furnished meets or exceeds the design yield strength shall be provided, on Architect's request, in the form of certified test reports.
3. Deduct the area of holes in chords from the area of the chord when calculating the strength of the member.

B. Steel Bearing Plates: ASTM A 36.

C. Unfinished Threaded Fasteners: ASTM A 307, Grade A, regular hexagon type, low carbon steel.

D. Paint: Comply with SJI and AISC "Standard Specifications," except asphalt type paint is not permitted. Provide Type I, red oxide, steel joist shop paint conforming to Steel Structure Painting Council (SSPC) - Paint 15.

1. Do not apply primer paint to joists indicated to receive sprayed-on fireproofing.

2.3 FABRICATION

A. General: Fabricate steel joists in accordance with SJI and AISC "Standard Specifications," and as follows:

1. Make shop connections and splices using either arc or resistance welding. Shop-bolted connections are not acceptable.
2. Do not splice web members; use only full-length pieces.
3. Top and bottom chords shall be uniform size throughout their full length.
4. Do not splice bottom chord members in the middle third of the span.
5. Splices in bottom chord members shall be certified by the joist fabricator to provide 100 percent of the strength of the chord section used.

B. Holes in Chord Members: Provide holes in chord members where shown for securing other work to steel joists; however, deduct area of holes from the area of chord when calculating strength of member.

C. Extended End: Provide extended ends on joists where indicated, complying with SJI "Specifications" and load tables.

D. Ceiling Extension: Provide ceiling extensions in areas having ceilings attached directly to joist bottom chord. Provide either an extended bottom chord element or a separate unit, to suit manufacturer's standards, of sufficient strength to support ceiling construction. Extend ends to within 1/2 inch of finished wall surface, unless otherwise indicated.

E. Top Chord Extension: Provide top chord extensions ("R" type) on joists where indicated, complying with SJI "Specifications" and load tables.

F. Bridging: Provide horizontal or diagonal type bridging for joists and joist girders, complying with SJI "Specifications." Provide bridging anchors for ends of bridging lines terminating at walls or beams.

G. End Anchorage: Provide end anchorages, including steel bearing plates, to secure joists to adjacent construction, complying with SJI "Specifications."

H. Header Units: Provide header units to support tail joists at openings in floor or roof system not framed with steel shapes.

I. Top Chords: Shall be absolutely flat across its full width and length for application of metal decking.

J. Bottom Chords: Shall be extended and connected to columns or webs of girders at column lines and where shown on structural drawings.

K. Joist Ends: Shall be beveled when slope exceeds 1/4 inch in 12 inch or sloped shoes shall be provided.

L. Shop Painting:

1. Remove loose scale, heavy rust, and other foreign materials from fabricated joists and accessories before application of shop paint.
2. Apply one shop coat of steel primer paint to steel joists and accessories by spray, dipping, or other method to provide a continuous dry paint film thickness of not less than 1.0 mil.

PART 3 - EXECUTION

3.1 PREPARATION

A. Roof joist anchorage shall be designed to resist gross uplift force indicated on the Drawings.

B. Joist anchorage for un-enclosed areas and roof overhangs shall be designed to the upward pressure indicated on the Drawings.

3.2 ERECTION

A. Place and secure steel joists in accordance with SJI "Specifications," final shop drawings, and as herein specified.

B. Anchors: Furnish anchor bolts, steel bearing plates, and other devices to be built into concrete and masonry construction.

1. Provide unfinished threaded fasteners for anchor bolts, unless high strength bolts indicated.

C. Placing Joists: Do not start placement of steel joists until supporting work is in place and secured. Place joists on supporting work, adjust and align in accurate locations and spacing before permanently fastening.

D. Provide temporary bridging, connections, and anchors to ensure lateral stability during

construction.

E. Bridging: Install bridging simultaneously with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords where terminating at walls or beams.

F. Fastening Joists: Comply with the following:

1. Field weld joists to supporting steel framework and steel bearing plates where indicated in accordance with SJI "Specifications" for type of joists used. Coordinate welding sequence and procedure with placing of joists.
2. Bolt joists to supporting steel framework in accordance with SJI "Specifications" for type of joists used.

    a. Use unfinished threaded fasteners for bolted connections, unless otherwise indicated.

G. End Anchorage

1. At steel supports the joist ends shall extend not less than 2-1/2 inches over beams.
2. At masonry the joist ends shall extend not less than 4 inches over walls. The center line of bearing the joist shall coincide with the center line of the masonry bearing plate and the masonry wythe on which it bears, except where 2 joists from opposite sides bear on the same wythe.
3. Ends shall be anchored with the equivalent of two 3/16-inch fillet welds 1-1/2 inches long or two 1/2-inch bolts.

H. Field Welding

1. The total length of weld at a cross-section shall not exceed 50 percent of the overall developed width of cold-formed members.
2. Extreme caution must be exercised during welding. Completely cover and protect masonry and concrete in place from damage during welding.

I. Touch-Up Painting: After joist installation, paint field bolt heads and nuts and abraded or rusty surfaces on joists and steel supporting members. Wire brush surfaces and clean with solvent before painting. Use the same type of paint as used for shop painting.

END OF SECTION 05 21 00

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SECTION 05 31 00
STEEL DECKING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes steel deck units for floor and roof applications.

1. Metal roof deck units.

B. Related Work

1. The cutting, drilling, or punching of openings smaller than 12 by 12 inches for passage of pipes, ducts, and the attachment of other items shall be performed in the field by the respective trades requiring same.
2. For openings 12 by 12 inches and larger, each shall be predetermined and provided or cut under this Section. Steel framing members indicated or required around openings 12 by 12 inches and larger through decks shall be provided and erected under Section 05 12 00.

1.2 SUBMITTALS

A. Product Data: Manufacturer's specifications and installation instructions for each type of decking and accessories.

1. Provide test data for mechanical fasteners used in lieu of welding for fastening deck to supporting structures.

B. Shop Drawings: Show layout and types of deck units, anchorage details, and conditions requiring closure strips, supplementary framing, sump pans, cant strips, cut openings, special jointing, and accessories.

C. Calculations prepared and signed and sealed by a Florida Registered Engineer showing required roof deck fastening patterns for combined wind uplift and diaphragm shear forces shown on the Structural Drawings. Type, size, and spacing of fasteners shall be included in calculations.

D. Preinstallation Conference minutes

1.3 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of the following codes and standards, except as otherwise indicated:

1. American Iron and Steel Institute (AISI), "Specification for the Design of Cold-Formed Steel Structural Members."

2. American Welding Society (AWS), D1.3 "Structural Welding Code - Sheet Steel."
3. Steel Deck Institute (SDI), "Design Manual for Composite Decks, Form Decks and Roof Decks."

B. Qualification of Field Welding: Use qualified welding processes and welding operators in accordance with "Welder Qualification" procedures of AWS.

1. Welded decking in place is subject to inspection and testing. Owner will bear expense of removing and replacing portions of decking for testing purposes if welds are found to be satisfactory. Remove work found to be defective and replace with new acceptable work.

C. Design Criteria:

1. Compute the properties of metal roof deck sections on the basis of the effective design width as limited by the provisions of the SDI specifications. Provide the deck section properties, including section modulus and moment of inertia per foot of width.
2. Allowable Deflection: Design and fabricate deck for a maximum deflection of 1/240 of the clear span under the uniform live load.

D. Preinstallation Conference: Prior to steel deck installation, conduct a preinstallation conference at the project site with the contractor and Architect. Refer to Section 01 31 19, Project Meetings, for preinstallation conference requirements. Submit preinstallation conference meeting minutes as specified.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products of one of the following:

1. Vulcraft Div., Nucor Corp.
2. New Millennium Building Systems
3. Canam Steel Corp.

2.2 MATERIALS

A. Steel for Galvanized Metal Deck Units: ASTM A 653, grade as required to comply with SDI specifications.

B. Miscellaneous Steel Shapes: ASTM A 36.

C. Sheet Metal Accessories: ASTM A 653, commercial quality, galvanized.

D. Galvanizing: ASTM A 653, G90 (.90 oz. per sq.ft.).

E. Galvanizing Repair: Where galvanized surfaces are damaged, prepare surfaces and repair in accordance with procedures specified in ASTM A 780.

F. Flexible Closure Strips: Manufacturer's standard vulcanized, closed-cell, synthetic rubber.

G. Acoustic Sound Barrier Closures: Manufacturer’s standard mineral fiber closures.

H. Self-Drilling Screws: Hilti self-drilling screws or approved equal.

I. Powder Actuated Fasteners: Hilti X-ENP-19 L15 pins or approved equal.

2.3 FABRICATION

A. General: Form deck units in lengths to span multiple supports as indicated on the Drawings, with flush, telescoped, or nested 2-inch laps at ends and interlocking or nested side laps, of metal thickness, depth, and width as indicated.

B. Metal Roof Deck Units: Provide deck configurations that comply with SDI "Specifications and Commentary for Steel Roof Deck."

1. Provide type, depth and gage as indicated on the Drawings. Finish shall be galvanized G90.
2. Roof deck shall be vented 0.5% for cellular lightweight insulating concrete roofing as required by FBC section 1917.4.1 and 1917.4.1.1.

C. Metal Cover Plates: Fabricate metal cover plates for end-abutting floor deck units of not less than same thickness as decking. Form to match contour of deck units and approximately 6 inches wide.

D. Metal Closure Strips: Fabricate metal closure strips, for cell raceways and openings between decking and other construction, of not less than 0.045-inch min. (18 gage) sheet steel. Form to provide tight-fitting closures at open ends of cells or flutes and sides of decking.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine the areas and conditions under which metal decking items are to be installed. Do not proceed with the Work until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install deck units and accessories in accordance with manufacturer's recommendations, shop drawings, and as specified.

B. Place deck units on supporting steel framework and adjust to final position with ends accurately aligned and bearing on supporting members before being permanently fastened. Do not stretch or contract side lap interlocks.

1. Do not start placement of deck units before supporting members are installed. Place deck units on supporting metal steel framework and adjust to final position with ends bearing on supporting members and accurately aligned end to end before being permanently fastened.

    a. Lap ends 1-1/2 inch deck units not less than 2 inches.
    b. Butt ends of 3-inch deck units.
    c. Do not stretch or compress the side-lap interlocks.
    d. Place deck units flat and square, secured to adjacent framing without warp or excessive deflection.

C. Align deck units for entire length of run of cells and with close alignment between cells at ends of abutting units.

D. Place deck units flat and square, secured to adjacent framing without warp or deflection.

E. Do not place deck units on concrete supporting structure until concrete has cured and is dry.

F. Coordinate and cooperate with structural steel erector in locating decking bundles to prevent overloading of structural members.

G. Attach deck to supports and install side lap fasteners as indicated.

1. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used in correcting welding work. Use welding washers where recommended by deck manufacturer.
2. Mechanical fasteners, either powder-actuated or pneumatically driven, may be used in lieu of welding. Locate mechanical fasteners and install in accordance with deck manufacturer's instructions. Substituted fasteners must have equivalent strength and characteristics of specified fasteners or welds.

H. Cutting and Fitting: Cut and neatly fit deck units and accessories around other work projecting through or adjacent to the decking, as shown.

I. Reinforcement at Openings: Provide additional metal reinforcement and closure pieces as required for strength, continuity of decking, and support of other work shown.

J. Joint Covers: Provide metal joint covers at abutting ends and changes in direction of floor deck units, except where taped joints are required.

K. Closure Strips: Provide metal closure strips at open uncovered ends and edges of roof decking and in voids between decking and other construction. Weld into position to provide a complete decking installation.

1. Provide flexible closure strips instead of metal closures, at Contractor's option, wherever their use will ensure complete closure. Install with adhesive in accordance with manufacturer's instructions.

L. Touch-Up Painting: After decking installation, wire brush, clean, and paint scarred areas, welds, and rust spots on top and bottom surfaces of decking units and supporting steel members.

1. Touch-up galvanized surfaces with galvanizing repair paint applied in accordance with manufacturer's instructions.
2. In areas where shop-painted surfaces are to be exposed, apply touch-up paint to blend into adjacent surfaces.

M. Repair:

1. Holes up to 1/2 inch in diameter fill with urethane or silicone sealant and cover with duct tape.
2. Holes above 1/2-inch diameter require sheet metal plate patches fastened to deck.

3.3 SUPPORT OF OTHER WORK

A. Suspension wires, straps, and chains such as those used to support acoustical ceilings, ductwork, and lights **shall not** be attached to or through steel roof decks.

END OF SECTION 05 31 00

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SECTION 05 40 00
COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Types of cold-formed metal framing units include the following:

1. Exterior wall, fascia, soffit and ceiling studs.
2. Exterior hat channels.
3. Exterior angles, bent plates and miscellaneous units necessary to support the architectural finishes.

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B. Related Work Specified Elsewhere:

1. Metal studs and accessories for gypsum wallboard included under Work of Section 09 20 00.

1.2 SUBMITTALS

A. Submit in accordance with Division 1 requirements.

B. Product data and installation instructions for each item of cold-formed metal framing and accessories.

C. Shop drawings for special components and installations not fully dimensioned or detailed in manufacturer's product data.

1. Include engineered placing drawings for framing members showing size and gage designations, number, type, location, and spacing. Indicate supplemental strapping, bracing, splices, bridging, accessories, and details required for proper installation. Submittals shall bear the signature and seal of the Florida professional engineer who was in responsible charge of their preparation.

1.3 QUALITY ASSURANCE

A. Component Design: Calculate structural properties of studs and joists in accordance with American Iron and Steel Institute (AISI) "Specification for Design of Cold-Formed Steel Structural Members."

B. Welding: Use qualified welders and comply with American Welding Society (AWS) D1.3, "Structural Welding Code - Sheet Steel."

1. Field welding of studs shall not be permitted.

C. Fire-Rated Assemblies: Where framing units are components of assemblies indicated for a fire-resistance rating, including those required for compliance with governing regulations, provide units that have been approved by governing authorities that have jurisdiction.

D. Pre-Installation Conference: Prior to start of installation of metal framing systems, meet at project site with installers of other work. Review areas of potential interference and conflicts, and coordinate layout and support provisions for interfacing work.

E. The following documents of the issue in effect on date of material procurement, referred to thereafter by basic designation only, form a part of this Specification to the extent indicated by reference thereto.

1. Specification for the Design of Cold-Formed Steel Structural Members, American Iron and Steel Institute.
2. ASTM A653/A653M - Specification for Steel Sheet, Zinc Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality.
3. ASTM A1011/A1011M - Specification for Hot-Rolled Carbon Steel Sheets and Strip, Structural Quality.
4. ASTM A1008/A1008M - Specification for Steel, Cold-Rolled Sheet, Carbon Structural.
5. MFMA (Metal Framing Manufacturers Association) - Guidelines for the Use of Metal Framing.

1.4 DELIVERY AND STORAGE

A. Protect metal framing units from rusting and damage. Deliver to project site in manufacturer's unopened containers or bundles, fully identified with name, brand, type, and grade. Store off ground in a dry ventilated space or protect with suitable waterproof coverings.

PART 2 - PRODUCTS

2.1 STRUCTURAL DESIGN

A. Design, analysis, and computation of section properties shall be in conformance with the Specification for the Design of Cold-Formed Steel Structural Members of the American Iron and Steel Institute.

B. Technical tabulations of section properties and load capacities shall indicate dimensions, steel characteristics, and allowable stresses upon which computations are based.

C. Structural calculations of the specific members required to provide a complete assembly shall be performed based upon the wind load pressures and suctions as indicated in the drawings in addition to well established and documented dead loads as required for the specific situations. Deflections shall be limited to L/600 for masonry finishes, L/360 for stucco finishes and L/240 for EIFS finishes. Submittals shall be prepared based upon the finishes as indicated in the architectural drawings and the available structure to attach to as indicated in the structural drawings.

2.2 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products of one of the following:

1. Ram Steel Framing, Inc.
2. ClarkDietrich Building Systems
3. Marino\WARE 800-627-4661 info@marinoware.com

2.3 METAL FRAMING

A. System Components: Manufacturers' standard steel studs and joists of type, size, shape, and gage as indicated. With each type of metal framing required, provide manufacturer's standard, steel runners (tracks), blocking, lintels, clip angles, shoes, reinforcements, fasteners, and accessories for applications indicated, as needed to provide a complete metal framing system. Provide manufacturer's recommended "slip" connection where the deflections of overhead decking or structural members may cause an axial load to be imposed on the steel studs.

1. Vertical Deflection Clips: Manufacturer's standard [bypass] [head] clips, capable of accommodating upward and downward vertical displacement of primary structure through positive mechanical attachment to stud web. Required use of connection products that have a valid ICC ES Report or equivalent complying with ICC Acceptance Criteria AC261. The Steel Network, Inc.: VertiClip® and VertiTrack® (ICC #ESR-1903) or approved equivalent.

B. Materials and Finishes:

1. Steel Studs: Fabricate metal framing components of structural quality steel sheet with a minimum yield point of 40,000 psi; ASTM A 653, A 1011, or A 1008.
2. Provide galvanized finish to metal framing components complying with ASTM A 653 for minimum: G 60 coating interior framing, G 90 coating exterior framing.
3. Fasteners: Provide nuts, bolts, washers, screws, and other fasteners with corrosion-resistant plated finish. Where exposed to weather provide galvanized fasteners.
4. Electrodes for Welding: Comply with AWS Code and as recommended by stud manufacturer.
5. Galvanizing Repair: Where galvanized surfaces are damaged, prepare surfaces and repair in accordance with procedures specified in ASTM A 780.

2.4 FABRICATION

A. General: Framing components may be prefabricated into assemblies before erection. Fabricate panels plumb, square, true to line, and braced against racking with joints welded. Perform lifting of prefabricated units to prevent damage or distortion.

B. Fabricate units in jig templates to hold members in proper alignment and position and to assure consistent component placement.

C. Fastenings: Attach similar components by shop welding or field installed screw fasteners. Attach dissimilar components by shop welding or field bolting/screwing, as standard with manufacturer.

D. Wire tying of framing components is not permitted.

E. Fabrication Tolerances: Fabricate units to a maximum allowable tolerance variation from plumb, level, and true to line of 1/8 inch in 10 feet.

PART 3 - EXECUTION

3.1 INSPECTION

A. Pre-installation Conference: Prior to start of installation of metal framing systems, meet at project site with installers of other work including ceiling grid systems and mechanical and electrical work. Review areas of potential interference and conflicts and coordinate layout and support provisions for interfacing work.

3.2 INSTALLATION

A. Install metal framing systems in accordance with manufacturer's printed or written instructions and recommendations and in conformance with the engineered and approved submittals.

B. Runner Tracks: Install continuous tracks sized to match studs. Align tracks accurately to layout at base and tops of studs. Secure tracks as recommended by stud manufacturer for type of construction involved, except do not exceed 24 inches o.c. spacing for nail or power-driven fasteners or 16 inches o.c. for other types of attachment. Provide fasteners at corners and ends of tracks. All runner tracks shall be at least the same gauge metal as the steel stud it attaches to. All attachments of the runner tracks to the building construction shall be designed to withstand dead and wind loads. Steel studs shall be attached to runner tracks on both faces of runner track.

C. Installation of Studs: Secure studs to runner tracks at both inside and outside flanges. Secure studs to each other at intersections. Secure studs to the structure.

D. Hat Channels: Secure hat channels to studs and to the structure.

E. Set studs plumb, except as needed for diagonal bracing or required for non-plumb walls or warped surfaces and similar requirements.

F. Where stud system abuts structural columns or walls, including masonry and/or tilt-up concrete walls, anchor ends of stiffeners to supporting structure.

G. Install supplementary framing, blocking, and bracing in metal framing system wherever walls or partitions are indicated to support fixtures, equipment, services, casework, heavy trim and furnishings, and similar work requiring attachment to the wall or partition. Where type of supplementary support is not otherwise indicated, comply with stud manufacturer's recommendations and industry standards in each case, considering weight or loading resulting from item supported.

H. Frame wall openings larger than 2 feet square with double stud at each jamb of frame except where more than two are either shown or indicated in the engineered submittals. Install runner tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with stud shoes or by welding, and space jack studs same as full-height studs of wall. Secure stud

system wall opening frame in manner indicated.

1. Contractor's option to reduce or eliminate multiple studs at jambs and headers: JamStud as manufactured by the Steel Network, Inc. ASTM A653/A653M, Grade 50 (340), 50ksi (340MPa), minimum yield strength, 65ksi (450 MPa), minimum tensile strength, G-60 (Z180) hot-dipped galvanized coating.
2. Approved Engineered Connections for attachment of jambs to headers: StiffClip HE and StiffClip AL as manufactured by The Steel Network, Inc.

I. Frame both sides of expansion and control joints with separate studs; do not bridge the joint with components of stud system.

J. Install horizontal stiffeners in stud system, spaced (vertical distance) at not more than 54 inches o.c.

K. Erection Tolerances: Bolt or weld wall panels (at both horizontal and vertical junctures) to produce flush, even, true-to-line joints.

1. Maximum variation in plane and true position between prefabricated assemblies should not exceed 1/16 inch.

L. Field Painting: Touch-up damaged shop-applied protective coatings. Use compatible primer for prime-coated surfaces; use galvanizing repair system for galvanized surfaces.

END OF SECTION 05 40 00

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SECTION 05 50 00
METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Steel framing and supports for applications where framing and supports are not specified in other Sections.
2. Slotted channel framing.
3. Miscellaneous steel trim including steel angle corner guards.
4. Metal bollards.
5. Dumpster enclosure gate panels.

1.3 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written instructions to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.4 ACTION SUBMITTALS

A. Product Data: For the following:

1. Shop primers.
2. Slotted channel framing.
3. Metal bollards.

B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the following:

1. Steel framing and supports for overhead doors.
2. Steel framing and supports for applications where framing and supports are not specified in other Sections.

3. Miscellaneous steel trim including steel angle corner guards.
4. Metal bollards.

C. Delegated-Design Submittal: For dumpster enclosure gates and attachments, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For powder-coating applicator.

B. Qualification Data: For professional engineer.

C. Welding certificates.

D. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

E. Research Reports: For post-installed anchors.

1.6 QUALITY ASSURANCE

A. Powder-Coating Applicator Qualifications: A firm experienced in successfully applying powder coatings of type indicated and employing competent control personnel to conduct continuing, effective quality-control program to ensure compliance with requirements.

B. Welding Qualifications: Qualify procedures and personnel in accordance with the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."

1.7 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls, floor slabs, decks, and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer to design dumpster enclosure gates and attachments.

B. Structural Performance: Provide dumpster enclosure gates, and anchorage capable of withstanding the effects of loads and stresses within limits and under conditions indicated without permanent deformation of components, noise or metal fatigue caused by blade rattle or flutter, or permanent damage to fasteners and anchors.

1. Wind Loads: As indicated on Drawings.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

C. Steel Tubing: ASTM A500/A500M, cold-formed steel tubing.

D. Steel Pipe: ASTM A53/A53M, Standard Weight (Schedule 40) unless otherwise indicated.

E. Slotted Channel Framing: Cold-formed metal box channels (struts) complying with MFMA-4.

1. Size of Channels: 1-5/8 by 1-5/8 inches.
2. Galvanized Steel: ASTM A653/A653M, structural steel, Grade 33, with G90 coating; 0.108-inch nominal thickness.

F. Aluminum Plate and Sheet: ASTM B209, Alloy 6061-T6.

G. Aluminum Extrusions: ASTM B221, Alloy 6063-T6.

2.3 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563; and, where indicated, flat washers.

C. High-Strength Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325, Type 3, heavy-hex steel structural bolts; ASTM A563, Grade DH3, heavy-hex carbon-steel nuts; and where indicated, flat washers.

D. Stainless Steel Bolts and Nuts: Regular hexagon-head annealed stainless steel bolts, ASTM F593; with hex nuts, ASTM F594; and, where indicated, flat washers; Alloy Group 1.

E. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563; and, where indicated, flat washers.

1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.

F. Anchors, General: Capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing in accordance with ASTM E488/E488M, conducted by a qualified independent testing agency.

G. Cast-in-Place Anchors in Concrete: Either threaded or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A47/A47M malleable iron or ASTM A27/A27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F2329/F2329M.

H. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.
2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless steel bolts, ASTM F593, and nuts, ASTM F594.

I. Slotted-Channel Inserts: Cold-formed, hot-dip galvanized-steel box channels (struts) complying with MFMA-4, 1-5/8 by 7/8 inches by length indicated with anchor straps or studs not less than 3 inches long at not more than 8 inches o.c. Provide with temporary filler and tee-head bolts, complete with washers and nuts, all zinc-plated to comply with ASTM B633, Class Fe/Zn 5, as needed for fastening to inserts.

2.4 MISCELLANEOUS MATERIALS

A. Shop Primers: Provide primers that comply with Section 09 91 00 "Painting."

B. Concrete: Comply with requirements in Section 03 30 00 "Cast-in-Place Concrete" for normal-weight, air-entrained concrete with a minimum 28-day compressive strength of 3000 psi.

2.5 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

J. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

K. Corrosion Protection: Coat concealed surfaces of aluminum that come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:

1. Cast Aluminum: Heavy coat of bituminous paint.
2. Extruded Aluminum: Two coats of clear lacquer.

2.6 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.

1. Fabricate units from slotted channel framing where indicated.
2. Furnish inserts for units installed after concrete is placed.

C. Galvanize miscellaneous framing and supports where indicated.

2.7 MISCELLANEOUS STEEL TRIM

A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.

B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.

1. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.

C. Galvanize and prime exterior miscellaneous steel trim.

2.8 METAL BOLLARDS

A. Fabricate metal bollards from Schedule 40 steel pipe.

1. Cap bollards with 1/4-inch-thick, steel plate with domed top.
2. Where bollards are indicated to receive controls for door operators, provide cutouts for controls and holes for wire.
3. Where bollards are indicated to receive light fixtures, provide cutouts for fixtures and holes for wire.

B. Fabricate surface mounted bollards with 3/8-inch-thick, steel baseplates for bolting to concrete slab. Drill baseplates at all four corners for 3/4-inch anchor bolts.

1. Where bollards are to be anchored to sloping concrete slabs, angle baseplates for plumb alignment of bollards.

C. Prime steel bollards with primer specified in Section 09 91 00 "Painting."

2.9 DUMPSTER ENCLOSURE GATE PANELS

A. Gate Panels: Consisting of Stiles top, bottom and intermediate rails, with louvered infill panels, fabricated from aluminum.

1. Size: As indicated.
2. Configuration: Include top, bottom and middle rail.
3. Finish Powder Coated.

a. Color: As selected by Architect from Manufacturer’s full range.

B. Basis of Design Product and Manufacturer: Ametco, model Shadow 100 grilles with horizontal louvers and 100% direct visual screening.

C. Provide gates of type and size indicated on Drawings. Equip gates with manufacturer's heavy-duty hardware as required for complete functional operation, including but not limited to locking hasp, cane bolt assembly, bolt sleeve and hinges.

1. Hinges: (3) Heavy-Duty hinges, locking provisions and cane bolt per gate by Size and type to be verified by manufacturer.

D. Accessories

1. Fasteners: Stainless steel bolts of type, size, and spacing as recommended by gate manufacturer for specific conditions.

E. Hardware; as indicated in section 08 71 00 “Door Hardware.”

2.10 GENERAL FINISH REQUIREMENTS

A. Finish metal fabrications after assembly.

B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.11 STEEL AND IRON FINISHES

A. Shop prime iron and steel items unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.

1. Shop prime with primers specified in Section 09 91 00 "Painting."

B. Preparation for Shop Priming: Prepare surfaces to comply with SSPC-SP 3, "Power Tool Cleaning."

C. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

2.12 POWDER COATED FINISHES

A. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

1. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

3.2 INSTALLATION OF MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

B. Anchor supports for overhead doors securely to, and rigidly brace from, building structure.

3.3 INSTALLATION OF METAL BOLLARDS

A. Fill metal-capped bollards solidly with concrete and allow concrete to cure seven days before installing.

B. Anchor bollards in place with concrete footings. Center and align bollards in holes 3 inches above bottom of excavation. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.

C. Anchor surface mounted bollards to existing construction with expansion anchors. Provide four 3/4-inch bolts at each bollard unless otherwise indicated.

1. Embed anchor bolts at least 4 inches in concrete.

D. Fill bollards solidly with concrete, mounding top surface to shed water.

3.4 REPAIRS

A. Touchup Painting:

1. Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

a. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

2. Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 09 91 00 "Painting."

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

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SECTION 05 75 10
DECORATIVE FORMED METAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Brake Metal.

1.3 COORDINATION

A. Coordinate installation of anchorages for decorative formed metal items.

B. Coordinate installation of decorative formed metal with adjacent construction to ensure that assemblies, and joint sealants, are protected against causes of deterioration.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product, including finishing materials.

B. Shop Drawings: Show fabrication and installation details for decorative formed metal.

1. Include plans, elevations, component details, and attachment details.
2. Indicate materials and profiles of each decorative formed metal member, fittings, joinery, finishes, fasteners, anchorages, and accessory items.

C. Samples: For each type of exposed finish required, in manufacturer's standard sizes.

1.6 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: For decorative formed metal elements that house items specified in other Sections. Show dimensions of housed items, including locations of housing penetrations and attachments, and necessary clearances.

B. Evaluation Reports: For post-installed anchors, from ICC-ES.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver decorative formed metal products wrapped in protective coverings and strapped together in suitable packs or in heavy-duty cartons. Remove protective coverings before they stain or bond to finished surfaces.

B. Store products on elevated platforms in a dry location.

1.9 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls, columns, beams, and other construction contiguous with decorative formed metal by field measurements before fabrication and indicate measurements on Shop Drawings.

1.10 WARRANTY

A. Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes do not comply with requirements or that fail in materials or workmanship within specified warranty period. Warranty does not include normal weathering.

1. Warranty Period: 10 years from date of Final Completion.

PART 2 - PRODUCTS

2.1 SHEET METAL

A. General: Fabricate products from sheet metal without pitting, seam marks, roller marks, stains, discolorations, or other imperfections where exposed to view on finished units.

B. Aluminum Sheet: Flat sheet complying with ASTM B 209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with strength and durability properties of not less than Alloy 5005-H32.

1. Thickness: 0.50 inches thick.

2.2 MISCELLANEOUS MATERIALS

A. Fasteners: Fabricated from same basic metal and alloy as fastened metal unless otherwise indicated. Do not use metals that are incompatible with materials joined.

1. Provide concealed fasteners for interconnecting decorative formed metal items and for attaching them to other work unless otherwise indicated.

B. Structural Anchors: For applications indicated to comply with certain design loads, provide fastener systems with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193 or ICC-ES AC308.

C. Anchor Materials:

1. Match material and finish of components to be fastened.

D. Sound-Deadening Materials:

1. Mastic: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

E. Backing Materials: Provided or recommended by decorative formed metal manufacturer.

F. Isolation Coating: Manufacturer's standard bituminous paint.

2.3 FABRICATION, GENERAL

A. Shop Assembly: Preassemble decorative formed metal items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

B. Coordinate dimensions and attachment methods of decorative formed metal items with those of adjoining construction to produce integrated assemblies with closely fitting joints and with edges and surfaces aligned unless otherwise indicated.

C. Form metal to profiles indicated, in maximum lengths to minimize joints. Produce flat, flush surfaces without cracking or grain separation at bends. Fold back exposed edges of unsupported sheet metal to form a 1/2-inch-wide hem on the concealed side, or ease edges to a radius of approximately 1/32 inch and support with concealed stiffeners.

D. Increase metal thickness or reinforce with concealed stiffeners, backing materials, or both, as needed to provide surface flatness equivalent to stretcher-leveled standard of flatness and sufficient strength for indicated use.

1. Support joints with concealed stiffeners as needed to hold exposed faces of adjoining sheets in flush alignment.

E. Build in straps, plates, and brackets as needed to support and anchor fabricated items to adjoining construction. Reinforce decorative formed metal items as needed to attach and support other construction.

F. Provide support framing, mounting and attachment clips, splice sleeves, fasteners, and accessories needed to install decorative formed metal items.

2.4 DECORATIVE TRIM

A. Form closures and trim from metal of type and thickness indicated below. Fabricate to fit tightly to adjoining construction.

1. Aluminum Sheet: 0.63-Inches Thick.

B. Conceal fasteners where possible; otherwise, locate where they are as inconspicuous as possible. Size fasteners to support closures and trim, with fasteners spaced to prevent buckling or waviness in finished surfaces.

C. Drill and tap holes needed for securing closures and trim to other surfaces.

D. Miter or cope trim members at corners and reinforce with bent metal splice plates to form tight joints.

2.5 GENERAL FINISH REQUIREMENTS

A. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.6 ALUMINUM FINISH

A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of decorative formed metal.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Locate and place decorative formed metal items level and plumb and in alignment with adjacent construction. Perform cutting, drilling, and fitting required to install decorative formed metal.

1. Do not cut or abrade finishes that cannot be completely restored in the field. Return items with such finishes to the shop for required alterations, followed by complete refinishing, or provide new units as required.

B. Use concealed anchorages where possible.

C. Form tight joints with exposed connections accurately fitted together. Provide reveals and openings for sealants and joint fillers as indicated.

D. Corrosion Protection: Apply bituminous paint or other permanent separation materials on concealed surfaces where metals would otherwise be in direct contact with substrate materials that are incompatible or could result in corrosion or deterioration of either material or finish.

3.3 ADJUSTING AND CLEANING

A. Unless otherwise indicated, clean metals by washing thoroughly with water and soap, rinsing with clean water, and drying with soft cloths.

B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit or provide new units.

3.4 PROTECTION

A. Protect finishes of decorative formed metal items from damage during construction period. Remove temporary protective coverings at time of Substantial Completion.

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Division 06

Wood, Plastics and Composites

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SECTION 06 10 53
MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Wood blocking, cants, and nailers.
2. Wood furring and grounds.
3. Plywood backing panels.

1.3 DEFINITIONS

A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.

B. Dimension Lumber: Lumber of 2 inches nominal or greater size but less than 5 inches nominal size in least dimension.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

1.5 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For the following, from ICC-ES:

1. Preservative-treated wood.
2. Power-driven fasteners.
3. Post-installed anchors.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece or omit grade stamp and provide certificates of grade compliance issued by grading agency.
3. Dress lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 15 percent for 2-inch nominal thickness or less, 19 percent for more than 2-inch nominal thickness unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
2. For exposed items indicated to receive a stained or natural finish, chemical formulations shall not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece or omit marking and provide certificates of treatment compliance issued by inspection agency.

D. Application: Treat all miscellaneous carpentry unless otherwise indicated.

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.

3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
4. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Cants.
4. Furring.
5. Grounds.

B. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

C. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

D. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.4 PLYWOOD BACKING PANELS

A. Equipment Backing Panels: Plywood, DOC PS 1, Exterior, C-C Plugged, in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.

2.5 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.

B. Nails, Brads, and Staples: ASTM F1667.

C. Screws for Fastening to Metal Framing: ASTM C1002 or ASTM C954, length as recommended by screw manufacturer for material being fastened.

D. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

E. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01, ICC-ES AC58, ICC-ES AC193 or ICC-ES AC308 as appropriate for the substrate.

1. Material: Carbon-steel components, zinc plated to comply with ASTM B633, Class Fe/Zn 5.
2. Material: Stainless steel with bolts and nuts complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry accurately to other construction. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

C. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels.

D. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.

E. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

F. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.
2. Use copper naphthenate for items not continuously protected from liquid water.

G. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

H. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
2. ICC-ES evaluation report for fastener.

I. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 INSTALLATION OF WOOD BLOCKING AND NAILER

A. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

C. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 INSTALLATION OF WOOD FURRING

A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.

3.4 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

B. Protect miscellaneous rough carpentry from weather. If, despite protection, miscellaneous rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

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SECTION 06 40 23
INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Interior standing and running trim.

1.3 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Sustainable Design Submittals:

1. Laboratory Test Reports: For adhesives, indicating compliance with requirements for low-emitting materials.

C. Shop Drawings: For interior architectural woodwork.

1. Include plans, elevations, sections, and attachment details.
2. Show locations and sizes of furring, blocking, and hanging strips, including blocking and reinforcement concealed by construction and specified in other Sections.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

1.7 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver interior architectural woodwork until painting and similar finish operations that might damage woodwork have been completed in installation areas. Store woodwork in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install interior architectural woodwork until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

B. Field Measurements: Where interior architectural woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being concealed by construction, and indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 INTERIOR ARCHITECTURAL WOODWORK, GENERAL

A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

2.2 INTERIOR STANDING AND RUNNING TRIM FOR OPAQUE FINISH

A. Architectural Woodwork Standards Grade: Custom.

B. Hardwood Lumber:

1. Wood Species and Cut: Match species and cut indicated for other types of -finished architectural woodwork located in same area of building unless otherwise indicated.
2. Species: Any Closed Grain Hardwood.

2.3 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of interior architectural woodwork and quality grade specified unless otherwise indicated.

1. Wood Moisture Content: 8 to 13 percent.

2.4 FABRICATION

A. Fabricate interior architectural woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:

1. Edges of Solid-Wood (Lumber) Members: 1/16 inch unless otherwise indicated.

2.5 MISCELLANEOUS MATERIALS

A. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

B. Adhesives: Use adhesives that meet the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

C. Installation Adhesive: Product recommended by fabricator for each substrate for secure anchorage.

1. Verify adhesives have a VOC content of 70 g/L or less.
2. Verify adhesive complies with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

D. Installation Adhesive: Product recommended by fabricator for each substrate for secure anchorage.

2.6 FABRICATION

A. Fabricate interior architectural woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:

1. Edges of Solid-Wood (Lumber) Members: 1/16 inch unless otherwise indicated.
2. Edges of Rails and Similar Members More Than 3/4-Inch-Thick: 1/8 inch.

2.7 SHOP PRIMING

A. Preparations for Finishing: Comply with the Architectural Woodwork Standards for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing interior architectural woodwork, as applicable to each unit of work.

B. Interior Architectural Woodwork for Opaque Finish: Shop prime with one coat of wood primer as specified in Section 09 91 00 "Painting."

1. Backpriming: Apply one coat of primer, compatible with finish coats, to concealed surfaces of woodwork.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition interior architectural woodwork to average prevailing humidity conditions in installation areas.

B. Before installing interior architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

A. Grade: Install interior architectural woodwork to comply with same grade as item to be installed.

B. Assemble interior architectural woodwork and complete fabrication at Project site to the extent that it was not completed in the shop.

C. Install interior architectural woodwork level, plumb, true in line, and without distortion. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.

D. Scribe and cut interior architectural woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

E. Anchor interior architectural woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails for exposed fastening, countersunk and filled flush with interior architectural woodwork.

F. Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 60 inches long except where shorter single-length pieces are necessary.

1. Scarf running joints and stagger in adjacent and related members.
2. Fill gaps, if any, between top of base and wall with plastic wood filler; sand smooth; and finish same as wood base if finished.
3. Install standing with no more variation from a straight line than 1/8 inch in 96 inches.

G. Touch up finishing work specified in this Section after installation of interior architectural woodwork. Fill nail holes with matching filler where exposed.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective interior architectural woodwork, where possible, to eliminate functional and visual defects. Where not possible to repair, replace interior architectural woodwork. Adjust joinery for uniform appearance.

B. Clean interior architectural woodwork on exposed and semiexposed surfaces. Touch up finishes to restore damaged or soiled areas.

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SECTION 06 41 16
PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Plastic-laminate-faced architectural cabinets.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product, including high-pressure decorative laminate and cabinet hardware and accessories.

B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

1. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
2. Show locations and sizes of cutouts and holes for electrical switches and outlets and other items installed in architectural plastic-laminate cabinets.
3. Apply AWI Quality Certification Program label to Shop Drawings.

C. Samples for Initial Selection: For each type of exposed finish.

D. Samples for Verification: For the following:

1. Plastic Laminates: 8 by 10 inches, for each type, color, pattern, and surface finish required.

a. Provide one sample applied to core material with specified edge material applied to one edge.

2. Thermally Fused Laminate (TFL) Panels: 8 by 10 inches, for each color, pattern, and surface finish.

a. Provide edge banding on one edge.

3. Corner Pieces:

a. Cabinet-front frame joints between stiles and rails and at exposed end pieces, 18 inches high by 18 inches wide by 6 inches deep.
b. Miter joints for standing trim.

4. Exposed Cabinet Hardware and Accessories: One full-size unit for each type and finish.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer.

B. Quality Standard Compliance Certificates: AWI Quality Certification Program.

1.5 QUALITY ASSURANCE

A. Defective workmanship or damaged components shall be corrected, repaired, or replaced as requested by the Architect, without further cost to the Owner.

B. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

1. Shop Certification: AWI's Quality Certification Program accredited participant.

C. Installer Qualifications: AWI's Quality Certification Program accredited participant.

D. Coordinate delivery of templates and other similar items from other trades necessary for the construction of required casework units.

E. Coordinate submittals with construction schedule ensuring timely review to avoid delays from installation.

F. Casework shall be manufactured and install to meet the requirements of the Florida Building Code Current Edition and the Florida Fire Prevention Code Current.

1.6 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver cabinets until painting and similar operations that could damage woodwork have been completed in installation areas. If cabinets must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in Field Conditions Article.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install cabinets until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

B. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed, and indicate measurements on Shop Drawings.

C. Established Dimensions: Where cabinets are indicated to fit to other construction, establish dimensions for areas where cabinets are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.9 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that cabinets can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of architectural plastic-laminate cabinets indicated for construction, finishes, installation, and other requirements.

1. Provide inspections of fabrication and installation together with labels and certificates from AWI certification program indicating that woodwork complies with requirements of grades specified.

B. Architectural Woodwork Standards Grade: Custom.

C. Type of Construction: Frameless.

D. Cabinet, and Door Style: Full Overlay.

E. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by woodwork quality standard.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on the Interior Finish Schedule or comparable product by one of the following:

a. Formica Corporation.
b. Lamin-Art, Inc.

2. Colors, Patterns, and Finishes: As selected by Architect from Manufactures full range.

F. Laminate Cladding for Exposed Surfaces:

1. Horizontal Surfaces: Grade HGS.
2. Vertical Surfaces: Grade VGS.
3. Edges: Grade HGS.

G. Materials for Semiexposed Surfaces:

1. Horizontal and vertical surfaces: Grade CLS.

H. Concealed Backs of Panels with Exposed Plastic-Laminate Surfaces: High-pressure decorative laminate, NEMA LD 3, Grade BKL.

2.2 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.

1. Wood Moisture Content: 8 to 13 percent.

B. Composite Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.

2.3 CABINET CONSTRUCTION

A. Support bases for base cabinets shall be 2-inch x 4-inch minimum pressure treated material. Cabinet Base: 4-inch high, 3/4 inch CDX plywood, marine grade at sink bases. Provide additional center support for cabinets over 24 inches wide.

B. Base, Wall, and Tall Cabinet Boxes

1. Sides, bottom, and top: Constructed of glued and spline doweled 3/4 inch formaldehyde-free plywood providing balanced construction, surfaced with cabinet liner CLS for semi-exposed and vertical grade laminate for exposed locations.
2. Wall cabinet bottoms and tops: Constructed of glued and spline doweled one inch thick formaldehyde-free plywood, providing balanced construction surfaced with vertical grade laminate for exposed locations and cabinet liner CLS for semi-exposed locations.
3. Back panel: Constructed of minimum 1/4 inch prefinished tempered hard board, surfaced with CLS for semi-exposed and vertical grade laminate for exposed locations, inset and glued into sides, bottom, and top.
4. Exposed backs: Constructed of 3/4 inch formaldehyde-free plywood, surfaced with vertical grade laminate of balanced construction for semi-exposed locations, glued and spline doweled, and mechanically attached if required.
5. Intermediate support rail: Minimum 3/4 inch formaldehyde-free plywood, surfaced with vertical grade laminate of balanced construction, glued and doweled into cabinet sides.
6. Hanger rails: Two located at top and bottom of cabinet back, 3 on tall cabinets, locate at top, bottom, and center of 3/4 inch formaldehyde-free plywood.

C. Fixed and Adjustable Shelves and Dividers

1. One inch (formaldehyde-free plywood) shelves
2. Exposed Locations: Vertical grade plastic laminate both sides. Color to match cabinet exterior plastic laminate or as selected by Architect.
3. Semi-exposed locations: VGS or CLS
4. Front and back leading edges shall be edged with flat 1mm thick high impact PVC edging to match shelf color.
5. Number of adjustable shelves provided, unless indicated otherwise on the Drawings or on the Schedule

    a. Low and tall cabinets

        1) 1 up to 24 inches 4 up to 72 inches
        2) 2 up to 36 inches 5 up to 84 inches
        3) 3 up to 60 inches 6 up to 96 inches

    b. Wall hung cabinets

        1) 0 up to 24 inches 2 up to 36 inches
        2) 1 up to 30 inches 3 up to 40 inches

6. Adjustable dividers: 1/4 inch minimum thickness, prefinished tempered hardboard or plywood, smooth both faces, retained by molded plastic support clip.
7. Fixed dividers: Constructed of 3/4 inch plywood, surfaced with vertical grade laminate, providing balanced construction; glued and spline doweled. PVC edged to match laminate or adjacent PVC edging.

D. Cabinet Doors

1. 3/4 inch formaldehyde-free particleboard
2. High pressure plastic vertical grade laminate exterior and interior.
3. Doors 48 inches and less in length shall have 2 hinges per door; doors over 48 inches in length shall have 3 hinges per door.
4. Corners: Square with radiused edges, 3mm PVC edging.

E. Counter tops:

1. High Pressure Plastic Laminate: GP-50 grade.
2. Plywood concealed members; solid formaldehyde-free plywood shall be 7 – Ply marine grade boat plywood or Baltic birch marine grade boat plywood.
3. Plywood shall incorporate Type II water resistant glue.
4. Horizontal work surfaces to be 1-1/2 inch thick unless otherwise noted.
5. Cut openings in countertops for sinks or other items required. Cut to size from template furnished by supplier of sinks or use the designated sinks on job.
6. Edging: Radius, with 3mm PVC.
7. Provide balancing sheet on opposite face.
8. Laminate tops shall be continuous in practical lengths. When requiring splice joints, use a combination of splines or dowels for alignment and Tite-Joint fasteners as required to make a uniform and gapless joint.
9. All protruding countertops edges shall be mitered.
10. Backsplash and Endsplashes: Scribable, square set, color matching, and mechanically attached.

a. Backsplashes are required at locations where countertops abut walls where indicated on Drawings.
b. Edges of back and endsplashes shall be of square edge configuration.

2.4 CABINET HARDWARE AND ACCESSORIES

A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets.

B. Butt Hinges: 2-3/4-inch, five-knuckle steel hinges made from 0.095-inch- thick metal, and as follows:

1. Semiconcealed Hinges for Overlay Doors: ANSI/BHMA A156.9, B01521.

C. Pulls: 4-inch solid aluminum or stainless-steel wire pulls, fastened from back with two screws. For sliding doors, provide recessed stainless-steel flush pulls. Provide two pulls for drawers more than 24 inches wide. Pull design shall comply with Americans with Disability Act (ADA).

D. Recessed Metal Adjustable Shelf Standards and Supports: BHMA A156.9, B04071; with shelf rests, B04081.

E. Catches: Magnetic type, adjusted for maximum 5-pound pull. Attach with screws and slotted for adjustment.

F. Drawer Slides: ANSI/BHMA A156.9.

1. Heavy-Duty (Grade 1HD-100 and Grade 1HD-200): Undermount.

a. Type: Full extension.
b. Motion Feature: Soft close dampener.

G. Grommets for Cable Passage: 2-inch OD, molded-plastic grommets and matching plastic caps with slot for wire passage.

1. Color: Black.

2.5 PLASTIC LAMINATE COUNTER TOPS

A. Square Edge Configurations: 1 inch to 1-1/8 inch thick monolithic particleboard with 1-1/4 inch edge face including top and bottom laminates.

B. Top and matching front edge to be high pressure plastic laminate factory bonded.

C. Provide balancing sheet on opposite face.

D. Provide countertops for base cabinets and counter sections.

E. Laminate tops and shall be continuous in practical lengths. When requiring splice joints, use a combination of splines or dowels for alignment and tite-joint fasteners as required to make a uniform and gapless joint.

1. Provide continuous top for counter type cabinets fixed in a line.

F. Provide 4 inch high scribable, square set, color matching, mechanically attached backsplash with endsplashes.

1. Backsplashes are required at locations where countertops abut walls where indicated on Drawings.

G. Edges of back and endsplashes shall be of square edge configuration.

H. Sealants: Fully bed and seal splashes to tops and to other splashes with clear Sanitary Silicone Sealant Refer to Section 07 92 00 “Sealants.”

2.6 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

C. Adhesives: Use adhesives that meet the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

D. Adhesives: Do not use adhesives that contain urea formaldehyde.

2.7 FABRICATION

A. General: Fabricate cabinets and shelves to dimensions, profiles, and details indicated.

1. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
2. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

B. Countertops: Provide plastic-laminate backer sheet, Grade BKL, on underside of countertop substrates.

C. Shelves: 3/4-inch plywood core with high pressure laminate all sides and edges. Maximum depth shall be 24 –inches. Maximum length shall be 36 inches. Finish all edges including top and bottom.

D. All visible surfaces of cabinetry not concealed shall be laminated.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition cabinets to average prevailing humidity conditions in installation areas.

B. Before installing cabinets, examine shop-fabricated work for completion and complete work as required.

3.2 INSTALLATION

A. Grade: Install cabinets to comply with same grade as item to be installed.

B. Assemble cabinets and complete fabrication at Project site to the extent that it was not completed in the shop.

C. Install cabinets level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.

D. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

E. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork.

1. Use filler matching finish of items being installed.

F. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.

1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.

3.3 INSTALLATION OF COUNTERTOPS

A. Comply with installation requirements in SEFA 2. Abut top and edge surfaces true in plane with flush hairline joints and with internal supports placed to prevent deflection. Locate joints where indicated on Shop Drawings.

B. Field Jointing: Where possible, make in same manner as shop-made joints, using dowels, splines, fasteners, adhesives, and sealants recommended by manufacturer. Shop prepare edges for field-made joints.

C. Fastening:

1. Secure epoxy countertops to cabinets with epoxy cement, applied at each corner and along perimeter edges at not more than 48 inches o.c.

2. Where necessary to penetrate countertops with fasteners, countersink heads approximately 1/8 inch and plug hole flush with material equal to countertop in chemical resistance, hardness, and appearance.

D. Provide holes and cutouts required for service fittings.

E. Provide scribe moldings for closures at junctures of countertop, curb, and splash with walls as recommended by manufacturer for materials involved. Match materials and finish to adjacent laboratory casework. Use chemical-resistant, permanently elastic sealing compound where recommended by manufacturer.

F. Dress joints smooth, remove surface scratches, and clean entire surface.

3.4 CLEANING AND PROTECTING

A. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.

B. Protect countertop surfaces during construction with 6-mil plastic or other suitable water-resistant covering. Tape to underside of countertop at a minimum of 48 inches o.c.

C. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

D. Clean, lubricate, and adjust hardware.

END OF SECTION 06 41 16

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SECTION 06 64 00
PLASTIC PANELING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Fiberglass reinforced plastic panels and trim.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For plastic paneling and trim accessories, in manufacturer's standard sizes.

1.4 QUALITY ASSURANCE

A. Testing Agency: Acceptable to authorities having jurisdiction.

1.5 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install plastic paneling until spaces are enclosed and weathertight and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 PLASTIC SHEET PANELING – FRP-1

A. Glass-Fiber-Reinforced Plastic Paneling: Gelcoat-finished, glass-fiber-reinforced plastic panels complying with ASTM D5319.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on the Interior Finish Schedule or comparable product by one of the following:

a. Crane Composites, Inc.

b. Glasteel.
c. Marlite.

2. Surface-Burning Characteristics: As follows when tested by a qualified testing agency according to ASTM E84. Identify products with appropriate markings of applicable testing agency.

a. Flame-Spread Index: 25 or less.
b. Smoke-Developed Index: 450 or less.

3. Nominal Thickness: Not less than 0.09 inch.
4. Surface Finish: Smooth surface with filled grooves at 4 inches o.c. to resemble tile.
5. Color: As indicated on the Finish Schedule.

2.2 ACCESSORIES

A. Trim Accessories: Manufacturer's standard one-piece vinyl extrusions designed to retain and cover edges of panels. Provide division bars, inside corners, outside corners, and caps as needed to conceal edges.

1. Color: Match panels.

B. Adhesive: As recommended by plastic paneling manufacturer.

C. Sealant: Mildew-resistant, single-component, neutral-curing sanitary silicone sealant recommended by plastic paneling manufacturer and complying with requirements in Section 07 92 00 "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove loose or soluble paint, and other materials that might interfere with adhesive bond.

B. Prepare substrate by sanding high spots and filling low spots as needed to provide flat, even surface for panel installation.

C. Clean substrates of substances that could impair adhesive bond, including oil, grease, dirt, and dust.

D. Condition panels by unpacking and placing in installation space before installation according to manufacturer's written recommendations.

E. Lay out paneling before installing. Locate panel joints so that trimmed panels at corners are not less than 12 inches wide.

1. Mark plumb lines on substrate at trim accessory locations for accurate installation.
2. Locate trim accessories to allow clearance at panel edges according to manufacturer's written instructions.

3.3 INSTALLATION

A. Install plastic paneling according to manufacturer's written instructions.

B. Install panels in a full spread of adhesive.

C. Install trim accessories with adhesive.

D. Fill grooves in trim accessories with sealant before installing panels, and bed inside corner trim in a bead of sealant.

E. Maintain uniform space between panels and wall fixtures. Fill space with sealant.

F. Maintain uniform space between adjacent panels and between panels and floors, ceilings, and fixtures. Fill space with sealant.

G. Remove excess sealant and smears as paneling is installed. Clean with solvent recommended by sealant manufacturer and then wipe with clean dry cloths until no residue remains.

END OF SECTION 06 64 00

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Division 07

Thermal and Moisture Protection

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SECTION 07 11 13
BITUMINOUS DAMPPROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cold-applied, emulsified-asphalt dampproofing.

1.2 SUBMITTALS

A. Product Data: For each type of product.

1.3 FIELD CONDITIONS

A. Weather Limitations: Proceed with application only when existing and forecasted weather conditions permit dampproofing to be performed according to manufacturers' written instructions.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Source Limitations: Obtain primary dampproofing materials and primers from single source from single manufacturer. Provide auxiliary materials recommended in writing by manufacturer of primary materials.

2.2 COLD-APPLIED, EMULSIFIED-ASPHALT DAMPPROOFING

A. Basis-of-Design Product: Subject to compliance with requirements, provide W. R. Meadows, Inc; Sealmastic or a comparable product by one of the following:

1. Euclid Chemical Company (The); an RPM company.
2. Karnak Corporation.

B. Trowel Coats: ASTM D 1227, Type II, Class 1.

2.3 AUXILIARY MATERIALS

A. General: Furnish auxiliary materials recommended in writing by dampproofing manufacturer for intended use and compatible with bituminous dampproofing.

B. Emulsified-Asphalt Primer: ASTM D 1227, Type III, Class 1, except diluted with water as recommended in writing by manufacturer.

C. Patching Compound: Epoxy or latex-modified repair mortar of type recommended in writing by dampproofing manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions with Applicator present, for compliance with requirements for surface smoothness, surface moisture, and other conditions affecting performance of bituminous dampproofing work.

1. Test for surface moisture according to ASTM D 4263.

B. Proceed with application only after substrate construction and penetrating work have been completed and unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Mask or otherwise protect adjoining exposed surfaces from being stained, spotted, or coated with dampproofing. Prevent dampproofing materials from entering and clogging weep holes and drains.

B. Clean substrates of projections and substances detrimental to the dampproofing work; fill voids, seal joints, and remove bond breakers if any, as recommended in writing by prime material manufacturer.

C. Apply patching compound to patch and fill tie holes, honeycombs, reveals, and other imperfections.

3.3 APPLICATION, GENERAL

A. Comply with manufacturer's written instructions for dampproofing application, cure time between coats, and drying time before backfilling unless more stringent requirements are indicated.

1. Apply dampproofing to provide continuous plane of protection.
2. Apply additional coats if recommended in writing by manufacturer or to achieve a smooth surface and uninterrupted coverage.

3.4 CLEANING

A. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended in writing by manufacturer of affected construction.

END OF SECTION 07 11 13

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SECTION 07 13 26
SELF-ADHERING SHEET MEMBRANE WATERPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Self-adhering membrane waterproofing.

1.3 PERFORMANCE REQUIREMENTS

A. Provide membrane waterproofing that prevents the passage of water.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer’s standard product data with general and specific installation instructions, recommendations, and limitations from waterproofing materials manufacturer for each required type of waterproofing system.

1. Include details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.

1.5 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Obtain primary waterproofing materials of each type required from a single manufacturer to the greatest extent possible.

1. Provide secondary materials only as recommended by manufacturer of primary materials.

1.6 DELIVERY, STORAGE AND HANDLING

A. Delivery: Deliver liquid materials to Project site in original packages with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.

B. Storage:

1. Store liquid materials in their original, undamaged packages in a clean, dry, protected location and within temperature range required by waterproofing manufacturer.
2. Store rolls according to manufacturer's written instructions.
3. Protect and keep stored materials from exposure to direct sunlight.

C. Remove and replace liquid materials that cannot be applied within their stated shelf life.

1.7 PROJECT CONDITIONS

A. Substrate: Proceed with work after substrate construction, openings, and penetrating work have been completed and areas are free of standing or running water, ice, and frost. Verify that concrete substrate is dry, smooth, and free from sharp or ragged out-angles, honeycombing, rock pockets, depressions, and projections.

B. Weather: Proceed with work only when existing and forecasted weather conditions will permit work to be performed in accordance with manufacturer's recommendations and warranty requirements.

1.8 WARRANTY

A. Warranty: Executed by the manufacturer, agreeing to repair or replace sheet membrane waterproofing that fails in materials or workmanship within specified warranty period.

1. Warranty Period: Five (5) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MODIFIED BITUMINOUS SHEET WATERPROOFING

A. Modified Bituminous Sheet: Minimum 60-mil nominal thickness, self-adhering sheet consisting of 56 mils of rubberized asphalt laminated on one side to a 4-mil- thick, polyethylene-film reinforcement, and with release liner on adhesive side.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Grace Construction Products; W.R. Grace & Co. -- Conn.; Bituthene 3000 or a comparable product by one of the following:

a. Carlisle Coatings & Waterproofing Inc.
b. Henry Company.
c. W. R. Meadows, Inc.

2.2 AUXILIARY MATERIALS

A. Adhesives and Joint Tape: Provide types of adhesive compound and tapes recommended by waterproofing sheet manufacturer for bonding to substrate (if required), for waterproofing seams

in membrane, and for waterproofing joints between membrane and flashings, adjoining surfaces, and projections through membrane.

B. Primers: Provide type of concrete primer recommended by manufacturer of sheet waterproofing material for applications required.

C. Flashing Materials: Except as otherwise indicated, provide types of flexible sheet material for flashing as recommended by waterproofing sheet manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION

A. Comply with manufacturer's instructions for preparing surfaces indicated to receive sheet waterproofing.

B. Apply primer to substrate surfaces at rate recommended by manufacturer of primary waterproofing materials.

1. Prime only area that will be covered by waterproofing membrane in same working day.
2. Re-prime areas not covered by waterproofing membrane within 24 hours.

3.2 GENERAL INSTALLATION PROVISIONS

A. Inspect both the substrate and conditions under which Work is to be performed.

1. Do not proceed until unsatisfactory conditions have been corrected.

B. Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.

3.3 INSTALLATION

A. Comply with manufacturer's instructions for handling and installing sheet waterproofing materials.

B. Coordinate installing waterproofing materials with associated work to provide complete system complying with combined recommendations by manufacturers and installers involved in Work.

1. Schedule installation to minimize exposure of sheet waterproofing materials.

3.4 CLEANING AND PROTECTION

A. Protect waterproofing membrane in accordance with manufacturer's written recommendations to ensure that work is undamaged at Date of Substantial Completion.

END OF SECTION 07 13 26

SECTION 07 21 00
BUILDING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Miscellaneous stuffing insulation.
2. Unfaced batt insulation.
3. Sound attenuation blankets.
4. Polyisocyanurate Foam-Plastic Board Insulation.
5. Semi-Rigid Insulation.

1.3 SUBMITTALS

A. Product Data: Each type of insulation product specified.

1.4 QUALITY ASSURANCE

A. Single-Source Responsibility for Insulation Products: Obtain each type of building insulation from a single source with resources to provide products complying with requirements indicated without delaying the Work.

B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated on Drawings or specified elsewhere in this Section as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

1. Surface-Burning Characteristics: ASTM E 84.
2. Fire-Resistance Ratings: ASTM E 119.
3. Combustion Characteristics: ASTM E 136.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

PART 2 - PRODUCTS

2.1 INSULATING MATERIALS

A. General: Provide insulating materials that comply with requirements and with referenced standards.

1. Preformed Units: Sizes to fit applications indicated; selected from manufacturer's standard thickness, widths, and lengths.

2.2 MISCELLANEOUS STUFFING INSULATION

A. Shall be inorganic (non-asbestos) mineral wool insulation without facing, for the purpose of filling and stuffing openings in walls around pipes, structural components, conduits, expansion joints to eliminate noise transfer and to insulate. Use to seal top of interior walls, not fire rated walls, between masonry and roof deck, or as otherwise indicated. Use at expansion joints as detailed or as otherwise indicated. Insulation shall have a flame spread rating of 15 or less, and a smoke development rating of 0; per ASTM E84. Miscellaneous stuffing insulation shall be formaldehyde-free. Approved manufacturers are as follows:

1. Thermafiber Corporation
2. Rock Wool Manufacturing Company

2.3 UNFACED BATT INSULATION

A. Unfaced preformed glass fiber batt insulation conforming to ASTM C665, Type I. Flame spread shall be 25, smoke developed 50 in accordance with ASTM E136. Unfaced batt insulation shall be formaldehyde-free. Approved manufacturers are as follows:

1. Basis of design Product and Manufacturer EcoBatt” by Knauf; subject to compliance with requirements other manufacturer offering products which may be incorporated into the work are but not limited to the following:

a. Owens-Corning Fiberglas Corp.
b. CertainTeed Corporation
c. JohnsManville

2.4 SOUND ATTENUATION BLANKETS

A. Sound Attenuation Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool, with maximum flame-spread and smoke-developed indices of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

1. Basis of design Product and Manufacturer EcoBatt” by Knauf; subject to compliance with requirements other manufacturer offering products which may be incorporated into the work are but not limited to the following:

a. Owens-Corning Fiberglas Corp.

b. CertainTeed Corporation;
c. JohnsManville.

2.5 POLYISOCYANURATE FOAM-PLASTIC BOARD INSULATION

A. Polyisocyanurate Board Insulation, Foil Faced: ASTM C1289, foil faced, Type I, Class 1 or 2.

1. Basis-of-Design Product: Subject to compliance with requirements, provide DuPont de Nemours, Inc.; Thermax™ Heavy Duty Insulation or a comparable product by one of the following:

   a. Hunter Panels.
   b. Johns Manville; a Berkshire Hathaway company.
   c. Rmax, Inc.

2. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
3. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.

B. Thickness: As indicated.

2.6 SEMI-RIGID INSULATION

A. Glass-Fiber Board, Unfaced: ASTM C 612, Type IA; unfaced, with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84, passing ASTM E 136 for combustion characteristics. Nominal density of 3 lb/cu. ft., thermal resistivity of 4.3 deg F x h x sq. ft./Btu x in. at 75 deg F.

B. Basis-of-Design Product: Subject to compliance with requirements, provide Owens Corning Johns Manville; a Berkshire Hathaway company; Fiberglass 703 or Johns Manville, IS300, 1-1/2-inch thick or a comparable product by one of the following:

1. CertainTeed Corporation.
2. Knauf Insulation.
3. Owens Corning.

C. Thickness: As indicated.

2.7 INSULATION FASTENERS

A. Adhesively Attached, Spindle-Type Anchors: Plate welded to projecting spindle; capable of holding insulation of specified thickness securely in position with self-locking washer in place.

B. Basis-of-Design Product: Subject to compliance with requirements, provide Owens Corning, Insul-Quick system or a comparable product by one of the following:

1. AGM Industries, Inc
2. Gemco.

C. The semi-rigid fiberglass insulation shall be installed using welded pins or studs finished with sheet metal pins utilizing the Fiberglas “Insul-Quick” system with speed washers or studs. Nuts shall be installed 12” x 18” centers and the insulation impaled over them. The sheet metal shall be secured to the same fasteners. Seal all joints with sealant or tape as recommended by the manufacturer.

2.8 ACCESSORIES

A. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.

B. Install insulation that is undamaged, dry, and unsoiled

C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Apply single layer of insulation to produce thickness indicated, unless multiple layers are otherwise shown or required to make up total thickness.

E. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.

3.3 MISCELLANEOUS STUFFING INSULATION

A. Where the Drawings call for interior walls to extend to deck or roof, openings in walls between rooms above the ceiling shall be sealed with mineral wool placed or stuffed in openings to eliminate noise transfer and air movement. Mineral wool insulation shall be provided at other building locations indicated or requiring minor fill to eliminate air movement.

B. Also use mineral wool stuffing at the transition between semi-rigid insulations where the GWB ends within the interstitial space above the ceiling on exterior tilt wall applications

3.4 BATT INSULATIONS

A. Install in areas as indicated. Install in strict accordance with the manufacturers written installation instructions. Install in all exterior wall voids, behind beams, and concealed locations in the exterior walls and roof areas of the building whether or not indicated. All gaps shall be filled with batt insulation.

B. Install thermal insulation as follows:

1. Erect insulation vertically and hold in place with Z-furring members spaced 24 inches o.c.
2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw attach short flange of furring channel to web of attached channel. Start from this furring channel with standard width insulation panel and continue in regular manner. At interior corners, space second member no more than 12 inches from corner and cut insulation to fit.
4. Until gypsum board is installed, hold insulation in place with 10-inch staples fabricated from 0.0625-inch (16-gage)-diameter tie wire and inserted through slot in web of member.

C. All voids in the perimeter of the building shell shall be filled and closed with batt insulation or miscellaneous mineral wool stuffing insulation, whether or not indicated or shown. This includes behind all steel beams, wide flange beams, channels, CMU, miscellaneous framing, etc.

3.5 SOUND ATTENUATION BLANKETS

A. Install in interior walls where indicated. Install with clips as recommended by the manufacturer. Install in strict accordance with the manufacturers written installation instructions. Install from floor to full height of wall, or as otherwise indicated.

3.6 GENERAL INSTALLATION PROVISIONS

A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.

C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.

D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.

E. Recheck measurements and dimensions, before starting each installation.

F. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.

3.7 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 07 21 00

SECTION 07 21 19
FOAMED-IN-PLACE INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Open-cell spray polyurethane foam.

1.3 ACTION SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

B. Submit technical data sheets and samples as required by local code officials.

C. Submit the technical data sheet from the manufacturer showing the test results from the ASTM E84 (Surface Burning Characteristics).

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Evaluation Reports:

1. For spray-applied polyurethane foam-plastic insulation, from ICC-ES.
2. For spray-applied ignition barrier, from ICC-ES.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be delivered in manufacturer's original containers clearly labelled with manufacturer's name, product identification, safety information, net weight of contents and expiration date.

B. Material shall be stored in a safe manner and where the temperatures are in the limits specified by the material manufacturer.

C. Empty containers shall be removed from site on a daily basis.

D. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. Ventilate insulation application area in accordance with the Spray Foam Coalition's Guidance on best practices for the installation of Spray Polyurethane Foam.

C. Protect workers as recommended by the Spray Foam Coalition's Guidance on best practices for the installation of Spray Polyurethane Foam.

D. Protect adjacent surfaces, windows, equipment and site areas from damage of overspray.

1.8 WARRANTY

A. Manufacturer's Standard Warranty: Spray-in-place urethane foam insulation, when installed by certified contractors using factory-trained applicators and applied in accordance with the Installation Instructions, will perform as stated in the Product Technical Data Sheet.

1. Warranty is in effect throughout the life of the building provided. Original purchaser shall register with the Warranty Department of the Manufacturer within thirty days of occupancy.

PART 2 - PRODUCTS

2.1 PERFORMANCE CHARACTERISTICS

A. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: 25 or less.
2. Smoke-Development Index: 450 or less.

B. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

C. Minimum acceptable properties of cured foam:

1. Air Permeance at 3" ASTM E 2178 < 0.014 L/s.m².
2. Water Vapor Permeance at 5.5" ASTM E 96 11 perm.
3. Water Absorption ASTM D 2842 5%.
4. Dimensional Stability at 28 days (Volume Change) ASTM D 2126 0.0% at 158°F and 95% RH.

2.2 OPEN-CELL SPRAY POLYURETHANE FOAM

A. Basis-of-Design Product: Subject to compliance with requirements, provide Huntsman Building Solutions, Ultra Classic Select, or comparable product by one of the following:

1. Carlisle, Spray Foam Insulation.

B. ASTM D 1622, minimum density of .5 lb/cu. ft.

C. Minimum aged R-value at 1-inch thickness of 3.7 deg.

2.3 IGNITION BARRIER

A. Basis-of-Design Product: Subject to compliance with requirements, provide No-Burn Inc. No-Burn Plus XD, or comparable product by one of the following:

1. International Fireproof Technology, Inc.
2. ICP Building Solutions Group.

B. Provide Ignition Barrier in locations as required by the Florida Building Code.

2.4 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by insulation manufacturer where required for adhesion of insulation to substrates.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that substrates are clean, dry, and free of substances that are harmful to insulation.

B. Priming: Prime substrates where recommended by insulation manufacturer. Apply primer to comply with insulation manufacturer's written instructions. Confine primers to areas to be insulated; do not allow spillage or migration onto adjoining surfaces.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Apply only when surfaces and environmental conditions are within limits prescribed by the material manufacturer.

C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

D. Prime all surfaces.

3.3 INSTALLATION

A. Comply with insulation manufacturer's written instructions applicable to products and applications.

B. Spray insulation to envelop entire area to be insulated and fill voids.

C. Apply in multiple passes to not exceed maximum thicknesses recommended by manufacturer. Do not spray into rising foam.

D. Do not apply insulation within 3-inches of heat emitting devices or where the temperature is in excess of 200 degrees F, as per ASTM C411 or in accordance with applicable codes.

E. Framed Construction: Install into cavities formed by framing members to achieve thickness indicated on Drawings.

F. Miscellaneous Voids: Apply according to manufacturer's written instructions.

G. Spray polyurethane foam insulation with qualified thermal or ignition barrier per applicable building codes.

3.4 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.

END OF SECTION 07 21 19

SECTION 07 21 20
MASONRY FILL INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Masonry fill insulation.

1.3 SUBMITTALS

A. Product Data: Submit product data for insulation specified.

B. Test Reports: Submit product test reports from and based on tests performed by a qualified independent testing agency evidencing compliance of insulation products with specified requirements including those for thermal resistance, fire-test-response characteristics, and other properties, based on comprehensive testing of current products.

1.4 QUALITY ASSURANCE

A. Single-Source Responsibility for Insulation Products: Obtain each type of building insulation from a single source with resources to provide products complying with requirements indicated without delaying the Work.

B. Installers Qualifications: Installer shall be a firm having a minimum of five consecutive years of documented experience with the installation of foam plastic masonry wall insulation.

C. Fire Performance Characteristics: Insulation materials shall be identical to those whose fire performance characteristics, as listed for each material or assembly of which insulation is a part, have been determined by testing, per methods indicated, by a testing agency acceptable to authorities having jurisdiction.

1. Surface Burning Characteristics: ASTM E-84
2. Combustion Characteristics: ASTM E-136

D. Preinstallation Conference: Conduct conference at Project site.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Comply with manufacturer's written instructions for handling and protecting during installation.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Injected Foam Insulation - Foamed-In-Place Insulation: Two-component, nitrogen-based, non-toxic amino-plast resin, utilizing a foaming catalyst, and air as a delivery method. Foam plastic insulation resin shall be pre-mixed, by the manufacture, to insure consistency.

1. Product and Manufacturer – Basis of Design: Core-Fill 500; Tailored Chemical Products of Florida, Inc.

    a. Surface Burning Characteristics: Maximum flame spread, smoke developed and fuel contributed of 15, 75, and 0 respectively.
    b. Combustion Characteristics: Non-combustible, Class A.
    c. Thermal Values: Minimum R-Value of 4.91 per inch at 32 degrees F mean; ASTM C-177.

2. Other Acceptable Manufacturers: Subject to compliance with requirements, products that may be incorporated in the Work include:

    a. C.P. Chemical Company, White Plains, NY
    b. Jesco Inc., Florence, SC
    c. Thermal Corp. of America, Mt. Pleasant, IA

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and to determine if other conditions affecting performance of insulation are satisfactory. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Comply with insulation manufacturer's written instructions applicable to products and application indicated.

1. Fill all open cells and voids in all exterior hollow concrete masonry walls.
2. Drill holes, only through grout joints, maximum 8-inches on center, where required, to verify complete insulation installation.

END OF SECTION 07 21 20

SECTION 07 22 00
ROOF INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Provide labor, materials, and equipment necessary for complete installation of roof insulation for roofing as indicated on the Drawings and specified herein. Specification includes the following:

1. Roof insulation.
2. Cover board.

1.3 SUBMITTALS

A. Product data.

1. Roof insulation
2. Fasteners

B. Shop Drawings: Include plans, sections, details, and attachments to other Work.

1. Layout and thickness of insulation.
2. Tapered insulation, including slopes.
3. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.

1.4 QUALITY ASSURANCE

A. Preinstallation Conference: Conduct conference at the Project site.

B. Roof system shall be designed to meet wind-loading requirements for Building Code with the Supplement. Refer to Structural Drawings for wind velocity and “Importance Factor” requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver products in manufacturer's original packaging, dry, undamaged, with seals and labels intact.

B. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

1.6 WARRANTY

A. Insulation shall be included as a covered component of the roofing warranty.

1. Refer to section 07 41 13 “Standing Seam Metal Roof Panels,” for warranty requirements.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.

B. Structural Performance: Provide a membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to withstand the effects of the following:

1. Wind Loads: In accordance with Florida Building Code (current edition).

a. Basic Wind Speed: As indicated on the Structural Drawings.

2.2 MATERIALS

A. General: Preformed roof insulation boards manufactured or approved by membrane roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated and that produce FM Global-approved roof insulation.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Atlas EPS; a Division of Atlas Roofing Corporation.
2. Celotex
3. Firestone Building Products.
4. Hunter Panels
5. Johns Manville; a Berkshire Hathaway company.
6. Rmax, Inc.

C. Roof Insulation: Insulation shall have glass fiber reinforced facer sheets on both sides integrally laminated to the polyisocyanurate core material. Insulation shall meet FM Class 1 construction.

1. Total LTTR value: As indicated on the drawings.
2. Compressive Strength: 25 pounds per square inch minimum.
3. Board Size: 4’ x 8’ maximum

D. Fasteners: Metal fasteners and the insulation shall be approved by the membrane manufacturer to assure that required conditions are met to provide a membrane manufacturer's roof warranty. The type of fastener shall be appropriate for the substrate to achieve maximum withdraw and anti-corrosion characteristics. The membrane manufacturer approved fasteners shall also meet the following requirements:

1. FM 4470 SPRI Corrosion Test Procedure for Roofing Fasteners. To pass, the fasteners shall not accumulate more that 15 percent red rust after the "required number cycles" in the Kesternich cabinet.

a. The required number of cycles is as currently recommended by FM and SPRI, but in no case shall it be less than 15.

E. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:

1. Modified asphaltic, asbestos-free, cold-applied adhesive.
2. Bead-applied, low-rise, one-component or multicomponent urethane adhesive.
3. Full-spread, spray-applied, low-rise, two-component urethane adhesive.

2.3 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with roofing.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.

C. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to another insulation layer.

D. Cover Board: ASTM C1177/C1177M, glass-mat, water-resistant gypsum board or ASTM C1278/C1278M fiber-reinforced gypsum board.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Georgia-Pacific Gypsum LLC.
b. National Gypsum Company.
c. USG Corporation.

2. Thickness: 5/8 inch.
3. Surface Finish: Unprimed.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work:

1. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.

3.2 PREPARATION

A. Install insulation strips according to acoustical roof deck manufacturer's written instructions.

3.3 INSULATION INSTALLATION

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Install tapered insulation under area of roofing to conform to slopes indicated.

C. Comply with insulation manufacturer's instructions and recommendations for the handling, installation, and bonding or anchorage or insulation to substrate.

D. Installation Over Metal Decking:

1. Install base layer of insulation with joints staggered not less than 24 inches in adjacent rows and with long joints continuous at right angle to flutes of decking.

a. Locate end joints over crests of decking.
b. Where installing composite and noncomposite insulation in two or more layers, install noncomposite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer.
c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
d. Make joints between adjacent insulation boards not more than 1/4 inch in width.
e. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches.

1) Trim insulation so that water flow is unrestricted.

f. Fill gaps exceeding 1/4 inch with insulation.
g. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
h. Loosely lay base layer of insulation units over substrate.
i. Mechanically attach base layer of insulation using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to metal decks.

1) Fasten insulation according to requirements in FM Approvals' RoofNav for specified Windstorm Resistance Classification.
2) Fasten insulation to resist specified uplift pressure at corners, perimeter, and field of roof.

2. Install upper layers of insulation and tapered insulation with joints of each layer offset not less than 12 inches from previous layer of insulation.

    a. Staggered end joints within each layer not less than 24 inches in adjacent rows.
    b. Install with long joints continuous and with end joints staggered not less than 12 inches in adjacent rows.
    c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
    d. Make joints between adjacent insulation boards not more than 1/4 inch in width.
    e. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches.
    f. Trim insulation so that water flow is unrestricted.
    g. Fill gaps exceeding 1/4 inch with insulation.
    h. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
    i. Loosely lay each layer of insulation units over substrate.
    j. Adhere each layer of insulation to substrate using adhesive according to FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows:

        1) Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

3.4 INSTALLATION OF COVER BOARDS

A. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction.

1. Trim cover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
2. At internal roof drains, conform to slope of drain sump.

    a. Trim cover board so that water flow is unrestricted.

3. Cut and fit cover board tight to nailers, projections, and penetrations.
4. Adhere cover board to substrate using adhesive according to FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows:

    a. Set cover board in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

3.5 PROTECTING AND CLEANING

A. Protect insulation system from damage and wear unit; covered by roofing membrane.

B. Correct deficiencies in or remove insulation that does not comply with requirements, repair substrates, and repair or reinstall insulation to a condition free of damage and deterioration prior to installation of roofing membrane.

END OF SECTION 07 22 00

SECTION 07 25 00
AIR AND WATER BARRIERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Weather barrier.

1.3 PERFORMANCE REQUIREMENTS

A. Performance Requirements:

1. The weather barrier system shall be applied to the building envelope to control water and air leakage into and out of the conditioned space.

    a. The weather barrier system components include window and door flashing, weather barrier membrane system, and accessory materials for application to exterior building envelope substrates indicated

2. Joints, penetrations and paths of water and air infiltration shall be made watertight and airtight.
3. The system shall withstand positive and negative combined wind, stack and HVAC pressures on the building envelope without damage or displacement.
4. The system shall be installed airtight and shall remain flexible allowing for the relative movement of building envelope components due to thermal and moisture variations.

1.4 SUBMITTALS

A. Product Data: For materials indicated; include manufacturer’s product data including weather barrier system materials and accessories, technical and test data, material descriptions and properties, installation instructions, and substrate preparation requirements.

1. Include manufacturer's written instructions for evaluating, preparing, and treating substrate; technical data; and tested physical and performance properties of products.

B. Shop Drawings: For weather barrier system assemblies.

1. Show locations and extent of barrier. Include details for substrate joints and cracks, counter flashing, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
2. Include details of interfaces with other materials that form part of barrier.

C. Qualification Data: For Installer.

D. Product Certificates: From barrier manufacturer, certifying compatibility of barrier and accessory materials with Project materials that connect to or that come in contact with the barrier.

E. Reports: Field quality control reports for the following.

1. On-site testing.
2. Observation of weather barrier installation.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain weather barrier materials and accessories from single source from single manufacturer.

B. Preinstallation Conference: Conduct conference at Project site.

1. Review weather barrier requirements and installation, special details, mockups, and bond testing, barrier protection, and work scheduling that covers barriers.
2. Contractor, Owner's Authorized Representative, installing subcontractor, membrane system manufacturer's representative, and all subcontractors who have materials penetrating membrane system or finishes covering membrane system shall be present.
3. Contractor shall notify Owner's Authorized Representative at least seven days prior to time for conference.
4. Contractor shall record minutes of meeting and distribute to attending parties.
5. Agenda: As a minimum discuss:
    a. Surface preparation.
    b. Substrate condition and pretreatment.
    c. Minimum curing period.
    d. Special details and sheet flashing.
    e. Sequence of construction, responsibilities, and schedule for subsequent operations.
    f. Installation procedures.
    g. Inspection procedures.
    h. Protection and repair procedures.
    i. Review and approval of all glazing applications.

C. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by weather barrier materials manufacturer.

D. Mockups: Build mockups to set quality standards for materials and execution and for preconstruction testing.

1. Build integrated mockups of exterior wall assembly incorporating backup wall construction, external cladding, window, door frame, penetrations, and flashing to demonstrate surface preparation, crack and joint treatment, application of barriers, and sealing of gaps, terminations, and penetrations of barrier assembly.

   a. Mockup shall illustrate material interfaces and seals of weather barrier in accordance with manufacturer's application instructions and recommendations.
   b. Coordinate construction of mockups to permit inspection of weather barrier before external cladding is installed.
   c. If Architect determines mockups do not comply with requirements, reconstruct mockups and apply barrier until mockups are approved.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

E. Reports: Field quality control reports for the following.

1. On-site testing.
2. Observation of weather barrier installation.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials and products in labeled packages. Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from damage, weather, excessive temperatures and construction operations. Remove damaged material from site and dispose of in accordance with applicable regulations.

B. Protect weather barrier components from freezing and extreme heat.

C. Sequence deliveries to avoid delays, and to minimize on-site storage.

D. Remove and replace weather barrier materials that cannot be applied within their stated shelf life.

E. Protect stored materials from direct sunlight.

1.7 PROJECT CONDITIONS

A. Weather Conditions: Perform work only when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials used.

1. Apply at surface and ambient temperatures recommended by the manufacturer. Refer to manufacturer's product data sheets for best practices.

2. Proceed with installation only when the substrate construction and preparation work are complete and in condition to receive the membrane system.

B. Exposure Limitations: Schedule work to ensure that weather barrier system is covered and protected from UV exposure within 180 days of installation. If weather barrier membrane system cannot be covered within 180 days after installation, apply temporary UV protection as recommended by membrane manufacturer.

1.8 WARRANTY

A. Manufacturer's Warranty Requirements: Submit manufacturer's written warranty stating that installed weather barrier materials are watertight, free from defects in material and workmanship, and agreeing to replace defective materials and components.

1. Warranty period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Manufacturer's standard formulation designed for indicated use; compatible with substrate and complying with one of the following:

2.2 WEATHER BARRIER SYSTEM

A. Products and Manufacturer – Basis of Design: Prosoco R-Guard Cat 5 Air & Water Resistive Barrier System; PROSOCO, Inc.

1. System Components:

a. PROSOCO R-GUARD GypPrime
b. PROSOCO R GUARD Stucco Prime
c. PROSOCO R-GUARD Joint & Seam Filler
d. PROSOCO R-GUARD FastFlash
e. PROSOCO R-GUARD CAT-5
f. PROSOCO R-GUARD AirDam sealant

2. Backer Rod: Compressible, closed cell rod stock as recommended by weather barrier system materials manufacturer for compatibility with AirDam sealant.
3. Weather Barrier Sealant: R-GUARD AirDam.

B. Other Acceptable Product and Manufacturer: Subject to compliance with requirements, the following may be used as a substitution for the Basis of Design specified:

1. Manufacturer: E.I du Pont de Nemours and Company

a. System Description: DuPont Tyvek Fluid Applied WB

1) Provide all materials and components for a complete weather barrier system.

2.3 ACCESSORY MATERIALS

A. General: Provide accessory materials recommended by weather barrier materials manufacturer to produce a complete weather barrier assembly. All accessory materials shall be compatible with primary weather barrier materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions for compliance with installation requirements and other conditions affecting performance of the Work.

B. All surfaces shall be sound, clean and free of grease, dirt, excess mortar or other contaminants. Fill or bridge damaged surfaces, voids or gaps larger than one-half (1/2) inch with suitable material as required to comply with material manufacturer's installation instructions and recommendations.

1. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
2. Verify that concrete has cured and aged for minimum time period recommended by barrier manufacturer.
3. Verify that concrete is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
4. Verify that masonry joints are flush and completely filled with mortar.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

A. Clean, prepare, treat, and seal substrate according to manufacturer's written instructions. Provide clean, dust-free, and dry substrate for barrier application.

B. Mask off adjoining surfaces not covered by barrier to prevent spillage and overspray affecting other construction.

C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.

D. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate-patching membrane.

E. Remove excess mortar from masonry ties, shelf angles, and other obstructions.

F. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.

G. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another in accordance with weather barrier membrane materials manufacturer to provide continuous support for barrier materials.

3.3 JOINT TREATMENT

A. Concrete and Masonry: Prepare, treat, rout, and fill joints and cracks in substrate according to manufacturer's written instructions.

3.4 FLASHING AT WINDOWS, DOORS, OPENINGS AND PENETRATIONS:

A. Flashing: Apply flashing materials in accordance with manufacturer’s application guideline illustrations.

3.5 WEATHER BARRIER COATING INSTALLATION

A. General: Apply weather barrier materials in accordance with manufacturer’s application guideline illustrations. Apply coating within manufacturer's recommended application temperature ranges.

B. Inspect membrane before covering. Repair any punctures, translucent or damaged areas by applying additional material.

C. Correct deficiencies in or remove barrier that does not comply with requirements; repair substrates and reapply barrier components.

D. Primer: Apply Primer; do not allow Primer to dry. Limit application of Stucco Prime to surfaces that can be covered with stucco scratch coat while primer is still “transfer wet to touch.”

3.6 FLASHING TRANSITIONS

A. Apply joint and seam filler and liquid flashing membrane to waterproof transitions in rough opening and between dissimilar materials.

1. Fill any voids between the top of the flashing leg and the vertical wall with joint and seam filler. Tool to direct water from the vertical wall to the flashing.
2. Apply flashing material to the top edge of the flashing leg.
3. Apply products to create a monolithic “cap-flash” flashing membrane extending 2 inches up the vertical face of the structural wall and 1 inch over the flashing membrane.
4. Apply additional product as needed to achieve a void and pinhole free surface.
5. Allow flashing membrane to skin before installing other wall assembly, weather barrier components.

3.7 INSTALLATION OF SEALANT FOR WINDOWS AND DOORS

A. Sealant: Install sealant in continuous beads without air gaps or air pockets.

1. Apply sealant to a clean, dry or damp surface

2. Install sealant in continuous ribbons without gaps or air pockets, with complete wetting of the joint bond surfaces.
3. Tool sealant immediately to ensure complete wetting of joint bond surface and to produce a smooth, concave joint profile flush with the edges of the adjacent surfaces. Where horizontal and vertical surfaces meet, tool sealant to create a slight cove so as to not trap moisture or debris.
4. Do not allow sealant to overflow onto adjacent surfaces. Prevent staining of adjacent surfaces.
5. Remove excess and misplaced sealant as work progresses. Clean the adjoining surfaces to remove misplaced sealant without damage to adjacent surfaces or finishes.

3.8 FIELD QUALITY CONTROL

A. On-Site Testing: The weather barrier material manufacturer's authorized representative shall perform tests as required to confirm the weather barrier materials have been installed in accordance with material manufacturer's instructions and written recommendations.

B. Observation of Weather Barrier Installation: The barrier material manufacturer's authorized representative shall observe installation of materials. Observations includes, but are not limited to, the following:

1. Site conditions for application temperature and dryness of substrates have been maintained.
2. Substrate conditions for application have been maintained during materials installation.
3. Continuity of weather barrier system has been achieved with no gaps or holes.
4. Maximum exposure time of materials to UV deterioration has not been exceeded.
5. Compatible materials have been used in all locations.
6. Connections between assemblies have complied with weather barrier materials manufacturer's requirements including surface preparation and continuity of seal.
7. All penetrations have been sealed.

C. Material application will be considered defective if it does not pass on-site testing and site observations.

1. Apply additional barrier material, according to manufacturer's written instructions, where testing and observation results indicate insufficient thickness.
2. Remove and replace deficient barrier components for retesting in accordance with manufacturer's instructions and recommendations.

D. Repair damage to barriers caused by testing; follow manufacturer's written instructions.

3.9 CLEANING AND PROTECTION

A. Protect weather barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.

1. Protect weather barrier from exposure to UV light and harmful weather exposure as required by manufacturer.
2. Protect weather barrier from contact with incompatible materials and sealants not approved by weather barrier manufacturer.

B. Clean spills, stains, and soiling from construction that would be exposed in the completed work using cleaning agents and procedures recommended by manufacturer of affected construction.

C. Remove masking materials after installation.

END OF SECTION 07 25 00

SECTION 07 26 10
UNDERSLAB VAPOR BARRIER

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Provide the Work required to provide and install the underslab vapor barrier and its accessories as indicated on the Drawings and as specified herein.

1.3 SUBMITTALS

A. Submit in accordance with Division 01 requirements.

B. Product data and general recommendations from materials manufacturer for types of underslab vapor barrier required.

C. Samples of underslab vapor barrier and auxiliary materials.

D. Submit pre-installation conference meeting minutes.

1.4 QUALITY ASSURANCE

A. Pre-installation Conference: Prior to installing vapor barrier and associated work, meet at Project site with the contractor. Review material selections and procedures to be followed in performing work. Notify Architect at least 48 hours before conducting meeting.

B. Definition: Vapor Barrier: A material or assembly of materials that resists water vapor transmission through it.

C. Vapor Barrier shall comply with:

1. ASTM E 1745, latest edition, “Water Vapor Barriers Used in Contact with Soil or Granular Fill under Concrete Slabs.”
2. ASTM E 1643, latest edition, “Installation of Water Vapor Barriers Used in Contact with Earth or Granular Fill Under Concrete Slabs.”
3. Federal Specification UU-B-790a Type 1, Grade A, Style 4.

1.5 PROJECT CONDITIONS

A. Substrate: Proceed with work after substrate construction, openings, and penetrating work have been completed and areas are free of standing or running water, ice, and frost.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Basis of Design: “Moistop Ultra 15 Underslab Vaper Barrier” as manufactured by Fortifiber Building Products Systems. Products of the following manufacturers are also acceptable provided compliance with requirements as specified herein:

1. Griffolyn Division of Reef Industries, Inc.
2. Stego Industries, llc.

2.2 UNDERSLAB VAPOR BARRIER

A. Multi-layer composite polyethylene reinforced with fiberglass reinforcing.

B. Class A material in accordance with ASTM E 1745, latest edition.

C. Thickness: 15 mil reinforced.

2.3 AUXILIARY MATERIALS

A. Joint Tape: Provide types of adhesive compound and tapes recommended by underslab vapor barrier manufacturer for seams in vapor barrier, and for projections through vapor barrier.

PART 3 - EXECUTION

3.1 PREPARATION

A. Ensure that all items that pass through the vapor barrier are properly and rigidly installed.

B. Substrate shall be free of projections and irregularities.

3.2 INSTALLATION

A. Comply with manufacturer's instructions for handling and installing underslab vapor barrier materials.

B. Seal projections through vapor barrier and seal seams. Bond to vertical surfaces and also, where shown or recommended by manufacturer, bond to horizontal surfaces.

C. Overlap and seal all seams in strict accordance with the manufacturers written installation instructions.

3.3 PROTECTION

A. Protect completed vapor barrier during installation of the concrete slab on grade.

B. Repair and seal all punctures that may occur prior or during installation.

C. Vapor barrier shall be continuously sealed at all joints and projections.

END OF SECTION 07 26 10

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SECTION 07 41 13
STANDING-SEAM METAL ROOF PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Standing-seam metal roof panels.
2. Underlayment Materials.

1.3 CODE COMPLIANCE

A. Exterior openings shall meet the requirements of the Florida Building Code.

1. Provide product evaluations and installation requirements indicating compliance with Code requirements.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of roof accessories and roof-mounted equipment.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review structural loading limitations of deck during and after roofing.
6. Review flashings, special details, drainage, penetrations, equipment curbs, and condition of other construction that affect metal panels.
7. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
8. Review temporary protection requirements for metal panel systems during and after installation.
9. Review procedures for repair of metal panels damaged after installation.

10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.5 ACTION SUBMITTALS

A. Product Approval: Submit current Product Approval documentation in accordance with the Florida Building Code.

B. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

C. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.

D. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.

1. Include similar Samples of trim and accessories involving color selection.

E. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.

1. Metal Panels: 12 inches long by actual panel width. Include clips, fasteners, closures, and other metal panel accessories.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Field quality-control reports.

D. Sample Warranties: For special warranties.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panels to include in maintenance manuals.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. UL-Certified, Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of work.

C. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build mockup of typical roof area and eave, including fascia, as shown on Drawings; approximately 48 inches square by full thickness, including attachments, underlayment, and accessories.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels during installation.

1.10 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.11 COORDINATION

A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.

B. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.12 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including rupturing, cracking, or puncturing.
b. Deterioration of metals and other materials beyond normal weathering.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

C. Special Weathertightness Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that fail to remain weathertight, including leaks, within specified warranty period.

1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:

1. Wind Loads: As indicated on Drawings.

B. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E1680 or ASTM E283 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft..

C. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E1646 or ASTM E331 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft..

D. Hydrostatic-Head Resistance: No water penetration when tested according to ASTM E2140.

E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

2.2 STANDING-SEAM METAL ROOF PANELS

A. Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.

1. Aluminum Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E1637.

B. Vertical-Rib, Seamed-Joint, Standing-Seam Metal Roof Panels: Formed with vertical ribs at panel edges and intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels, engaging opposite edge of adjacent panels, and mechanically seaming panels together.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Berridge Manufacturing Company.
b. MBCI.
c. PAC-CLAD; Petersen Aluminum Corporation; a Carlisle company.

2. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A653/A653M, G90 coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A792/A792M, Class AZ50 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755/A755M.

a. Nominal Thickness: 0.028 inch.
b. Exterior Finish: Metallic fluoropolymer.
c. Color: As selected by Architect from manufacturer's full range.

3. Clips: Stainless Steel, Two-piece fixed to accommodate thermal movement.

a. Material: 0.0625-inch-thick, stainless steel sheet.

4. Joint Type: Double folded.
5. Panel Coverage: 16 inches.
6. Panel Height: 2.0 inches.

2.3 UNDERLAYMENT MATERIALS

A. Self-Adhering, High-Temperature Underlayment: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 30 mils thick, consisting of slip-resistant, polyethylene-film top surface laminated to a layer of butyl or SBS-modified asphalt adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer.

1. Thermal Stability: Stable after testing at 240 deg F; ASTM D1970.
2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F; ASTM D1970.

3. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Carlisle WIP Products; a brand of Carlisle Construction Materials.
    b. GCP Applied Technologies Inc.
    c. Henry Company.

B. Slip Sheet: Manufacturer's recommended slip sheet, of type required for application.

2.4 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C645; cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 coating designation or ASTM A792/A792M, Class AZ50 coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch-thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

D. Pipe Flashing: Premolded, EPDM pipe collar with flexible aluminum ring bonded to base.

E. Gutters: Formed from same material as roof panels, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch-long sections, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Furnish gutter supports spaced a maximum of 36 inches o.c., fabricated from same metal as gutters. Provide wire ball strainers of compatible metal at outlets.

1. Refer to Section 07 62 00 “Sheet Metal Flashings and Trim.”

F. Downspouts: Formed from same material as roof panels. Fabricate in 10-foot-long sections, complete with formed elbows and offsets, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Finish downspouts to match gutters.

1. Refer to Section 07 62 00 “Sheet Metal Flashings and Trim.”

G. Panel Fasteners: Stainless Steel, Self-tapping screws designed to withstand design loads.

H. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

2.5 FABRICATION

A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

C. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.

D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
3. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.

4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
5. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

    a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal panel manufacturer for application, but not less than thickness of metal being secured.

2.6 FINISHES

A. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Panels and Accessories:

1. Metallic Fluoropolymer: AAMA 621. Three-coat fluoropolymer finish with suspended metallic flakes containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

    a. Color: As selected by Architect from Manufacturer’s full range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.

1. Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.
2. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.

    a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.

3.3 INSTALLATION OF UNDERLAYMENT

A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated below, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps with roller. Cover underlayment within 14 days.

1. Apply over the entire roof surface.

B. Slip Sheet: Apply slip sheet over underlayment before installing metal roof panels.

C. Flashings: Install flashings to cover underlayment to comply with requirements specified in Section 07 62 00 "Sheet Metal Flashing and Trim."

3.4 INSTALLATION OF STANDING SEAM METAL ROOF PANELS

A. Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal panels.
2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
3. Install screw fasteners in predrilled holes.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Install flashing and trim as metal panel work proceeds.
6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

1. Use stainless steel fasteners.

C. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.

D. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

E. Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.

1. Install clips to supports with self-tapping fasteners.
2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
4. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.
5. Watertight Installation:

    a. Apply a continuous ribbon of sealant or tape to seal joints of metal panels, using sealant or tape as recommend in writing by manufacturer as needed to make panels watertight.
    b. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
    c. At panel splices, nest panels with minimum 6-inch end lap, sealed with sealant and fastened together by interlocking clamping plates.

F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal roof panel manufacturers; or, if not indicated, types recommended by metal roof panel manufacturer.

G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

H. Gutters: Join sections with riveted and soldered or lapped and sealed joints. Attach gutters to eave with gutter hangers spaced not more than 36 inches o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.

I. Downspouts: Join sections with telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c. in between.

1. Provide elbows at base of downspouts to direct water away from building.
2. Connect downspouts to underground drainage system indicated.

J. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.

3.5 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.6 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect metal roof panel installation, including accessories. Report results in writing.

B. Remove and replace applications of metal roof panels where tests and inspections indicate that they do not comply with specified requirements.

C. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.

D. Prepare test and inspection reports.

3.7 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

B. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

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SECTION 07 42 13.13
FORMED METAL WALL PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Concealed fastener metal wall panels.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of doors, windows, and louvers.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that affect metal panels.
6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
7. Review temporary protection requirements for metal panel assembly during and after installation.
8. Review of procedures for repair of metal panels damaged after installation.
9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.

C. Samples for Initial Selection: For each type of metal panel indicated with factory-applied finishes.

1. Include Samples of trim and accessories involving color selection.

D. Samples for Verification: For each type of exposed finish, prepared on Samples of size indicated below:

1. Metal Panels: 12 inches long by actual panel width. Include fasteners, closures, and other metal panel accessories.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Field quality-control reports.

D. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panels to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build mockup of typical metal panel assembly as shown on Drawings, including corner, supports, attachments, and accessories.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels during installation.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.10 COORDINATION

A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including rupturing, cracking, or puncturing.
b. Deterioration of metals and other materials beyond normal weathering.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.

B. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E283 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft.

C. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E331 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

E. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.2 CONCEALED-FASTENER, LAP-SEAM METAL WALL PANELS

A. Flush-Profile, Concealed-Fastener Metal Wall Panels: Formed with vertical panel edges and a flat pan between panel edges; with flush joint between panels.

1. Basis-of-Design Product: Subject to compliance with requirements, provide PAC-CLAD; Petersen Aluminum Corporation; a Carlisle company; Flush wall panels. or a comparable product by one of the following:

a. Berridge Manufacturing Company.
b. MBCI; Cornerstone Building Brands.

2. Aluminum Sheet: Coil-coated sheet, ASTM B209, alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required. Prepainted by the coil-coating process to comply with ASTM A755/A755M.

a. Thickness: 0.040 inch.
b. Surface: Smooth, flat finish.

c. Exterior Finish: Metallic fluoropolymer.
d. Color: As selected by Architect from manufacturer's full range.

B. Metal Wall Panel Accessories:

1. Provide complete metal wall panel assembly including trim, copings, fascia, sills, factory fabricated one-piece inside and outside corners, jambs, and miscellaneous flashings. Include required fasteners, gaskets, closure strips, and sealants.
2. Provide Manufactures recommended vented hat Channels for rainscreen systems.
3. Fabricate accessories listed above from materials matching panels.
4. Finish exposed trim and extrusions to match panels.

2.3 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C645, cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 coating designation or ASTM A792/A792M, Class AZ50 aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

1. Closures: Provide closures at eaves and rakes, fabricated of same metal as metal panels.
2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch-thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.

E. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

2.4 FABRICATION

A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

C. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.

D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
3. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

    a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal wall panel manufacturer for application but not less than thickness of metal being secured.

2.5 FINISHES

A. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Metallic Fluoropolymer: AAMA 2605. Three-coat fluoropolymer finish with suspended metallic flakes containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.

1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal wall panel manufacturer.
2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.

a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.

3.3 INSTALLATION

A. Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal panels.
2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
3. Install screw fasteners in predrilled holes.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Install flashing and trim as metal panel work proceeds.
6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

1. Use stainless steel fasteners.

C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

D. Lap-Seam Metal Panels: Fasten metal panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.

1. Lap ribbed or fluted sheets one full rib. Apply panels and associated items true to line for neat and weathertight enclosure.
2. Provide metal-backed washers under heads of exposed fasteners bearing on weather side of metal panels.
3. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
4. Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.
5. Flash and seal panels with weather closures at perimeter of all openings.

E. Watertight Installation:

1. Apply a continuous ribbon of sealant or tape to seal lapped joints of metal panels, using sealant or tape as recommend by manufacturer on side laps of nesting-type panels; and elsewhere as needed to make panels watertight.
2. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
3. At panel splices, nest panels with minimum 6-inch end lap, sealed with sealant and fastened together by interlocking clamping plates.

F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal wall panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.

G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.

1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Water-Spray Test: After installation, test area of assembly as directed by Architect for water penetration according to AAMA 501.2.

C. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect completed metal wall panel installation, including accessories.

D. Remove and replace metal wall panels where tests and inspections indicate that they do not comply with specified requirements.

E. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.

F. Prepare test and inspection reports.

3.5 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

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SECTION 07 42 93
METAL SOFFIT PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes metal soffit panels.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.

C. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.

1. Include similar Samples of trim and accessories involving color selection.

D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:

1. Metal Panels: 12 inches long by actual panel width. Include fasteners, closures, and other metal panel accessories.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each product, tests performed by a qualified testing agency.

C. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panels to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. UL-Certified, Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of work.

C. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels during installation.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.10 COORDINATION

A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of walls, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including rupturing, cracking, or puncturing.
b. Deterioration of metals and other materials beyond normal weathering.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592:

1. Wind Loads: As indicated on Drawings.

B. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E 283 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft..

C. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E 331 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft..

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

2.2 METAL SOFFIT PANELS

A. General: Provide metal soffit panels designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners in side laps. Include accessories required for weathertight installation.

B. Flush-Profile Metal Soffit Panels: Perforated panels formed with vertical panel edges and a flat pan between panel edges; with flush joint between panels.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Berridge Manufacturing Company.
b. MBCI.
c. PAC-CLAD; Petersen Aluminum Corporation; a Carlisle company.

2. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A653/A653M, G90 coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A792/A792M, Class AZ50 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755/A755M.

a. Nominal Thickness: 0.028 inch.
b. Exterior Finish: Metallic fluoropolymer.
c. Panel width 7-inches nominal.
d. Depth: 1-inch.
e. Color: As selected by Architect from manufacturer's full range.

2.3 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C 645, cold-formed, metallic-coated steel sheet, ASTM A 653/A 653M, G90 coating designation or ASTM A 792/A 792M, Class AZ50 aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

1. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch-thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Finish flashing and trim with same finish system as adjacent metal panels.

D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.

E. Panel Sealants: Provide sealant types recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
2. Joint Sealant: ASTM C 920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.

2.4 FABRICATION

A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.

C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

D. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.

E. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.

3. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
5. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

    a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal soffit panel manufacturer for application but not less than thickness of metal being secured.

2.5 FINISHES

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Panels and Accessories:

1. Metallic Fluoropolymer: AAMA 621. Three-coat fluoropolymer finish with suspended metallic flakes containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

    a. Color: As selected by Architect from Manufacturer’s full range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.

1. Examine framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal panel manufacturer.
2. Examine sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal panel manufacturer.

    a. Verify that air- or water-resistive barriers been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations.

1. Soffit Framing: Wire tie or clip furring channels to supports, as required to comply with requirements for assemblies indicated.

3.3 METAL PANEL INSTALLATION

A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal panels.
2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
3. Install screw fasteners in predrilled holes.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Install flashing and trim as metal panel work proceeds.
6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
7. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

1. Use stainless-steel fasteners.

C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

D. Lap-Seam Metal Panels: Fasten metal panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.

1. Apply panels and associated items true to line for neat and weathertight enclosure.
2. Provide metal-backed washers under heads of exposed fasteners bearing on weather side of metal panels.
3. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
4. Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.

E. Watertight Installation:

1. Apply a continuous ribbon of sealant or tape to seal lapped joints of metal panels, using sealant or tape as recommend by manufacturer on side laps of nesting-type panels and elsewhere as needed to make panels watertight.
2. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
3. At panel splices, nest panels with minimum 6-inch end lap, sealed with sealant and fastened together by interlocking clamping plates.

F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.

G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.

1. Install exposed flashing and trim that is without buckling, and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to achieve waterproof performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

3.4 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 42 93

SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Formed roof-drainage sheet metal fabrications.
2. Formed steep-slope roof sheet metal fabrications.

1.3 COORDINATION

A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.

B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review special roof details, roof drainage, roof-penetration flashing, equipment curbs, and condition of other construction that affect sheet metal flashing and trim.
3. Review requirements for insurance and certificates if applicable.
4. Review sheet metal flashing observation and repair procedures after flashing installation.

1.5 ACTION SUBMITTALS

A. Product Data: For each of the following

1. Underlayment materials.
2. Elastomeric sealant.
3. Butyl sealant.
4. Epoxy seam sealer.

B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.
2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled Work.
3. Include identification of material, thickness, weight, and finish for each item and location in Project.
4. Include details for forming, including profiles, shapes, seams, and dimensions.
5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
6. Include details of termination points and assemblies.
7. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
8. Include details of roof-penetration flashing.
9. Include details of connections to adjoining work.
10. Detail formed flashing and trim at scale of not less than 1-1/2 inches per 12 inches.

C. Samples for Initial Selection: For each type of sheet metal and accessory indicated with factory-applied finishes.

D. Samples for Verification: For each type of exposed finish.

1. Sheet Metal Flashing: 12 inches long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
2. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications: 12 inches long and in required profile. Include fasteners and other exposed accessories.
3. Unit-Type Accessories and Miscellaneous Materials: Full-size Sample.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.

B. Special warranty.

1.8 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
2. Protect stored sheet metal flashing and trim from contact with water.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.10 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

B. Special Weathertightness Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that fail to remain weathertight, including leaks, within specified warranty period.

1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Sheet metal flashing and trim assemblies, including cleats, anchors, and fasteners, shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual: Architectural Metal Flashing, Condensation and Air Leakage Control, and Reroofing" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 SHEET METALS

A. Protect finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Aluminum Sheet: ASTM B209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required; with smooth, flat surface.

1. Exposed Coil-Coated Finish:

a. Fluoropolymer: AAMA 2605. Three-coat fluoropolymer finish with suspended metallic flakes containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions for seacoast and severe environments.

2. Color: As selected by Architect from manufacturer's full range.
3. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil.

2.3 UNDERLAYMENT MATERIALS

A. Self-Adhering, High-Temperature Underlayment: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 30 mils thick, consisting of slip-resistant, polyethylene-film top surface laminated to a layer of butyl or SBS-modified asphalt adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer.

1. Thermal Stability: Stable after testing at 240 deg F; ASTM D1970.
2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F; ASTM D1970.
3. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Carlisle WIP Products; a brand of Carlisle Construction Materials.
b. GCP Applied Technologies Inc.
c. Henry Company.
d. Owens Corning.

B. Slip Sheet: Manufacturer's recommended slip sheet, of type required for application.

2.4 MISCELLANEOUS MATERIALS

A. Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.

a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
b. Blind Fasteners: High-strength aluminum or stainless steel rivets suitable for metal being fastened.

2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.

C. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.

D. Elastomeric Sealant: ASTM C920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

E. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

F. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

G. Bituminous Coating: Cold-applied asphalt emulsion in accordance with ASTM D1187/D1187M.

2.5 FABRICATION, GENERAL

A. Custom fabricate sheet metal flashing and trim to comply with details indicated and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required.

1. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
2. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
3. Verify shapes and dimensions of surfaces to be covered and obtain field measurements for accurate fit before shop fabrication.
4. Form sheet metal flashing and trim to fit substrates without excessive oil-canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
5. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances:

1. Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
2. Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal in accordance with cited sheet metal standard to provide for proper installation of elastomeric sealant.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.

G. Seams:

1. Fabricate nonmoving seams with flat-lock seams.
2. Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.
3. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints where necessary for strength.

H. Do not use graphite pencils to mark metal surfaces.

2.6 ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Hanging Gutters:

1. Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required.
2. Fabricate in minimum 96-inch-long sections.
3. Furnish flat-stock gutter brackets and flat-stock gutter spacers and straps fabricated from same metal as gutters, of size recommended by cited sheet metal standard, but with thickness not less than twice the gutter thickness.
4. Expansion Joints: Lap type.
5. Fabricate from the following materials:

    a. Aluminum: 0.040 inch thick.

B. Downspouts: Fabricate downspouts to dimensions indicated on Drawings, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors. Shop fabricate elbows.

1. Fabricate from the following materials:

   a. Aluminum: 0.125 inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.

1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF UNDERLAYMENT

A. Self-Adhering, High-Temperature Sheet Underlayment:

1. Install self-adhering, high-temperature sheet underlayment; wrinkle free.
2. Prime substrate if recommended by underlayment manufacturer.
3. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures.
4. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses.
5. Overlap side edges not less than 3-1/2 inches. Roll laps and edges with roller.
6. Roll laps and edges with roller.
7. Cover underlayment within 14 days.

B. Install slip sheet, wrinkle free, over underlayment before installing sheet metal flashing and trim.

1. Install in shingle fashion to shed water.
2. Lapp joints not less than 4 inches.

3.3 INSTALLATION, GENERAL

A. Install sheet metal flashing and trim to comply with details indicated and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.

1. Install fasteners, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

2. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of sealant.
3. Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement.
4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
5. Install continuous cleats with fasteners spaced not more than 12 inches o.c.
6. Space individual cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
7. Install exposed sheet metal flashing and trim with limited oil-canning, and free of buckling and tool marks.
8. Do not field cut sheet metal flashing and trim by torch.
9. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.

1. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.
2. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.
3. Use lapped expansion joints only where indicated on Drawings.

D. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

F. Seal joints as required for watertight construction.

1. Use sealant-filled joints unless otherwise indicated.

a. Embed hooked flanges of joint members not less than 1 inch into sealant.
b. Form joints to completely conceal sealant.
c. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way.
d. Adjust setting proportionately for installation at higher ambient temperatures.

1) Do not install sealant-type joints at temperatures below 40 deg F.

2. Prepare joints and apply sealants to comply with requirements in Section 07 92 00 "Joint Sealants."

G. Rivets: Rivet joints in aluminum where necessary for strength.

3.4 INSTALLATION OF ROOF-DRAINAGE SYSTEM

A. Install sheet metal roof-drainage items to produce complete roof-drainage system in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.

B. Hanging Gutters:

1. Join sections with riveted joints or joints sealed with sealant.
2. Provide for thermal expansion.
3. Attach gutters at eave or fascia to firmly anchor them in position.
4. Provide end closures and seal watertight with sealant.
5. Slope to downspouts.
6. Fasten gutter spacers to front and back of gutter.
7. Anchor and loosely lock back edge of gutter to continuous eave or apron flashing.
8. Install gutter with expansion joints at locations indicated on Drawings, but not exceeding, 50 feet apart. Install expansion-joint caps.

C. Downspouts:

1. Join sections with 1-1/2-inch telescoping joints.
2. Provide hangers with fasteners designed to hold downspouts securely to walls.
3. Locate hangers at top and bottom and at approximately 60 inches o.c.
4. Provide elbows at base of downspout to direct water away from building.
5. Connect downspouts to underground drainage system.

3.5 INSTALLATION OF ROOF FLASHINGS

A. Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard.

1. Provide concealed fasteners where possible, and set units true to line, levels, and slopes.
2. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

B. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric sealant and clamp flashing to pipes that penetrate roof.

3.6 INSTALLATION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.7 CLEANING

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean off excess sealants.

3.8 PROTECTION

A. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

B. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended in writing by sheet metal flashing and trim manufacturer.

C. Maintain sheet metal flashing and trim in clean condition during construction.

D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures, as determined by Architect.

END OF SECTION 07 62 00

SECTION 07 81 00
APPLIED FIREPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Concealed SFRM.

1.3 DEFINITIONS

A. SFRM: Sprayed fire-resistive material.

B. Concealed: Fire-resistive materials applied to surfaces that are concealed from view behind other construction when the Work is completed.

1.4 SUBMITTALS

A. Product Data: For products indicated.

B. Shop Drawings: Framing plans, schedules, or both indicating the following:

1. Locations and types of surface preparations required before applying SFRM.
2. Extent of fireproofing for each construction and fire-resistance rating.
3. Applicable fire-resistance design designations of a qualified testing and inspecting agency acceptable to authorities having jurisdiction.
4. Minimum fireproofing thicknesses needed to achieve required fire-resistance rating of each structural component and assembly.
5. Treatment of SFRM after application.

C. Qualification Data: For Installer and testing agency.

D. Product Certificates: For fireproofing.

E. Evaluation Reports: For fireproofing.

F. Preconstruction Test Reports: For fireproofing.

G. Compatibility and Adhesion Test Reports: From SFRM manufacturer indicating the following:

1. Materials have been tested for bond with substrates.
2. Materials have been verified by SFRM manufacturer to be compatible with substrate primers and coatings.
3. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

H. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for fireproofing.

I. Field Quality-Control Test Reports: Submit completed reports.

J. Preinstallation Meeting Reports: Submit meeting minutes.

K. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A firm or individual certified, licensed, or otherwise qualified by fireproofing manufacturer as experienced and with sufficient trained staff to install manufacturer's products according to specified requirements.

B. Source Limitations: Obtain SFRM through one source from a single manufacturer.

C. Preinstallation Meeting: Conduct conference at Project site. Review methods and procedures related to SFRM including, but not limited to, the following:

1. Review products, exposure conditions, design ratings, restrained and unrestrained conditions, calculations, densities, thicknesses, bond strengths, and other performance requirements.
2. Review and finalize construction schedule and verify sequencing and coordination requirements.
3. Review weather predictions, ambient conditions, and proposed temporary protections for SFRM during and after installation.
4. Review surface conditions and preparations.
5. Review field quality-control testing procedures.

D. Fire-Test-Response Characteristics: Provide SFRM with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting age cy acceptable to authorities having jurisdiction. Identify bags containing SFRM with appropriate markings of applicable testing and inspecting agency.

1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" acceptable to authorities having jurisdiction, for SFRM serving as direct applied protection tested per ASTM E119.
2. Surface-Burning Characteristics: ASTM E84.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to Project site in original, unopened packages with intact and legible manufacturers' labels identifying product and manufacturer, date of manufacture, shelf life if applicable, and fire-resistance ratings applicable to Project.

B. Use materials with limited shelf life within period indicated. Remove from Project site and discard materials whose shelf life has expired.

C. Store materials inside, under cover, and aboveground; keep dry until ready for use. Remove from Project site and discard wet or deteriorated materials.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not apply SFRM when ambient or substrate temperature is 40 deg F or lower unless temporary protection and heat are provided to maintain temperature at or above this level for 24 hours before, during, and for 24 hours after product application.

B. Ventilation: Ventilate building spaces during and after application of fireproofing, providing a minimum 4 complete air exchanges per hour and according to manufacturer's written instructions until Spray-Applied Fire Resistive Materials are dried and cured. Use natural means or, if they are inadequate, forced-air circulation until fireproofing dries thoroughly.

1.8 COORDINATION

A. Sequence and coordinate application of SFRM with other related work specified in other Sections to comply with the following requirements:

1. Provide temporary enclosure as required to confine spraying operations and protect the environment.
2. Provide temporary enclosures for applications to prevent deterioration of fire-resistive material due to exposure to weather and to unfavorable ambient conditions for humidity, temperature, and ventilation.
3. Avoid unnecessary exposure of fire-resistive material to abrasion and other damage likely to occur during construction operations subsequent to its application.
4. Do not apply fire-resistive material to metal roof deck substrates until concrete topping, if any, has been completed. For metal roof decks without concrete topping, do not apply fire-resistive material to metal roof deck substrates until roofing has been completed; prohibit roof traffic during application and drying of fire-resistive material.
5. Do not apply fire-resistive material to metal floor deck substrates until concrete topping has been completed.
6. Do not begin applying fire-resistive material until clips, hangers, supports, sleeves, and other items penetrating fire protection are in place.
7. Defer installing ducts, piping, and other items that would interfere with applying fire-resistive material until application of fire protection is completed.
8. Do not install enclosing or concealing construction until after fire-resistive material has been applied, inspected, and tested and corrections have been made to defective applications.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form, signed by Contractor and by Installer, in which manufacturer agrees to repair or replace SFRMs that fail in materials within specified warranty period.

B. Failures include, but are not limited to, the following:

1. Cracking, flaking, spalling, or eroding in excess of specified requirements; peeling; or delaminating of SFRM from substrates.
2. Not covered under the warranty are failures due to damage by occupants and Owner's maintenance personnel, exposure to environmental conditions other than those investigated and approved during fire-response testing, and other causes not reasonably foreseeable under conditions of normal use.

C. Warranty Period: Two years from Date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Assemblies: Provide fireproofing, including auxiliary materials, according to requirements of each fire-resistance design and manufacturer's written instructions.

B. Source Limitations: Obtain fireproofing for each fire-resistance design from single source.

C. Fire-Resistance Design: Indicated on Drawings, tested according to ASTM E119 or UL 263; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Steel members are to be considered unrestrained unless specifically noted otherwise.

D. VOC Content: For field applications, coatings shall comply with VOC content limits of authorities having jurisdiction.

E. Asbestos: Provide products containing no detectable asbestos.

2.2 MATERIALS, GENERAL

A. Assemblies: Provide fireproofing, including auxiliary materials, according to requirements of each fire-resistance design and manufacturer's written instructions.

B. Source Limitations: Obtain fireproofing for each fire-resistance design from single source.

C. Fire-Resistance Design: Indicated on Drawings, tested according to ASTM E 119 or UL 263 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Steel members are to be considered unrestrained unless specifically noted otherwise.

D. Asbestos: Provide products containing no detectable asbestos.

2.3 SPRAYED FIRE-RESISTIVE MATERIALS

A. Standard Durability SFRM: Manufacturer's standard, factory-mixed, lightweight, dry formulation, complying with indicated fire-resistance design, and mixed with water at Project site to form a slurry or mortar before conveyance and application. Dry mix sprayed fire resistive materials containing mineral fibers are not allowed.

1. Products: Subject to compliance with requirements, provide the following:

    a. Grace Construction Products; W.R. Grace & Co. -- Conn; Monokote MK-6 Series (basis of design)
    b. Isolatek International, Inc; Cafco 300
    c. Pyrok, Inc.

2. Bond Strength: Minimum 200-lbf/sq. ft. cohesive and adhesive strength based on field testing according to ASTM E 736.
3. Density: Not less than 15 lb/cu. ft. and as specified in the approved fire-resistance design, according to ASTM E 605.
4. Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design or ASTM E 605, whichever is thicker, but not less than 0.375 inch.
5. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

    a. Flame-Spread Index: 0.
    b. Smoke-Developed Index: 0.

6. Compressive Strength: Minimum 10 lbf/sq. in. according to ASTM E 761.

B. Medium Durability SFRM for Exposed Columns in Mechanical Room: Manufacturer's standard, factory-mixed, Portland cement based dry formulation, complying with indicated fire-resistance design, and mixed with water at Project site to form a slurry or mortar before conveyance and application. Dry mix sprayed fire resistive materials containing mineral fibers are not allowed.

1. Products: Subject to compliance with requirements, provide the following:

    a. Grace Construction Products; W.R. Grace & Co. -- Conn.; Monokote Z-106/HY (basis of design)
    b. Isolatek International, Inc; Cafco 400
    c. Pyrok, Inc.

2. Bond Strength: Minimum 2,000-lbf/sq. ft. cohesive and adhesive strength based on field testing according to ASTM E 736.
3. Density: Not less than 22 lb/cu. ft. and as specified in the approved fire-resistance design, according to ASTM E 605.
4. Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design or ASTM E 605, whichever is thicker, but not less than 0.375 inch (9 mm).
5. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

    a. Flame-Spread Index: 0.
    b. Smoke-Developed Index: 0.

6. Compressive Strength: Minimum 100 lbf/sq. in. according to ASTM E 761.

2.4 AUXILIARY FIRE-RESISTIVE MATERIALS

A. General: Provide auxiliary fire-resistive materials that are compatible with SFRM and substrates and are approved by UL or another testing and inspecting agency acceptable to authorities having jurisdiction for use in fire-resistance designs indicated.

B. Substrate Primers: For use on each substrate and with each sprayed fire-resistive product, provide primer that complies with one or more of the following requirements:

1. Primer's bond strength complies with requirements specified in UL's "Fire Resistance Directory" for coating materials based on a series of bond tests per ASTM E736.
2. Primer is identical to those used in assemblies tested for fire-test-response characteristics of SFRM per ASTM E119 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

C. Adhesive for Bonding Fire-Resistive Material: Product approved by manufacturer of SFRM.

D. Reinforcing Fabric: Glass- or carbon-fiber fabric of type, weight, and form required to comply with fire-resistance designs indicated; approved and provided by manufacturer of SFRM.

E. Topcoat: Type recommended in writing by manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for substrates and other conditions affecting performance of the Work and according to each fire-resistance design. Verify compliance with the following:

1. Substrates are free of dirt, oil, grease, release agents, rolling compounds, mill scale, loose scale, incompatible primers, paints, and encapsulants, or other foreign substances capable of impairing bond of fireproofing with substrates under conditions of normal use or fire exposure.
2. Objects penetrating fireproofing, including clips, hangers, support sleeves, and similar items, are securely attached to substrates.
3. Substrates receiving fireproofing are not obstructed by ducts, piping, equipment, or other suspended construction that will interfere with fireproofing application.

B. Conduct tests according to fireproofing manufacturer's written recommendations to verify that substrates are free of substances capable of interfering with bond.

C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Application of the fireproofing shall not begin until the contractor, applicator and fireproofing testing laboratory (inspector) have examined surfaces to receive fireproofing and determined that the surfaces are acceptable to receive the fireproofing material.

3.2 PREPARATION

A. Cover other work subject to damage from fallout or overspray of fireproofing materials during application.

B. Clean substrates of substances that could impair bond of fireproofing.

C. Prime substrates where included in fire-resistance design and where recommended in writing by fireproofing manufacturer unless compatible shop primer has been applied and is in satisfactory condition to receive fireproofing.

D. For applications visible on completion of Project, repair substrates to remove surface imperfections that could affect uniformity of texture and thickness in finished surface of fireproofing. Remove minor projections and fill voids that would telegraph through fire-resistive products after application.

3.3 APPLICATION

A. Construct fireproofing assemblies that are identical to fire-resistance design indicated and products as specified, tested, and substantiated by test reports; for thickness, primers, sealers, topcoats, finishing, and other materials and procedures affecting fireproofing work.

B. Comply with fireproofing manufacturer's written instructions for application procedures, and types of equipment used to apply fireproofing; as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.

C. Coordinate application of fireproofing with other construction to minimize need to cut or remove fireproofing.

1. Do not begin applying fireproofing until clips, hangers, supports, sleeves, and other items penetrating fireproofing are in place.
2. Defer installing ducts, piping, and other items that would interfere with applying fireproofing until application of fireproofing is completed.

D. Install auxiliary materials as required, as detailed, and according to fire-resistance design and fireproofing manufacturer's written recommendations for conditions of exposure and intended use. For auxiliary materials, use attachment and anchorage devices of type recommended in writing by fireproofing manufacturer.

E. Spray apply fireproofing to maximum extent possible. Following the spraying operation in each area, complete the coverage by trowel application or other placement method recommended in writing by fireproofing manufacturer.

F. Extend fireproofing in full thickness over entire area of each substrate to be protected.

G. Install body of fireproofing in a single course unless otherwise recommended in writing by fireproofing manufacturer.

3.4 FIELD QUALITY CONTROL

A. Special Inspections: Engage a qualified special inspector to perform the following special inspections:

1. Test and inspect as required by the IBC and authorities having jurisdiction.

2. For reference, utilize AWCI - Inspection Procedure for Field-Applied Sprayed Fire-Resistive Materials, Technical Manual 12-A; an annotated guide.

B. Perform the tests and inspections of completed Work in successive stages. Do not proceed with application of fireproofing for the next area until test results for previously completed applications of fireproofing show compliance with requirements. Tested values must equal or exceed values as specified and as indicated and required for approved fire-resistance design.

C. Fireproofing will be considered defective if it does not pass tests and inspections.

1. Remove and replace fireproofing that does not pass tests and inspections, and retest.
2. Apply additional fireproofing, per manufacturer's written instructions, where test results indicate insufficient thickness, and retest.

D. Prepare test and inspection reports.

3.5 CLEANING, PROTECTING, AND REPAIRING

A. Cleaning: Immediately after completing spraying operations in each containable area of Project, remove material overspray and fallout from surfaces of other construction and clean exposed surfaces to remove evidence of soiling.

B. Protect fireproofing, according to advice of manufacturer and Installer, from damage resulting from construction operations or other causes, so fireproofing will be without damage or deterioration at time of Substantial Completion.

C. As installation of other construction proceeds, inspect fireproofing and repair damaged areas and fireproofing removed due to work of other trades.

D. Repair fireproofing damaged by other work before concealing it with other construction.

E. Repair fireproofing by reapplying it using same method as original installation.

END OF SECTION 07 81 00

SECTION 07 84 13
PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Through-penetration firestop systems for penetrations through the following fire-resistance-rated assemblies, including both empty openings and openings containing penetrating items:

    a. Walls and partitions.
    b. Floors and ceilings.
    c. Smoke barriers.

1.3 PERFORMANCE REQUIREMENTS

A. General: For the following constructions, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assembly penetrated.

1. Fire-resistance-rated load-bearing walls, including partitions, with fire-protection-rated openings.
2. Fire-resistance-rated non-load-bearing walls, including partitions, with fire-protection-rated openings.

B. F-Rated Systems: Provide through-penetration firestop systems with F-ratings indicated, as determined per ASTM E 814, but not less than that equaling or exceeding fire-resistance rating of constructions penetrated.

C. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that after curing do not deteriorate when exposed to these conditions both during and after construction.

1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
2. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.

D. For through-penetration firestop systems exposed to view, provide products with flame-spread ratings of less than 25 and smoke-developed ratings of less than 450, as determined per ASTM E 84.

1.4 SUBMITTALS

A. Product Data: For each type of through-penetration firestop system product indicated.

B. Shop Drawings: For each through-penetration firestop system, show each kind of construction condition penetrated, relationships to adjoining construction, and kind of penetrating item. Include firestop design designation of testing and inspecting agency acceptable to authorities having jurisdiction that evidences compliance with requirements for each condition indicated.

1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each through-penetration firestop system configuration for construction and penetrating items.
2. Where Project conditions require modification of qualified testing and inspecting agency's illustration to suit a particular through-penetration firestop condition, submit illustration, with modifications marked, approved by through-penetration firestop system manufacturer's fire-protection engineer.

C. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and Owners, and other information specified.

D. Product Certificates: Signed by manufacturers of through-penetration firestop system products certifying that products furnished comply with requirements.

E. Product Test Reports: From a qualified testing agency indicating through-penetration firestop system complies with requirements, based on comprehensive testing of current products.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed through-penetration firestop systems similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Installer Qualifications: An experienced installer who is qualified by having the necessary experience, staff, and training to install manufacturer's products per specified requirements. A manufacturer's willingness to sell its through-penetration firestop system products to Contractor or to an installer engaged by Contractor does not in itself confer qualification on buyer.

C. Source Limitations: Obtain through-penetration firestop systems, for each kind of penetration and construction condition indicated, from a single manufacturer.

D. Fire-Test-Response Characteristics: Provide through-penetration firestop systems that comply with the following requirements and those specified in "Performance Requirements" Article:

1. Firestopping tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL or another agency performing testing and follow-up inspection services for firestop systems acceptable to authorities having jurisdiction.

2. Through-penetration firestop systems are identical to those tested per ASTM E 814. Provide rated systems complying with the following requirements:

   a. Through-penetration firestop system products bear classification marking of qualified testing and inspecting agency.
   b. Through-penetration firestop systems correspond to those indicated by reference to through-penetration firestop system designations listed by the following:

      1) UL in "Fire Resistance Directory."

E. Preinstallation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver through-penetration firestop system products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying product and manufacturer; date of manufacture; lot number; shelf life, if applicable; qualified testing and inspecting agency's classification marking applicable to Project; curing time; and mixing instructions for multicomponent materials.

B. Store and handle materials for through-penetration firestop systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install through-penetration firestop systems when ambient or substrate temperatures are outside limits permitted by through-penetration firestop system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Ventilate through-penetration firestop systems per manufacturer's written instructions by natural means or, where this is inadequate, forced-air circulation.

1.8 COORDINATION

A. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.

B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration firestop systems.

C. Notify Owner's inspecting agency at least seven days in advance of through-penetration firestop system installations; confirm dates and times on days preceding each series of installations.

D. Do not cover up through-penetration firestop system installations that will become concealed behind other construction until Owner's inspecting agency and building inspector, if required by authorities having jurisdiction, have examined each installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Hilti, Inc.
2. 3M Fire Protection Products
3. Tremco, Inc.

2.2 FIRESTOPPING, GENERAL

A. Compatibility: Provide through-penetration firestop systems that are compatible with one another, with the substrates forming openings, and with the items, if any, penetrating through-penetration firestop systems, under conditions of service and application, as demonstrated by through-penetration firestop system manufacturer based on testing and field experience.

B. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E 84.

C. Accessories: Provide components for each through-penetration firestop system that are needed to install fill materials and to comply with "Performance Requirements" Article. Use only components specified by through-penetration firestop system manufacturer and approved by the qualified testing and inspecting agency for firestop systems indicated. Accessories include, but are not limited to, the following items:

1. Permanent forming/damming/backing materials, including the following:

a. Slag-/rock-wool-fiber insulation.
b. Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.
c. Fire-rated form board.
d. Fillers for sealants.

2. Temporary forming materials.
3. Substrate primers.
4. Collars.
5. Steel sleeves.

2.3 FILL MATERIALS

A. General: Provide through-penetration firestop systems containing the types of fill materials indicated by reference to the types of materials described in this Article. Fill materials are those referred to in directories of the referenced testing and inspecting agencies as fill, void, or cavity materials.

B. Latex Sealants: Single-component latex formulations that after cure do not re-emulsify during exposure to moisture.

C. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.

D. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced elastomeric sheet bonded to galvanized steel sheet.

E. Intumescent Putties: Nonhardening dielectric, water-resistant putties containing no solvents, inorganic fibers, or silicone compounds.

F. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.

G. Mortars: Prepackaged, dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.

H. Pillows/Bags: Reusable, heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents and fire-retardant additives.

I. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

J. Silicone Sealants: Moisture-curing, single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:

1. Grade: Pourable (self-leveling) formulation for openings in horizontal surfaces and nonsag formulation for openings in vertical and other surfaces requiring a nonslumping, gunnable sealant, unless indicated firestop system limits use to nonsag grade for both opening conditions.
2. Grade for Horizontal Surfaces: Pourable (self-leveling) formulation for openings in other horizontal surfaces.
3. Grade for Vertical Surfaces: Nonsag formulation for openings in vertical and other surfaces.

2.4 MIXING

A. For those products requiring mixing before application, comply with through-penetration firestop system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning: Clean out openings immediately before installing through-penetration firestop systems to comply with written recommendations of firestop system manufacturer and the following requirements:

1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of through-penetration firestop systems.
2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with through-penetration firestop systems. Remove loose particles remaining from cleaning operation.
3. Remove laitance and form-release agents from concrete.

B. Priming: Prime substrates where recommended in writing by through-penetration firestop system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking Tape: Use masking tape to prevent through-penetration firestop systems from contacting adjoining surfaces that will remain exposed on completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestop system materials. Remove tape as soon as possible without disturbing firestop system's seal with substrates.

3.3 THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATION

A. General: Install through-penetration firestop systems to comply with "Performance Requirements" Article and firestop system manufacturer's written installation instructions and published drawings for products and applications indicated.

B. Install forming/damming/backing materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

1. After installing fill materials, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.

C. Install fill materials for firestop systems by proven techniques to produce the following results:

1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 FIELD QUALITY CONTROL

A. Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E2174.

B. Where deficiencies are found or penetration firestopping system is damaged or removed because of testing, repair or replace penetration firestopping system to comply with requirements.

C. Proceed with enclosing penetration firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

3.5 IDENTIFICATION

A. Identify through-penetration firestop systems with pressure-sensitive, self-adhesive, preprinted vinyl labels. Attach labels permanently to surfaces of penetrated construction on both sides of each firestop system installation where labels will be visible to anyone seeking to remove penetrating items or firestop systems. Include the following information on labels:

1. The words: "Warning--Through-Penetration Firestop System--Do Not Disturb. Notify Building Management of Any Damage."
2. Contractor's name, address, and phone number.
3. Through-penetration firestop system designation of applicable testing and inspecting agency.
4. Date of installation.
5. Through-penetration firestop system manufacturer's name.
6. Installer's name.

3.6 CLEANING AND PROTECTION

A. Clean off excess fill materials adjacent to openings as Work progresses by methods and with cleaning materials that are approved in writing by through-penetration firestop system manufacturers and that do not damage materials in which openings occur.

B. Provide final protection and maintain conditions during and after installation that ensure through-penetration firestop systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated through-penetration firestop systems immediately and install new materials to produce through-penetration firestop systems complying with specified requirements.

END OF SECTION 07 84 13

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SECTION 07 92 00
JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Sealants for interior and exterior applications.

1.3 PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.4 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Product Certificates: Signed by manufacturers of joint sealants certifying that products furnished comply with requirements and are suitable for the use indicated.

D. Preconstruction Field Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on preconstruction testing specified in "Quality Assurance" Article.

E. Field Test Report Log: For each elastomeric sealant application. Include information specified in "Field Quality Control" Article.

F. Compatibility and Adhesion Test Reports: From sealant manufacturer indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

G. Product Test Reports: From a qualified testing agency indicating sealants comply with requirements, based on comprehensive testing of current product formulations.

H. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has specialized in installing joint sealants similar in material, design, and extent to those indicated for this Project and whose work has resulted in joint-sealant installations with a record of successful in-service performance.

B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

C. Manufacturer's Representative: Manufacturer's representative shall certify the installation of sealant materials and shall attend pre-construction meetings, make site visits during construction and after completion of each phase of work that directly applies to the materials being installed before issuing a warrantee certification.

D. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockup of each type of sealant and backing installation; minimum length 8 feet.
2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration date, pot life, curing time, and mixing instructions for multicomponent materials.

B. Store and handle materials in compliance with manufacturer's written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer.
2. When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 40 degrees F.
3. When joint substrates are wet.

B. Joint-Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

C. Joint-Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.8 WARRANTY

A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Special Manufacturer's Warranty: Written warranty, signed by elastomeric sealant manufacturer agreeing to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: As specified beginning from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Colors of Exposed Joint Sealants: Match Architect's samples.

2.2 PRODUCTS AND MANUFACTURERS

A. Products: Provide the following products for each application listed. Substitutions for exterior building joint sealants shall be listed on the Validated Products list published by the Sealant, Waterproofing, and Restoration Institute (SWRI).

1. Joint Sealant - One-Part: For precast concrete, poured-in-place concrete, and concrete-to-concrete and concrete-to-masonry; one-part silicone sealant, having a joint movement capability of plus-or-minus 100% elongation, minus 50% compression, and Shore A durometer hardness of 15.

a. Product and Manufacturer:

1) Dow Corning 790 Silicone Building Sealant; Dow Corning Corp.

b. Warranty: Manufacturer's standard 20-year warranty.

2. Joint Sealant - One-Part: For masonry-to-aluminum, steel-to-aluminum, concrete-to-aluminum, steel-to-steel, and other metal-to-metal joints (including KYNAR coatings); one-part silicone sealant having a joint movement capability of plus-or-minus 50% elongation, and Shore A durometer hardness of 30.

a. Product and Manufacturer:

1) Dow Corning 795 Silicone Building Sealant; Dow Corning Corp.

b. Warranty: Manufacturer's extended 20-year warranty.

3. Joint Sealant - Two-Part, Pourable Urethane Sealant: For horizontal joints, exterior and interior; provide joint sealant with a joint movement capability of plus-or-minus 25%.

a. Products and Manufacturers: Provide one of the following.

1) Vulkem 245; Tremco, Inc.
2) NR200 Urexpan; Pecora Corp.
3) Sikaflex 2c SL; Sika Corp.
4) THC-900; Tremco, Inc.

b. Warranty: Manufacturer's extended 5-year warranty.

4. Joint Sealant - Two-Part Urethane Non-Sag Sealant: For general interior use; provide joint sealant with a joint movement capability of plus-or-minus 50%.

a. Products and Manufacturers: Provide one of the following.

1) Vulkem 922; Tremco, Inc.
2) Dynatrol II; Pecora Corp.
3) Sikaflex 2c NS; Sika Corp.
4) NP II; Sonneborne Building Products Division, ChemRex, Inc.

b. Warranty: Manufacturer's extended 5-year warranty.

5. Joint Sealant - One-Part Latex Sealant: For interior use for horizontal and vertical joints around door frames, and joints between dissimilar materials.

a. Products and Manufacturers: Provide one of the following.

1) AC-20 + Silicone; Pecora Corp.
2) Sherwin Williams; 850A
3) Sonolac; Sonneborn Building Products Div., ChemRex, Inc.
4) Tremflex 834; Tremco, Inc.

b. Warranty: Manufacturer's standard warranty.

6. Joint Sealant - One-Part Silicone - Sanitary Sealant: For Interior use at plumbing fixtures in toilets and janitor closets, and horizontal and vertical joints of dissimilar materials in toilets and other wet areas.

a. Products and Manufacturers: Provide one of the following.

1) Dow Corning 786 Silicone Mildew Resistant Sealant; Dow Corning Corp.
2) SCS1700 Sanitary; General Electric Co.
3) Pecora 898 Silicone Mildew Resistant Silicone Sealant; Pecora Corp.
4) Tremsil 200; Tremco, Inc.

b. Warranty: Manufacturer's extended 3-year warranty.

7. Joint Sealant - Acoustic Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

a. Product and Manufacturer: Provide the following.

1) Pecora Corporation; AC-20 FTR.
2) USG Corporation; SHEETROCK Acoustical Sealant.

2.3 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range for this characteristic.

2.4 JOINT-SEALANT BACKING

A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Backer Rod (Joint Fillers, Compressible Filler): Type B, ASTM C 1330, preformed, cylindrical, flexible, compressible, resilient, non-staining, bi-cellular material, with a density of 24-48 km/m3 per ASTM D1622, tensile strength greater than 200 kPa per ASTM D 1623, and water absorption less than 0.1 g/cc per ASTM C 1016.

1. Product and Manufacturer - Basis of Design:

a. Sof Rod; Nomaco, Inc., Zebulon, NC.

2. Other Acceptable Manufacturers: Manufacturers offering products having performance characteristics meeting or exceeding those specified may be incorporated into the Work.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.5 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants with joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Verify location and application of acoustical sealant and all other sealants indicated. Do not allow sealants to come into contact with incompatible materials. Prevent reaction to metals and other substances; protect all surfaces.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint sealant manufacturer's written instructions.

B. Joint Priming: Prime joint substrates, unless otherwise recommended in writing by joint sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience.

1. Apply primer to comply with joint sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

1. Install sealants by proven techniques and at the same time backings are installed.
2. Place sealants so they directly contact and fully wet joint substrates.
3. Completely fill recesses provided for each joint configuration.

4. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

B. Backing Materials: Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

C. Bond-Breaker Tape: Install bond-breaker tape behind sealants where sealant backings are not used between sealants and back of joints.

D. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealants from surfaces adjacent to joint.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.

3.4 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Perform field-test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed elastomeric sealant joints as follows:

a. Perform 10 tests for the first 1000 feet of joint length for each type of elastomeric sealant and joint substrate.
b. Perform one test for each 1000 feet of joint length thereafter or one test per each floor per elevation.

2. Test Method: Test joint sealants by hand-pull method described below:

a. Make knife cuts from one side of joint to the other, followed by two cuts approximately 2 inches long at sides of joint and meeting cross cut at one end. Place a mark 1 inch from crosscut end of 2-inch piece.
b. Use fingers to grasp 2-inch piece of sealant between cross-cut end and 1-inch mark; pull firmly at a 90-degree angle or more in direction of side cuts while holding a ruler along side of sealant. Pull sealant out of joint to the distance recommended by sealant manufacturer for testing adhesive capability, but not less than that equaling specified maximum movement capability in extension; hold this position for 10 seconds.
c. For joints with dissimilar substrates, check adhesion to each substrate separately. Do this by extending cut along one side, checking adhesion to opposite side, and then repeating this procedure for opposite side.

3. Inspect joints for complete fill, for absence of voids, and for joint configuration complying with specified requirements. Record results in a field adhesion test log.
4. Inspect tested joints and report on the following:

    a. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field- adhesion hand-pull test criteria.
    b. Whether sealants filled joint cavities and are free from voids.
    c. Whether sealant dimensions and configurations comply with specified requirements.

5. Record test results in a field adhesion test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
6. Repair sealants pulled from test area by applying new sealants following same procedures used to originally seal joints. Ensure that original sealant surfaces are clean and new sealant contacts original sealant.

B. Evaluation of Field-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements, will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

A. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from the original work.

END OF SECTION 07 92 00

Division 08
Openings

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SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:

1. Interior standard steel doors and frames.
2. Exterior standard steel doors and frames.

1.3 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings in accordance with NAAMM-HMMA 803 or ANSI/SDI A250.8.

1.4 CODE COMPLIANCE

A. Exterior openings shall meet the requirements of the Florida Building Code.

1. Provide product evaluations and installation requirements indicating compliance with Code requirements.

1.5 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.6 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.7 ACTION SUBMITTALS

A. Product Approval: Submit current Product Approval documentation in accordance with the Florida Building Code.

B. Product Data: For each type of product.

1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, and finishes.

C. Shop Drawings: Include the following:

1. Elevations of each door type.
2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
7. Details of anchorages, joints, field splices, and connections.
8. Details of accessories.
9. Details of moldings, removable stops, and glazing.

D. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

1.8 INFORMATIONAL SUBMITTALS

A. Qualification Data: For door inspector.

1. Fire-Rated Door Inspector: Submit documentation of compliance with NFPA 80, Section 5.2.3.1.
2. Egress Door Inspector: Submit documentation of compliance with NFPA 101, Section 7.2.1.15.4.
3. Submit copy of DHI Fire and Egress Door Assembly Inspector (FDAI) certificate.

B. Product Test Reports: For each type of fire-rated hollow-metal door and frame assembly for tests performed by a qualified testing agency indicating compliance with performance requirements.

C. Oversize Construction Certification: For assemblies required to be fire-rated and exceeding limitations of labeled assemblies.

D. Field quality control reports.

1.9 CLOSEOUT SUBMITTALS

A. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.10 QUALITY ASSURANCE

A. Fire-Rated Door Inspector Qualifications: Inspector for field quality control inspections of fire-rated door assemblies is to meet the qualifications set forth in NFPA 80, section 5.2.3.1 and the following:

1. Door and Hardware Institute Fire and Egress Door Assembly Inspector (FDAI) certification.

B. Egress Door Inspector Qualifications: Inspector for field quality control inspections of egress door assemblies is to meet the qualifications set forth in NFPA 101, Section 7.2.1.15.4 and the following:

1. Door and Hardware Institute Fire and Egress Door Assembly Inspector (FDAI) certification.

1.11 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

1. Provide additional protection to prevent damage to factory-finished units.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch-high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Amweld Building Products, Inc.
2. Ceco Door Products; an ASSA ABLOY Group Company.
3. CURRIES Company; an ASSA ABLOY Group Company.
4. Republic Builders Products Company.
5. Steelcraft; an Ingersoll-Rand Company.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated on Drawings, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.

1. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing in accordance with UL 1784 and installed in compliance with NFPA 105.
2. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a qualified testing agency that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.

B. Fire-Rated, Borrowed-Lite Assemblies: Assemblies complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing in accordance with NFPA 257 or UL 9.

C. Windborne-Debris Impact Resistance: Passes ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996 for Wind Zone Indicated.

1. Large-Missile Test: For glazed openings located within 30 feet of grade.

D. Thermally Rated Door Assemblies: Provide door assemblies with U-factor of not more than 0.50 deg Btu/F x h x sq. ft. when tested in accordance with ASTM C1363 or ASTM E1423.

2.3 INTERIOR STANDARD STEEL DOORS AND FRAMES

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Extra-Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 3; ANSI/SDI A250.4, Level A..

1. Doors:

a. Type: As indicated in the Door and Frame Schedule.
b. Thickness: 1-3/4 inches.
c. Face: Uncoated steel sheet, minimum thickness of 0.053 inch.
d. Edge Construction: Model 1, Full Flush.
e. Edge Bevel: Provide manufacturer's standard beveled or square edges.
f. Core: Polyurethane.
g. Fire-Rated Core: Manufacturer's standard laminated mineral board core for fire-rated doors.

2. Frames:

a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch.
b. Sidelite and Transom Frames: Fabricated from same thickness material as adjacent door frame.
c. Construction: Face welded.

3. Exposed Finish: Prime.

2.4 EXTERIOR STANDARD STEEL DOORS AND FRAMES

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Extra-Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 3; ANSI/SDI A250.4, Level A..

1. Doors:

a. Type: As indicated in the Door and Frame Schedule.
b. Thickness: 1-3/4 inches.
c. Face: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A60 coating.
d. Edge Construction: Model 2, Seamless.
e. Edge Bevel: Provide manufacturer's standard beveled or square edges.
f. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
g. Bottom Edges: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
h. Core: Polyurethane.

2. Frames:

a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A60 coating.
b. Construction: Full profile welded.

3. Exposed Finish: Prime.

2.5 BORROWED LITES

A. Fabricate of uncoated steel sheet, minimum thickness of 0.053 inch.

B. Construction: Face welded.

C. Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as metal as frames.

D. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.

2.6 FRAME ANCHORS

A. Jamb Anchors:

1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches of frame height above 7 feet.
3. Postinstalled Expansion Anchor: Minimum 3/8-inch-diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.

B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.

C. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized in accordance with ASTM A153/A153M, Class B.

2.7 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized in accordance with ASTM A153/A153M.

E. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

F. Mineral-Fiber Insulation: ASTM C665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E136 for combustion characteristics.

G. Glazing: Comply with requirements in Section 08 80 00 "Glazing."

2.8 FABRICATION

A. Door Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.

B. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.

1. Sidelite and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by welding.
2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
3. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

    a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
    b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

C. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping in accordance with ANSI/SDI A250.6, the Door Hardware Schedule, and templates.

1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

D. Glazed Lites: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.

1. Provide stops and moldings flush with face of door, and with square stops unless otherwise indicated.
2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames. Provide loose stops and moldings on inside of hollow-metal doors and frames.
4. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.
5. Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

2.9 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

2.10 LOUVERS

A. Provide louvers for interior doors, where indicated, which comply with SDI 111, with blades or baffles formed of 0.020-inch-thick, cold-rolled steel sheet set into 0.032-inch-thick steel frame.

1. Sightproof Louver: Stationary louvers constructed with inverted-V or inverted-Y blades.
2. Lightproof Louver: Stationary louvers constructed with baffles to prevent light from passing from one side to the other.

3. Fire-Rated Automatic Louvers: Louvers constructed with movable blades closed by actuating fusible link, and listed and labeled for use in fire-rated door assemblies of type and fire-resistance rating indicated by same qualified testing and inspecting agency that established fire-resistance rating of door assembly.

B. Form corners of moldings with hairline joints. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.

PART 3 - EXECUTION

3.1 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.

B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.2 INSTALLATION

A. Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.

B. Hollow-Metal Frames: Comply with ANSI/SDI A250.11.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.

    a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
    b. Install frames with removable stops located on secure side of opening.

2. Fire-Rated Openings: Install frames in accordance with NFPA 80.
3. Floor Anchors: Secure with postinstalled expansion anchors.

    a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.

4. Solidly pack mineral-fiber insulation inside frames.
5. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout or mortar.
6. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
7. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:

a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.

1. Non-Fire-Rated Steel Doors: Comply with ANSI/SDI A250.8.
2. Fire-Rated Doors: Install doors with clearances in accordance with NFPA 80.
3. Smoke-Control Doors: Install doors in accordance with NFPA 105.

D. Glazing: Comply with installation requirements in Section 08 80 00 "Glazing" and with hollow-metal manufacturer's written instructions.

3.3 FIELD QUALITY CONTROL

A. Inspection Agency: Engage a qualified inspector to perform inspections and to furnish reports to Architect.

B. Inspections:

1. Fire-Rated Door Inspections: Inspect each fire-rated door in accordance with NFPA 80, Section 5.2.
2. Egress Door Inspections: Inspect each door equipped with panic hardware, each door equipped with fire exit hardware, each door located in an exit enclosure, each electrically controlled egress door, and each door equipped with special locking arrangements in accordance with NFPA 101, Section 7.2.1.15.

C. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

D. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

E. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80 and NFPA 101.

3.4 REPAIR

A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

B. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

C. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION 08 11 13

SECTION 08 14 16
FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Flush Wood Doors.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product, including the following:

1. Door core materials and construction.
2. Door edge construction
3. Door face type and characteristics.
4. Door trim for openings.
5. Factory-machining criteria.
6. Factory- finishing specifications.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data; and the following:

1. Door schedule indicating door location, type, size, fire protection rating, and swing.
2. Door elevations, dimension and locations of hardware, lite and cutouts, and glazing thicknesses.
3. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
4. Dimensions and locations of blocking for hardware attachment.
5. Dimensions and locations of mortises and holes for hardware.
6. Clearances and undercuts.
7. Requirements for veneer matching.
8. Doors to be factory finished and application requirements.
9. Apply AWI Quality Certification Program label to Shop Drawings.

C. Samples for Initial Selection: For factory-finished doors.

D. Samples for Verification:

1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species and transparent finish, provide set of three Samples showing typical range of color and grain to be expected in finished Work.
2. Corner sections of doors, approximately 8 by 10 inches, with door faces and edges representing actual materials to be used.
3. Frames for light openings, 6 inches long, for each material, type, and finish required.

1.5 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

B. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Special warranties.

B. Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.

C. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.7 QUALITY ASSURANCE

A. Manufacturer's Certification: Licensed participant in AWI's Quality Certification Program.

B. Fire-Rated Door Inspector Qualifications: Inspector for field quality-control inspections of fire-rated door assemblies shall comply with qualifications set forth in NFPA 80, Section 5.2.3.1 and the following:

1. DHI's Fire and Egress Door Assembly Inspector (FDAI) certification.

C. Egress Door Inspector Qualifications: Inspector for field quality-control inspections of egress door assemblies shall comply with qualifications set forth in NFPA 101, Section 7.2.1.15.4 and the following:

1. DHI's Fire and Egress Door Assembly Inspector (FDAI) certification.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in plastic bags or cardboard cartons.

C. Mark each door on bottom with opening number used on Shop Drawings.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and HVAC system is operating and maintaining temperature and relative humidity at levels designed for building occupants for the remainder of construction period.

1.10 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Delamination of veneer.
b. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
c. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.

2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
3. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Rated Wood Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated on Drawings, based on testing at positive pressure in accordance with UL 10C or NFPA 252.

B. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing in accordance with UL 1784 and installed in compliance with NFPA 105.

2.2 FLUSH WOOD DOORS, GENERAL

A. Quality Standard: In addition to requirements specified, comply with AWI/AWMAC/WI's "Architectural Woodwork Standards."

1. Provide labels and certificates from AWI certification program indicating that doors comply with requirements of grades specified.
2. The Contract Documents contain requirements that are more stringent than the referenced quality standard. Comply with the Contract Documents in addition to those of the referenced quality standard.

2.3 SOLID-CORE FLUSH WOOD VENEER-FACED DOORS

A. Interior Doors:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Eggers Industries.
   b. Masonite Architectural.
   c. Oshkosh Door Company.
   d. VT Industries Inc.

2. Performance Grade: ANSI/WDMA I.S. 1A Extra Heavy Duty.
3. Architectural Woodwork Standards Grade: Premium.
4. Faces: Single-ply wood veneer not less than 1/50 inch thick.

   a. Species: As indicated on the Interior Finish Schedule.
   b. Cut: As indicated on the Interior Finish Schedule.
   c. Color: As indicated on the Interior Finish Schedule.
   d. Match between Veneer Leaves: Match Architects Sample.

5. Exposed Vertical and Top Edges: Same species as faces or a compatible species - Architectural Woodwork Standards edge Type A.

   a. Fire-Rated Single Doors: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed vertical edges.
   b. Fire-Rated Pairs of Doors: Provide fire-retardant stiles that are listed and labeled for applications indicated without formed-steel edges and astragals. Provide stiles with concealed intumescent seals. Comply with specified requirements for exposed edges.
   c. Mineral-Core Doors: At hinge stiles, provide laminated-edge construction with improved screw-holding capability and split resistance. Comply with specified requirements for exposed edges.

      1) Screw-Holding Capability: 550 lbf in accordance with WDMA T.M. 10.

6. Core for Non-Fire-Rated Doors:

   a. ANSI A208.1, Grade LD-2 particleboard.

      1) Provide doors with glued-wood-stave or WDMA I.S. 10 structural-composite-lumber cores instead of particleboard cores for doors scheduled to receive exit devices in Section 08 71 00 "Door Hardware."

   b. Glued wood stave.
   c. WDMA I.S. 10 structural composite lumber.

      1) Screw Withdrawal, Door Face: 550 lbf.
      2) Screw Withdrawal, Vertical Door Edge: 550 lbf.

   d. Either glued wood stave or WDMA I.S. 10 structural composite lumber.

7. Core for Fire-Rated Doors: As required to achieve fire-protection rating indicated on Drawings.

    a. Blocking for Mineral-Core Doors: Provide composite blocking with improved screw-holding capability approved for use in doors of fire-protection ratings indicated on Drawings as needed to eliminate through-bolting hardware.

8. Construction: Five or Seven plies, hot-pressed bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before veneering.

2.4 LIGHT FRAMES

A. Metal Frames for Light Openings: Manufacturer's standard frame formed of 0.048-inch-thick, cold-rolled steel sheet; with baked-enamel- or powder-coated finish; and approved for use in doors of fire-protection rating indicated on Drawings.

1. Metal and Finish: Hot-dip galvanized steel, 0.040 inch thick, with baked-enamel- or powder-coated finish.

2.5 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated.

1. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
2. Comply with NFPA 80 requirements for fire-rated doors.

B. Factory machine doors for hardware that is not surface applied.

1. Locate hardware to comply with DHI-WDHS-3.
2. Comply with final hardware schedules, door frame Shop Drawings, ANSI/BHMA-156.115-W, and hardware templates.
3. Coordinate with hardware mortises in metal frames, to verify dimensions and alignment before factory machining.
4. For doors scheduled to receive electrified locksets, provide factory-installed raceway and wiring to accommodate specified hardware.
5. Metal Astragals: Factory machine astragals and formed-steel edges for hardware for pairs of fire-rated doors.

C. Transom and Side Panels:

1. Fabricate matching panels with same construction, exposed surfaces, and finish as specified for associated doors.
2. Finish bottom edges of transoms and top edges of rabbeted doors same as door stiles.
3. Fabricate door and transom panels with full-width, solid-lumber, rabbeted, meeting rails.
4. Provide factory-installed spring bolts for concealed attachment into jambs of metal door frames.

D. Openings: Factory cut and trim openings through doors.

1. Light Openings: Trim openings with moldings of material and profile indicated.

2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 08 80 00 "Glazing."

2.6 FACTORY FINISHING

A. Comply with referenced quality standard for factory finishing.

1. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
2. Finish faces, all four edges, edges of cutouts, and mortises.
3. Stains and fillers may be omitted on bottom edges, edges of cutouts, and mortises.

B. Factory finish doors.

C. Transparent Finish:

1. Architectural Woodwork Standards Grade: Premium.
2. Finish: ANSI/WDMA I.S. 1A TR-6 Catalyzed Polyurethane.
3. Staining: Match Architect's sample.
4. Effect: Match Architect's sample.
5. Sheen: Match Architect's sample.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames, with Installer present, before hanging doors.

1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
2. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Hardware: For installation, see Section 08 71 00 "Door Hardware."

B. Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.

C. Job-Fitted Doors:

1. Align and fit doors in frames with uniform clearances and bevels as indicated below.

a. Do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors.

2. Machine doors for hardware.

3. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
4. Clearances:

    a. Provide 1/8 inch at heads, jambs, and between pairs of doors.
    b. Provide 1/8 inch from bottom of door to top of decorative floor finish or covering unless otherwise indicated on Drawings.
    c. Where threshold is shown or scheduled, provide 1/4 inch from bottom of door to top of threshold unless otherwise indicated.
    d. Comply with NFPA 80 for fire-rated doors.

5. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.
6. Bevel fire-rated doors 1/8 inch in 2 inches at lock edge; trim stiles and rails only to extent permitted by labeling agency.

D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 FIELD QUALITY CONTROL

A. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

B. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

C. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80 and NFPA 101.

3.4 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 08 14 16

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SECTION 08 31 13
ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes access doors and frames.

1.2 SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Samples: For each type of access door and frame and for each finish specified, complete assembly minimum 6 by 6 inches in size.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

2.2 ACCESS DOORS AND FRAMES

A. Flush Access Doors with Exposed Flanges - Masonry Walls:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Babcock-Davis.
b. JL Industries, Inc.; a division of the Activar Construction Products Group.
c. Karp Associates, Inc.
d. Milcor; Commercial Products Group of Hart & Cooley, Inc.
e. Nystrom, Inc.

2. Description: Face of door flush with frame, with exposed flange and concealed hinge.
3. Locations: Walls.
4. Door Size: 24” x 24” unless indicated otherwise.

5. Uncoated Steel Sheet for Door: Nominal 0.060 inch, 16 gage, factory primed.
6. Frame Material: Same material, thickness, and finish as door.
7. Latch and Lock: Cam latch, Key operated.
8. Hinges: Continuous Stainless Steel Piano type with pin.
9. Provide UL Labeled, fire-rated access doors and panels when required to be installed in fire-rated walls or ceilings.

B. Recessed Access Doors with Concealed Flanges - Drywall locations:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

   a. Babcock-Davis.
   b. JL Industries, Inc.; a division of the Activar Construction Products Group.
   c. Karp Associates, Inc.
   d. Milcor; Commercial Products Group of Hart & Cooley, Inc.
   e. Nystrom, Inc.

2. Description: Door face recessed for gypsum board infill; with concealed flange for gypsum board installation and concealed hinge.
3. Locations: Ceiling.
4. Door Size: 24” x 24” unless indicated otherwise.
5. Uncoated Steel Sheet for Door: Nominal 0.060 inch, 16 gage, factory primed.
6. Hinges: Continuous Stainless Steel Piano type with pin.
7. Latch and Lock: Cam latch, Key operated.
8. Provide UL Labeled, fire-rated access doors and panels when required to be installed in fire-rated walls or ceilings.

C. Provide one key-operated cam lock per access door. Furnish 2 keys per lock. Key locks alike, unless otherwise scheduled.

1. If only one latching device is required, then it shall be a key operated cam lock.

D. Provide UL Labeled, fire-rated access doors and panels when required to be installed in fire-rated walls or ceilings.

2.3 MATERIALS

A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

B. Steel Sheet: Uncoated or electrolytic zinc coated, ASTM A 879/A 879M, with cold-rolled steel sheet substrate complying with ASTM A 1008/A 1008M, Commercial Steel (CS), exposed.

C. Frame Anchors: Same material as door face.

D. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

2.4 FABRICATION

A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.

B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish mounting holes, attachment devices and fasteners of type required to secure access doors to types of supports indicated.

1. For concealed flanges with drywall bead, provide edge trim for gypsum panels securely attached to perimeter of frames.
2. For concealed flanges with plaster bead for full-bed plaster applications, provide zinc-coated expanded-metal lath and exposed casing bead welded to perimeter of frames.

D. Recessed Access Doors: Form face of panel to provide recess for application of applied finish. Reinforce panel as required to prevent buckling. Provide access sleeves for each latch operator and install in holes cut through finish.

1. For recessed doors with plaster infill, provide self-furring expanded-metal lath attached to door panel.

E. Latch and Lock Hardware:

1. Quantity: Furnish number of latches and locks required to hold doors tightly closed.

2.5 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Painted Finishes: Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

1. Factory Primed: Apply manufacturer's standard, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's written instructions for installing access doors and frames.

3.3 ADJUSTING

A. Adjust doors and hardware, after installation, for proper operation.

END OF SECTION 08 31 13

SECTION 08 33 23
OVERHEAD COILING DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Insulated service doors.

1.3 CODE COMPLIANCE

A. Exterior openings shall meet the requirements of the Florida Building Code.

1. Provide product evaluations and installation requirements indicating compliance with Code requirements.

1.4 ACTION SUBMITTALS

A. Product Approval: Submit current Product Approval documentation in accordance with the Florida Building Code.

B. Product Data: For each type and size of overhead coiling door and accessory.

1. Include construction details, material descriptions, dimensions of individual components, profiles for slats, and finishes.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.
3. Include description of automatic-closing device and testing and resetting instructions.

C. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.

1. Include plans, elevations, sections, and mounting details.
2. Include details of equipment assemblies, and indicate dimensions, required clearances, method of field assembly, components, and location and size of each field connection.
3. Include points of attachment and their corresponding static and dynamic loads imposed on structure.
4. For exterior components, include details of provisions for assembly expansion and contraction and for excluding and draining moisture to the exterior.
5. Show locations of controls, locking devices, and other accessories.

6. Include diagrams for power, signal, and control wiring.

D. Samples for Initial Selection: Manufacturer's finish charts showing full range of colors and textures available for units with factory-applied finishes.

1. Include similar Samples of accessories involving color selection.

E. Samples for Verification: For each type of exposed finish on the following components, in manufacturer's standard sizes:

1. Curtain slats.
2. Bottom bar with sensor edge.
3. Guides.
4. Brackets.
5. Hood.
6. Locking device(s).
7. Include similar Samples of accessories involving color selection.

1.5 CLOSEOUT SUBMITTALS

A. Special warranty.

B. Maintenance Data: For overhead coiling doors to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer for both installation and maintenance of units required for this Project.

1. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of doors that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain overhead coiling doors from single source from single manufacturer.

1. Obtain operators and controls from overhead coiling-door manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Structural Performance, Exterior Doors: Capable of withstanding the following design wind loads:

1. Design Wind Load: As indicated on Drawings.
2. Testing: According to ASTM E330/E330M.
3. Deflection Limits: Design overhead coiling doors to withstand design wind load without evidencing permanent deformation or disengagement of door components.
4. Operability under Wind Load: Design overhead coiling doors to remain operable under design wind load, acting inward and outward.

B. Windborne-Debris Impact Resistance: Provide overhead coiling doors that pass ASTM E1886 missile-impact and cyclic-pressure tests according to ASTM E1996 for Wind Zone indicated for enhanced protection.

1. Large-Missile Test: For overhead coiling doors located within 30 ft. of grade.

2.3 DOOR ASSEMBLY

A. Insulated Service Door: Overhead coiling door formed with curtain of interlocking metal slats.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Clopay Building Products.
b. Cookson; a CornellCookson company.
c. Cornell; a CornellCookson company.
d. Overhead Door Corporation.

B. Operation Cycles: Door components and operators capable of operating for not less than 50,000. One operation cycle is complete when a door is opened from the closed position to the fully open position and returned to the closed position.

1. Include tamperproof cycle counter.

C. Air Infiltration: Maximum rate of 0.4 cfm/sq. ft. at 15 and 25 mph when tested according to ASTM E283.

D. Insulated Door Curtain R-Value: 4.5 deg F x h x sq. ft./Btu.

E. Insulated Door Assembly U-Factor: 0.90 Btu/deg F x h x sq. ft..

F. Door Curtain Material: Galvanized steel.

G. Door Curtain Slats: Flat profile slats of 2-5/8-inch center-to-center height.

1. Insulated-Slat Interior Facing: Metal.
2. Gasket Seal. Manufacturer's standard continuous gaskets between slats.

H. Bottom Bar: Two angles, each not less than 1-1/2 by 1-1/2 by 1/8 inch thick; fabricated from hot-dip galvanized steel and finished to match door.

I. Curtain Jamb Guides: Galvanized steel with exposed finish matching curtain slats.

J. Hood: Match curtain material and finish.

1. Shape: As indicated on Drawings.
2. Mounting: As indicated on Drawings.

K. Locking Devices: Equip door with locking device assembly.

1. Locking Device Assembly: Single-jamb side locking bars, operable from inside with thumbturn outside with cylinder.

L. Electric Door Operator:

1. Usage Classification: Heavy duty, 25 or more cycles per hour and more than 90 cycles per day.
2. Operator Location: As indicated on Drawings.
3. Safety: Listed according to UL 325 by a qualified testing agency for commercial or industrial use; moving parts of operator enclosed or guarded if exposed and mounted at 8 ft. or lower.
4. Motor Exposure: Interior.
5. Emergency Manual Operation: Push-up type.
6. Obstruction-Detection Device: Automatic electric sensor edge on bottom bar.

a. Sensor Edge Bulb Color: As selected by Architect from manufacturer's full range.

7. Control Station(s): Where indicated on Drawings.

M. Curtain Accessories: Equip door with weatherseals.

N. Door Finish:

1. Baked-Enamel or Powder-Coated Finish: Color as selected by Architect from manufacturer's full range.
2. Interior Curtain-Slat Facing: Match finish of exterior curtain-slat face.

2.4 MATERIALS, GENERAL

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.5 DOOR CURTAIN MATERIALS AND CONSTRUCTION

A. Door Curtains: Fabricate overhead coiling-door curtain of interlocking metal slats, designed to withstand wind loading indicated, in a continuous length for width of door without splices. Unless otherwise indicated, provide slats of thickness and mechanical properties recommended by door manufacturer for performance, size, and type of door indicated, and as follows:

1. Steel Door Curtain Slats: Zinc-coated (galvanized), cold-rolled structural-steel sheet; complying with ASTM A653/A653M, with G90 zinc coating; nominal sheet thickness (coated) of 0.028 inch; and as required.

2. Metal Interior Curtain-Slat Facing: Match metal of exterior curtain-slat face, with minimum steel thickness of 0.010 inch.

B. Curtain Jamb Guides: Manufacturer's standard angles or channels and angles of same material and finish as curtain slats unless otherwise indicated, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading. Slot bolt holes for guide adjustment. Provide removable stops on guides to prevent overtravel of curtain.

2.6 HOODS

A. General: Form sheet metal hood to entirely enclose coiled curtain and operating mechanism at opening head. Contour to fit end brackets to which hood is attached. Roll and reinforce top and bottom edges for stiffness. Form closed ends for surface-mounted hoods and fascia for any portion of between-jamb mounting that projects beyond wall face. Equip hood with intermediate support brackets as required to prevent sagging.

1. Galvanized Steel: Nominal 0.028-inch-thick, hot-dip galvanized-steel sheet with G90 zinc coating, complying with ASTM A653/A653M.

2.7 LOCKING DEVICES

A. Locking Device Assembly: Fabricate with cylinder lock, spring-loaded dead bolt, operating handle, cam plate, and adjustable locking bars to engage through slots in tracks.

1. Lock Cylinders: As specified in Section 08 71 00 "Door Hardware".
2. Keys: Three for each cylinder.

B. Safety Interlock Switch: Equip power-operated doors with safety interlock switch to disengage power supply when door is locked.

2.8 CURTAIN ACCESSORIES

A. Weatherseals for Exterior Doors: Equip each exterior door with weather-stripping gaskets fitted to entire exterior perimeter of door for a weather-resistant installation unless otherwise indicated.

1. At door head, use 1/8-inch-thick, replaceable, continuous-sheet baffle secured to inside of hood or field-installed on the header.
2. At door jambs, use replaceable, adjustable, continuous, flexible, 1/8-inch-thick seals of flexible vinyl, rubber, or neoprene.

2.9 COUNTERBALANCE MECHANISM

A. General: Counterbalance doors by means of manufacturer's standard mechanism with an adjustable-tension, steel helical torsion spring mounted around a steel shaft and contained in a spring barrel connected to top of curtain with barrel rings. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.

B. Brackets: Manufacturer's standard mounting brackets of either cast iron or cold-rolled steel plate.

2.10 ELECTRIC DOOR OPERATORS

A. General: Electric door operator assembly of size and capacity recommended and provided by door manufacturer for door and operation-cycles requirement specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, control stations, control devices, integral gearing for locking door, and accessories required for proper operation.

1. Comply with NFPA 70.
2. Control equipment complying with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6, with NFPA 70 Class 2 control circuit, maximum 24-V ac or dc.

B. Usage Classification: Electric operator and components capable of operating for not less than number of cycles per hour indicated for each door.

C. Motors: Reversible-type motor with controller (disconnect switch) for motor exposure indicated for each door assembly.

1. Electrical Characteristics: Minimum as indicated for each door assembly. If not indicated, large enough to start, accelerate, and operate door in either direction from any position, at a speed not less than 8 in./sec. and not more than 12 in./sec., without exceeding nameplate ratings or service factor.
2. Operating Controls, Controllers, Disconnect Switches, Wiring Devices, and Wiring: Manufacturer's standard unless otherwise indicated.
3. Coordinate wiring requirements and electrical characteristics of motors and other electrical devices with building electrical system and each location where installed.

D. Limit Switches: Equip each motorized door with adjustable switches interlocked with motor controls and set to automatically stop door at fully opened and fully closed positions.

E. Obstruction-Detection Devices: External entrapment protection consisting of indicated automatic safety sensor capable of protecting full width of door opening. Activation of device immediately stops and reverses downward door travel.

1. Electric Sensor Edge: Automatic safety sensor edge, located within astragal or weather stripping mounted to bottom bar. Contact with sensor activates device. Connect to control circuit using manufacturer's standard take-up reel or self-coiling cable.

    a. Self-Monitoring Type: Four-wire-configured device designed to interface with door operator control circuit to detect damage to or disconnection of sensor edge.

F. Control Station: Three-button control station in fixed location with momentary-contact push-button controls labeled "Open" and "Stop" and sustained- or constant-pressure push-button control labeled "Close."

1. Interior-Mounted Units: Full-guarded, surface-mounted, heavy-duty type, with general-purpose NEMA ICS 6, Type 1 enclosure.
2. Exterior-Mounted Units: Full-guarded, standard-duty, surface-mounted, weatherproof type, NEMA ICS 6, Type 4 enclosure, key operated.

G. Emergency Manual Operation: Equip each electrically powered door with capability for emergency manual operation. Design manual mechanism so required force for door operation does not exceed 25 lbf.

H. Emergency Operation Disconnect Device: Equip operator with hand-operated disconnect mechanism for automatically engaging manual operator and releasing brake for emergency manual operation while disconnecting motor without affecting timing of limit switch. Mount mechanism so it is accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.

I. Motor Removal: Design operator so motor may be removed without disturbing limit-switch adjustment and without affecting emergency manual operation.

2.11 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM/NOMMA 500 for recommendations for applying and designating finishes.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.12 STEEL AND GALVANIZED-STEEL FINISHES

A. Baked-Enamel or Powder-Coat Finish: Manufacturer's standard baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates areas and conditions, with Installer present, for compliance with requirements for substrate construction and other conditions affecting performance of the Work.

B. Examine locations of electrical connections.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Install overhead coiling doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.

B. Install overhead coiling doors, hoods, controls, and operators at the mounting locations indicated for each door.

C. Accessibility: Install overhead coiling doors, switches, and controls along accessible routes in compliance with the accessibility standard.

D. Power-Operated Doors: Install according to UL 325.

3.3 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.
2. After electrical circuitry has been energized, operate doors to confirm proper motor rotation and door performance.
3. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.

3.4 ADJUSTING

A. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion.

1. Adjust exterior doors and components to be weather resistant.

B. Lubricate bearings and sliding parts as recommended by manufacturer.

C. Adjust seals to provide tight fit around entire perimeter.

3.5 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service includes 12 months' full maintenance by skilled employees of coiling-door Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door operation. Parts and supplies are to be manufacturer's authorized replacement parts and supplies.

1. Perform maintenance, including emergency callback service, during normal working hours.
2. Include 24-hour-per-day, seven-day-per-week, emergency callback service.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain overhead coiling doors.

END OF SECTION 08 33 23

SECTION 08 41 13
ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Exterior and Interior storefront.
2. Entrance doors and frames.

1.3 CODE COMPLIANCE

A. Exterior openings shall meet the requirements of the Florida Building Code.

1. Provide product evaluations and installation requirements indicating compliance with Code requirements.

1.4 SUBMITTALS

A. Product Approval: Submit current Product Approval documentation in accordance with the Florida Building Code.

B. Product Data: For each product specified. Include details of construction relative to materials, dimensions of individual components, profiles, and finishes.

C. Engineering Responsibility: Prepare engineering data, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project as prepared by a professional engineer registered in the state of Florida.

D. Testing and Labeling: Comply with the Building Code. Submit manufacturer’s certification indicating compliance.

E. Shop Drawings: Show details of fabrication and installation, including plans, elevations, sections, details of components, provisions for expansion and contraction, and attachments to other work.

1. Engineering Responsibility: Prepare engineering data for storefront and entrance systems, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project as prepared by a professional engineer registered in the state of Florida.

    a. Include structural analysis data signed and sealed by professional engineer registered in the state of Florida responsible for their preparation.
    b. Show details of fabrication and installation, including plans, elevations, sections, details of components, provisions for expansion and contraction, and attachments to other work.
    c. Include all drawings and installation details required to ensure the elements installed on this Project will be installed in the same manner as they were tested and approved.

F. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.

G. Samples for Verification: Of exposed finish selected in manufacturer's standard sizes.

H. Samples: For the following.

1. Aluminum Framing:

    a. Samples for Verification: Of exposed metal finish selected in manufacturer's standard sizes.

2. Glass: Glass products, in the form of 12-inch-square Samples for each type of glass indicated.

I. Test Reports: Provide certified test reports indicating compliance with the Building Code.

J. Field Test Reports: Field quality-control test reports.

K. Warranties: Warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Experienced Installers skilled in the successful installation of the specified materials and assemblies on similar projects for a minimum of five (5) years.

1. Engineering Responsibility: Preparation of data for storefront systems including the following:

    a. Shop Drawings based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
    b. Shop Drawings, pre-construction testing program development, and comprehensive engineering analysis by a qualified professional engineer.

B. Test Reports: Provide test reports from AAMA accredited laboratories certifying the performance as specified.

1. Test reports shall be accompanied by the window manufacturer’s letter of certification, stating the tested window meets or exceeds the referenced criteria for the appropriate ANSI/AAMA/NWWDA 101/I.S.2/NAFS-02 window type.

C. Source Limitations: Obtain aluminum windows through one source from a single manufacturer.

D. Glazing Publications: Comply with published recommendations of glass manufacturers and GANA's "Glazing Manual" unless more stringent requirements are indicated.

E. Preinstallation Conference: Conduct conference at Project site.

1. Inspect and discuss condition of substrate and other preparatory work performed by other trades.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review required testing and inspecting procedures.

F. Source Limitations for Glass: Obtain glass from one source from a single manufacturer for each glass type.

G. Welding Standards: Comply with applicable provisions of AWS D1.2, "Structural Welding Code--Aluminum."

1.6 MOCKUPS

A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Designate an installed unit as a mock-up for review by the Architect.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.8 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Environmental Limitations for Glass and Glazing: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install liquid glazing sealants when ambient and substrate temperature conditions are outside limits permitted by glazing sealant manufacturer or below 40 degrees F.

1.9 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including, but not limited to, excessive deflection.
b. Noise or vibration created by wind and thermal and structural movements.
c. Deterioration of metals and other materials beyond normal weathering.
d. Water penetration through fixed glazing and framing areas.
e. Failure of operating components.

2. Warranty Period: 10 years from date of Final Completion.

B. Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes do not comply with requirements or that fail in materials or workmanship within specified warranty period. Warranty does not include normal weathering.

1. Warranty Period: 10 years from date of Final Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Building Code Requirements: Provide storefront and entrance systems that complies with the requirements of the Florida Building Code.

B. Delegated Design: Engage a qualified professional engineer to design aluminum-framed entrances and storefronts.

C. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure, including, but not limited to, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.

2. Failure also includes the following:

    a. Thermal stresses transferring to building structure.
    b. Glass breakage.
    c. Noise or vibration created by wind and thermal and structural movements.
    d. Loosening or weakening of fasteners, attachments, and other components.

D. Structural Loads:

1. Wind Loads: As indicated on Drawings.

E. Structural: Test in accordance with ASTM E330/E330M as follows:

1. When tested at positive and negative wind-load design pressures, storefront assemblies, including entrance doors, do not evidence deflection exceeding specified limits.
2. When tested at 150 percent of positive and negative wind-load design pressures, storefront assemblies, including entrance doors and anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
3. Test Durations: As required by design wind velocity, but not less than 10 seconds.

F. Water Penetration under Static Pressure: Test in accordance with ASTM E331 as follows:

1. No evidence of water penetration through fixed glazing and framing areas, including entrance doors, when tested in accordance with a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 10 lbf/sq. ft.

G. Water Penetration under Dynamic Pressure: Test in accordance with AAMA 501.1 as follows:

1. No evidence of water penetration through fixed glazing and framing areas when tested at dynamic pressure equal to 20 percent of positive wind-load design pressure, but not less than 10 lbf/sq. ft..
2. Maximum Water Leakage: No uncontrolled water penetrating assemblies or water appearing on assemblies' normally exposed interior surfaces from sources other than condensation. Water leakage does not include water controlled by flashing and gutters, or water that is drained to exterior.

3. Air Leakage:

    a. Fixed Glazing and Framing Areas: Air leakage for the system of not more than 0.06 cfm/sq. ft. at a static-air-pressure differential of 6.24 lbf/sq. ft. when tested in accordance with ASTM E283.
    b. Entrance Doors: Air leakage of not more than 1.0 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft..

H. Windborne-Debris Impact Resistance: Passes ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996 for Wind Zone indicated.

1. Large-Missile Test: For glazing located within 30 feet of grade.

I. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 GLAZING

A. Glazing: Comply with Section 08 80 00 "Glazing."

2.3 EXTERIOR STOREFRONT SYSTEMS

A. Basis-of-Design Product: Subject to compliance with requirements, provide YKK AP America Inc; Model YHS50FI, or a comparable product by one of the following:

1. EFCO Corporation.
2. Kawneer North America, an Arconic company.

B. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Exterior Framing Construction: Thermally broken.
2. Glazing System: Retained mechanically with gaskets on four sides.
3. Glazing Plane: Front.
4. Finish: Clear Anodized.
5. Fabrication Method: Field-fabricated stick system.
6. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
7. Steel Reinforcement: As required by manufacturer.

C. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.

D. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

2.4 INTERIOR STOREFRONT SYSTEMS

A. Basis-of-Design Product: Subject to compliance with requirements, provide YKK AP America Inc; Model YES 40FS, or a comparable product by one of the following:

1. EFCO Corporation.
2. Kawneer North America, an Arconic company.

B. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Glazing System: Retained mechanically with gaskets on four sides.
2. Glazing Plane: Center.
3. Finish: Clear Anodized.
4. Fabrication Method: Field-fabricated stick system.
5. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
6. Steel Reinforcement: As required by manufacturer.

C. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.

D. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

2.5 ENTRANCE DOOR SYSTEMS

A. Basis-of-Design Product: Subject to compliance with requirements, provide YKK AP America Inc; Model 50H or a comparable product by one of the following:

1. EFCO Corporation.
2. Kawneer North America, an Arconic company.

B. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation.

1. Door Construction: 1-3/4-inch overall thickness, with minimum 0.125-inch-thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
2. Door Design: Wise stile; 5-inch nominal width.
3. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.

    a. Provide nonremovable glazing stops on outside of door.

4. Finish: Match adjacent storefront framing finish.

2.6 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated, complying with the requirements of standards indicated below.

1. Sheet and Plate: ASTM B 209.
2. Extruded Bars, Rods, Shapes, and Tubes: ASTM B 221.
3. Extruded Structural Pipe and Tubes: ASTM B 429.
4. Bars, Rods, and Wire: ASTM B 211.
5. Welding Rods and Bare Electrodes: AWS A5.10.

B. Steel Reinforcement: Complying with ASTM A 36 for structural shapes, plates, and bars; ASTM A 611 for cold-rolled sheet and strip; or ASTM A 570 for hot-rolled sheet and strip.

C. Glazing Gaskets: As required to comply with system performance requirements. Provide gasket assemblies that have corners sealed with sealant recommended by gasket manufacturer.

D. Spacers, Setting Blocks, Gaskets, and Bond Breakers: Manufacturer's standard permanent, nonmigrating types in hardness recommended by manufacturer, compatible with sealants, and suitable for system performance requirements.

E. Framing system gaskets, sealants, and joint fillers as recommended by manufacturer for joint type.

F. Compression Glazing Strips and Weather-Stripping: Provide compressible weather stripping designed for permanently resilient sealing under bumper or wiper action, and completely concealed when aluminum window is closed.

1. Weather-Stripping Material: Elastomeric cellular preformed gaskets complying with ASTM C 509.
2. Weather-Stripping Material: Dense elastomeric gaskets complying with ASTM C 864
3. Weather-Stripping Material: Manufacturer's standard system and materials complying with AAMA/NWWDA 101/I.S.2.

2.7 COMPONENTS

A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Reinforce members as required to retain fastener threads.
2. Do not use exposed fasteners, except for hardware application. For hardware application, use countersunk Phillips flat-head machine screws finished to match framing members or hardware being fastened, unless otherwise indicated.

B. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123 or ASTM A 153 requirements.

2.8 ENTRANCE DOOR HARDWARE

A. Refer to section 08 71 00 “Door Hardware.”

2.9 FABRICATION

A. General: Fabricate components that, when assembled, will have accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

1. Fabricate components for screw-spline (concealed fastener) frame construction.
2. Forming: Form shapes with sharp profiles, straight and free of defects or deformations, before finishing.
3. Prepare components to receive concealed fasteners and anchor and connection devices.
4. Fabricate components to drain water passing joints and condensation and moisture occurring or migrating within the system to the exterior.

B. Welding: Weld components to comply with referenced AWS standard. Weld before finishing components to greatest extent possible. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Glazing Channels: Provide minimum clearances for thickness and type of glass indicated according to FGMA's "Glazing Manual."

D. Metal Protection: Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

2.10 ALUMINUM FINISH

A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of glazing systems. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Comply with manufacturer's written instructions for protecting, handling, and installing glazing systems. Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure non-movement joints. Seal joints watertight.

B. Metal Protection: Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Install the system plumb and true in alignment with established lines and grades without warp or rack. Lubricate operating hardware and other moving parts according to hardware manufacturers' written instructions.

D. Install glazing to comply with requirements of Division 08 Section "Glazing," unless otherwise indicated.

E. Install perimeter sealant to comply with requirements of Division 07 Section "Joint Sealants," unless otherwise indicated.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Field Quality-Control Testing: Perform the following test on representative areas of aluminum-framed entrances and storefronts.

1. Water-Spray Test: Before installation of interior finishes has begun, areas designated by Architect shall be tested in accordance with AAMA 501.2 and shall not evidence water penetration.

    a. Perform a minimum of three tests in areas as directed by Architect.
    b. Perform tests in each test area as directed by Architect. Perform at least three tests, prior to 10, 35, and 70 percent completion.

2. Air Leakage: ASTM E783 at 1.5 times the rate specified for laboratory testing in "Performance Requirements" Article but not more than 0.09 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft..

    a. Perform a minimum of three tests in areas as directed by Architect.
    b. Perform tests in each test area as directed by Architect. Perform at least three tests, prior to 10, 35, and 70 percent completion.

3. Water Penetration: ASTM E1105 at a minimum uniform and cyclic static-air-pressure differential of 0.67 times the static-air-pressure differential specified for laboratory testing in "Performance Requirements" Article, but not less than 6.24 lbf/sq. ft., and shall not evidence water penetration.

C. Aluminum-framed entrances and storefronts will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

3.4 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer that ensure glazing systems are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 08 41 13

SECTION 08 44 13
GLAZED ALUMINUM CURTAIN WALLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Aluminum curtain wall systems.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 CODE COMPLIANCE

A. Exterior openings shall meet the requirements of the Florida Building Code.

1. Provide product evaluations and installation requirements indicating compliance with Code requirements.

1.5 SUBMITTALS

A. Product Approval: Submit current Product Approval documentation in accordance with the Florida Building Code.

B. Engineering Responsibility: Prepare engineering data, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project as prepared by a professional engineer registered in the state of the project.

C. Testing and Labeling: Comply with the Building Code. Submit manufacturer’s certification indicating compliance.

D. Product Data: For each product specified. Include details of construction relative to materials, dimensions of individual components, profiles, and finishes.

E. Shop Drawings: Show details of fabrication and installation, including plans, elevations, sections, details of components, provisions for expansion and contraction, and attachments to other work.

1. Engineering Responsibility: Prepare engineering data for Glazed Aluminum Curtain Wall Systems, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project as prepared by a professional engineer registered in the state of the project.

    a. Include structural analysis data signed and sealed by professional engineer registered in the state of the project responsible for their preparation.
    b. Show details of fabrication and installation, including plans, elevations, sections, details of components, provisions for expansion and contraction, and attachments to other work.
    c. Include all drawings and installation details required to ensure the elements installed on this Project will be installed in the same manner as they were tested and approved.

F. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.

G. Samples for Verification: Of exposed finish selected in manufacturer's standard sizes.

H. Samples: For the following.

1. Aluminum Framing:

    a. Samples for Verification: Of exposed metal finish selected in manufacturer's standard sizes.

2. Sample of Approved Product Label and location of attachment to assembly.

3. Glass: Glass products, in the form of 12-inch-square Samples for each type of glass indicated.

I. Test Reports: AAMA accredited laboratories certifying the performance as specified.

J. Field Test Reports: Field quality-control test reports.

K. Warranties: Warranties specified in this Section.

L. Pre-Installation Minutes: Submit pre-installation conference meeting minutes.

1.6 QUALITY ASSURANCE

A. Mock-Ups (Field Constructed): Install at project site a job mock-up using acceptable products and manufacturer approved installation methods. Obtain Owner's and Architect's acceptance of finish color, and workmanship standard.

1. Build mockup of typical wall area as shown on Drawings.

    a. Mock-Up Size: As directed by the Architect.

2. Maintenance: Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.

3. Incorporation: Mock-up may be incorporated into final construction upon Owner's approval.

B. Installer Qualifications: Engage an experienced installer to assume engineering responsibility and perform work of this Section who has specialized in installing glazing systems similar to those required for this Project and who is acceptable to manufacturer.

1. Engineering Responsibility: Preparation of engineering data including the following:

a. Shop Drawings based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
b. Shop Drawings, pre-construction testing program development, and comprehensive engineering analysis by a qualified professional engineer registered in the state of the project.

C. Pre-Installation Conference: Conduct conference at Project site.

1. Review structural load limitations.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review required testing, inspecting, and certifying procedures.

D. Source Limitations: Obtain each type of Glazed Aluminum Curtain Wall Systems through one source from a single manufacturer.

E. Source Limitations for Glass: Obtain glass from one source from a single manufacturer for each glass type.

F. Welding Standards: Comply with applicable provisions of AWS D1.2, "Structural Welding Code--Aluminum."

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.8 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.9 WARRANTY

A. Manufacturer’s Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of Glazed Aluminum curtain wall systems that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including, but not limited to, excessive deflection.
b. Noise or vibration caused by thermal movements.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
d. Adhesive or cohesive sealant failures.
e. Water leakage through fixed glazing and framing areas.
f. Failure of operating components.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D 4214.
c. Cracking, peeling, or chipping.

2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, to design aluminum-framed entrances and storefronts.

B. Building Code Requirements: Provide Glazed Aluminum curtain wall systems that complies with the requirements of the International Building Code.

C. Performance Requirements: Provide Glazed Aluminum curtain wall systems capable of withstanding loads and thermal and structural movement requirements indicated without failure, based on testing manufacturer's standard units in assemblies similar to those indicated for this Project.

D. Glazing Systems: Provide Glazed Aluminum curtain wall systems capable of withstanding normal thermal movement and wind without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

E. Structural Loads:

1. Wind Loads: As indicated.

F. Dimensional Tolerances: Provide Glazed Aluminum curtain wall systems systems that accommodate dimensional tolerances of building frame and other adjacent construction.

G. Air Infiltration: Completed Glazed Aluminum curtain wall systems systems shall have 0.06 CFM/FT² maximum allowable infiltration when tested in accordance with ASTM E 283 at differential static pressure of 6.24 PSF.

H. Water Infiltration: Field test Glazed Aluminum curtain wall systems in accordance with AAMA 503. Fastener Heads must be seated and sealed against Sill Flashing on any fasteners that penetrate through the Sill Flashing.

I. Water Leakage: None, when measured in accordance with a test pressure difference of 15 lbf/sq. ft.

J. Deflection: Maximum allowable deflection in any member when tested in accordance with ASTM E 330 with allowable stress in accordance with AA Specifications for Aluminum Structures.

1. Limit mullion deflection to L/240 of span with full recovery of glazing materials.

K. System Assembly: Accommodate without damage to components or deterioration of seals, movement within system, movement between system and peripheral construction, dynamic loading and release of loads, deflection of structural support framing.

L. Thermal Movement: Provide for thermal movement caused by 180 degrees F over a 12 hour period surface temperature, without causing buckling stresses on glass, joint seal failure, undue stress on structural elements, damaging loads on fasteners, reduction of performance, or detrimental effects.

M. Windborne-Debris Impact Resistance: Passes ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996 for Wind Zone indicated.

1. Large-Missile Test: For glazing located within 30 feet of grade.

N. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes:

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

O. Thermal Performance: When tested in accordance with AAMA 507, AAMA 1503 and NFRC 100:

1. Match Window Glazing See section 08 80 00 “Glazing.”

P. Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to the exterior by a weep drainage network.

2.2 ALUMINUM CURTAIN WALL SYSTEMS

A. Model and Manufacturer – Basis of Design; YKK, AP America YHC 300 OG.

1. Or a comparable product by one of the following:

a. EFCO Corporation.
b. Kawneer an Alcoa Company.

2. Framing Member Depth: 9-Inches.
3. Finish: Clear Anodized.

2.3 ENTRANCE DOORS

A. Refer to Section 08 41 13 “Aluminum-Framed Entrances and Storefronts.”

2.4 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated, complying with the requirements of standards indicated below.

1. Sheet and Plate: ASTM B 209.
2. Extruded Bars, Rods, Shapes, and Tubes: ASTM B 221.
3. Extruded Structural Pipe and Tubes: ASTM B 429.
4. Bars, Rods, and Wire: ASTM B 211.
5. Welding Rods and Bare Electrodes: AWS A5.10.

B. Steel Reinforcement: Complying with ASTM A 36 for structural shapes, plates, and bars; ASTM A 611 for cold-rolled sheet and strip; or ASTM A 570 for hot-rolled sheet and strip.

1. Manufacturer's standard corrosion-resistant primer complying with SSPC-PS Guide No. 12.00 applied immediately after surface preparation and pretreatment.

C. Glass Type: Refer to Section 08 80 00 “Glazing.”

D. Glazing Gaskets: Manufacturer's standard pressure-glazing system of black, resilient glazing gaskets, setting blocks, and shims or spacers, fabricated from an elastomer of type and in hardness recommended by system and gasket manufacturer to comply with system performance requirements. Provide gasket assemblies that have corners sealed with sealant recommended by gasket manufacturer.

E. Spacers, Setting Blocks, Gaskets, and Bond Breakers: Manufacturer's standard permanent, nonmigrating types in hardness recommended by manufacturer, compatible with sealants, and suitable for system performance requirements.

F. Secondary Sealant: For use as weatherseal, compatible with structural silicone sealant and other system components with which it comes in contact, and that accommodates a 50 percent increase or decrease in joint width at the time of application when measured according to ASTM C 719.

1. Color: As selected by Architect from manufacturer's full range of colors.

G. Framing system gaskets, sealants, and joint fillers as recommended by manufacturer for joint type.

2.5 COMPONENTS

A. Brackets and Reinforcements: Provide manufacturer's standard brackets and reinforcements that are compatible with adjacent materials. Provide nonstaining, nonferrous shims for aligning system components.

B. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Reinforce members as required to retain fastener threads.
2. Do not use exposed fasteners, except for hardware application. For hardware application, use countersunk Phillips flat-head machine screws finished to match framing members or hardware being fastened, unless otherwise indicated.

C. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123 or ASTM A 153 requirements.

D. Concealed Flashing: Dead-soft, 0.018-inch-thick stainless steel, complying with ASTM A 666, of type selected by manufacturer for compatibility with system.

2.6 FABRICATION

A. General: Fabricate components that, when assembled, will have accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

1. Fabricate components for screw-spline (concealed fastener) frame construction.
2. Prepare components to receive concealed fasteners and anchor and connection devices.
3. Fabricate components to drain water passing joints and condensation and moisture occurring or migrating within the system to the exterior.

B. Forming: Form shapes with sharp profiles, straight and free of defects or deformations, before finishing.

C. Welding: Weld components to comply with referenced AWS standard. Weld before finishing components to greatest extent possible. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

D. Glazing Channels: Provide minimum clearances for thickness and type of glass indicated according to FGMA's "Glazing Manual."

E. Metal Protection: Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

2.7 ALUMINUM FINISH

A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of Glazed Aluminum Curtain Wall systems. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Comply with manufacturer's written instructions for protecting, handling, and installing Glazed Aluminum Curtain Wall systems. Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure nonmovement joints. Seal joints watertight.

1. Furnish and apply sealing materials to provide a weather tight installation at all joints and intersections and at opening perimeters.

B. Metal Protection: Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Install components to drain water passing joints and condensation and moisture occurring or migrating within the system to the exterior.

D. Set continuous sill members and flashing in a full sealant bed to provide weathertight construction, unless otherwise indicated. Comply with requirements of Division 7 Section "Joint Sealants."

E. Install framing components plumb and true in alignment with established lines and grades without warp or rack of framing members.

F. Install entrances plumb and true in alignment with established lines and grades without warp or rack. Lubricate operating hardware and other moving parts according to hardware manufacturers' written instructions.

1. Install surface-mounted hardware according to manufacturer's written instructions using concealed fasteners to greatest extent possible.

G. Install glazing to comply with requirements of Division 8 Section "Glazing," unless otherwise indicated.

1. Prepare surfaces that will contact structural sealant according to sealant manufacturer's written instructions to ensure compatibility and adhesion. Preparation includes, but is not limited to, cleaning and priming surfaces.
2. Install structural silicone sealant according to sealant manufacturer's written instructions.
3. Mechanically fasten glazing in place until structural sealant is cured.
4. Remove excess sealant from component surfaces before sealant has cured.

H. Install secondary-sealant weatherseal according to sealant manufacturer's written instructions to provide weatherproof joints. Install joint fillers behind sealant as recommended by sealant manufacturer.

I. Install perimeter sealant to comply with requirements of Division 7 Section "Joint Sealants," unless otherwise indicated.

J. Erection Tolerances: Install Glazed Aluminum Curtain Wall systems to comply with the following maximum tolerances:

1. Variation from Plane: Limit variation from plane or location shown to 1/8 inch in 12 feet; 1/4 inch over total length.
2. Alignment: Where surfaces abut in line, limit offset from true alignment to 1/16 inch. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch.
3. Diagonal Measurements: Limit difference between diagonal measurements to 1/8 inch.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Field Quality-Control Testing: Perform the following test on representative areas of glazed aluminum curtain walls.

1. Water-Spray Test: Before installation of interior finishes has begun, areas designated by Architect shall be tested according to AAMA 501.2 and shall not evidence water penetration.

    a. Perform a minimum of three tests in areas as directed by Architect.
    b. Perform tests in each test area as directed by Architect. Perform at least three tests, prior to 10, 35, and 70 percent completion.

2. Air Infiltration: ASTM E783 at 1.5 times the rate specified for laboratory testing in "Performance Requirements" Article but not more than 0.09 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft..

    a. Perform a minimum of three tests in areas as directed by Architect.
    b. Perform tests in each test area as directed by Architect. Perform at least three tests, prior to 10, 35, and 70 percent completion.

3. Water Penetration: ASTM E1105 at a minimum uniform and cyclic static-air-pressure differential of 0.67 times the static-air-pressure differential specified for laboratory testing in "Performance Requirements" Article, but not less than 6.24 lbf/sq. ft., and shall not evidence water penetration.

C. Structural-Sealant Adhesion: Test structural sealant according to recommendations in ASTM C1401, Destructive Test Method A, "Hand Pull Tab (Destructive)," Appendix X2.

1. Test a minimum of four areas on each building facade.
2. Repair installation areas damaged by testing.

D. Glazed aluminum curtain walls will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports.

3.4 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer that ensure Glazed Aluminum Curtain Wall systems are without damage or deterioration at the time of Substantial Completion.

3.5 ADJUSTING

A. Entrances: Adjust operating hardware for smooth operation according to hardware manufacturers' written instructions.

1. For doors accessible to people with disabilities, adjust closers to provide a 3-second closer sweep period for doors to move from a 70-degree open position to 3 inches from the latch measured to the leading door edge.

END OF SECTION 08 44 13

SECTION 087100
DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes commercial door hardware for the following:

1. Swinging doors.
2. Other doors to the extent indicated.

B. Door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.
2. Electromechanical door hardware.
3. Cylinders specified for doors in other sections.

C. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ANSI/SDI A250.13 - Testing and Rating of Severe Windstorm Resistant Components for Swing Door Assemblies.
3. ICC/IBC - International Building Code.
4. NFPA 70 - National Electrical Code.
5. NFPA 80 - Fire Doors and Windows.
6. NFPA 101 - Life Safety Code.
7. NFPA 105 - Installation of Smoke Door Assemblies.
8. State Building Codes, Local Amendments.

D. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:

1. ANSI/BHMA Certified Product Standards - A156 Series.
2. UL10C - Positive Pressure Fire Tests of Door Assemblies.

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."

2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.

3. Content: Include the following information:

   a. Type, style, function, size, label, hand, and finish of each door hardware item.
   b. Manufacturer of each item.
   c. Fastenings and other pertinent information.
   d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
   e. Explanation of abbreviations, symbols, and codes contained in schedule.
   f. Mounting locations for door hardware.
   g. Door and frame sizes and materials.
   h. Warranty information for each product.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:

   a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
   b. Complete (risers, point-to-point) access control system block wiring diagrams.
   c. Wiring instructions for each electronic component scheduled herein.

2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

E. Informational Submittals:

1. Hurricane Resistant Openings (State of Florida): Within the State of Florida, provide copy of current State of Florida Product Approval or Metro-Dade County Notice of Acceptance (NOA) as proof of compliance that doors, frames and hardware for exterior opening assemblies have been tested and approved for use at the wind load and design pressure level requirements specified for the Project.

    a. Hurricane Resistant Components (State of Florida): Within the State of Florida, provide copy of independent, third party certified listing to ANSI A250.13.

2. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

F. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

1.4 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.

2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

F. Hurricane Resistant Exterior Openings (State of Florida including the High Velocity Hurricane Zone (HVHZ)): Provide exterior door hardware as complete and tested assemblies, or component assemblies, including approved doors and frames specified under Section 081113 "Hollow Metal Doors and Frames", to meet the wind loads, design pressures, debris impact resistance, and glass and glazing requirements as detailed in the current State of Florida building code sections applicable to the Project.

1. Each unit to bear third party permanent label in accordance with the Florida Building Code requirements.

G. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

H. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

I. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

J. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.

C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.

D. Special Warranty Periods:

1. Ten years for mortise locks and latches.
2. Five years for exit hardware.
3. Twenty five years for manual overhead door closer bodies.
4. Five years for motorized electric latch retraction exit devices.
5. Two years for electromechanical door hardware, unless noted otherwise.

1.8 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.

B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:

1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.

C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity:

a. Two Hinges: For doors with heights up to 60 inches.
b. Three Hinges: For doors with heights 61 to 90 inches.
c. Four Hinges: For doors with heights 91 to 120 inches.
d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

a. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.
b. Sizes from 3’1” to 4’0”: 5” standard or heavy weight as specified.

3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:

a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

4. Hinge Options: Comply with the following:

a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.

5. Manufacturers:

a. Hager Companies (HA).
b. McKinney (MK).
c. Stanley Hardware (ST).

B. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 certified continuous geared hinge. with minimum 0.120-inch thick extruded 6063-T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Manufacturers:

a. Pemko (PE).

2.3 POWER TRANSFER DEVICES

A. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Manufacturers:

a. Pemko (PE) - EL-CEPT Series.
b. Securitron (SU) - EL-CEPT Series.

B. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

1. Provide one each of the following tools as part of the base bid contract:

   a. McKinney (MK) - Electrical Connecting Kit: QC-R001.
   b. McKinney (MK) - Connector Hand Tool: QC-R003.

2. Manufacturers:

   a. Hager Companies (HA) - Quick Connect.
   b. McKinney (MK) - QC-C Series.
   c. Stanley Hardware (ST) - WH Series.

2.4 DOOR OPERATING TRIM

A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified.

1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
2. Furnish dust proof strikes for bottom bolts.
3. Surface bolts to be minimum 8” in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.

5. Manufacturers:

   a. Ives (IV).
   b. Rockwood (RO).
   c. Trimco (TC).

B. Coordinators: ANSI/BHMA A156.3 certified door coordinators consisting of active-leaf, hold-open lever and inactive-leaf release trigger. Model as indicated in hardware sets.

1. Manufacturers:

   a. Ives (IV).
   b. Rockwood (RO).
   c. Trimco (TC).

C. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.

1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
4. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.

5. Manufacturers:

    a. Ives (IV).
    b. Rockwood (RO).
    c. Trimco (TC).

2.5 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.

C. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats and types:

1. Threaded mortise cylinders with rings and cams to suit hardware application.
2. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3. Bored or cylindrical lock cylinders with tailpieces as required to suit locks.
4. Tubular deadlocks and other auxiliary locks.
5. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
6. Keyway: Match Facility Restricted Keyway.

D. Removable Cores: Provide removable cores as specified, core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware.

E. Security Cylinders: ANSI/BHMA A156.5, Grade 1 Certified Products Directory (CPD) listed security cylinders and keys able to be used together under the same facility master or grandmaster key system. Cylinders to be factory keyed.

1. New security key systems shall not be established with products that have an expired patent. Expired systems shall only be specified and supplied to support existing systems.

2. Manufacturers:

    a. Corbin Russwin (RU) - Access 3 AS.
    b. Sargent (SA) - Degree DG2.

F. Patented Cylinders: ANSI/BHMA A156.5, Grade 1 Certified Products Directory (CPD) listed cylinders employing a utility patented and restricted keyway requiring the use of a patented key. Cylinders are to be protected from unauthorized manufacture and distribution by manufacturer's United States patents. Cylinders are to be factory keyed with owner having the ability for on-site original key cutting.

1. Patented key systems shall not be established with products that have an expired patent. Expired systems shall only be specified and supplied to support existing systems.

2. Manufacturers:

a. Corbin Russwin (RU) - Access 3 AP.
b. Sargent (SA) - Degree DG1.

G. Keying System: Each type of lock and cylinders to be factory keyed.

1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
3. New System: Key locks to a new key system as directed by the Owner.

H. Key Quantity: Provide the following minimum number of keys:

1. Change Keys per Cylinder: Two (2)
2. Master Keys (per Master Key Level/Group): Five (5).
3. Construction Keys (where required): Ten (10).
4. Construction Control Keys (where required): Two (2).
5. Permanent Control Keys (where required): Two (2).

I. Construction Keying: Provide construction master keyed cylinders.

J. Construction Keying: Provide temporary keyed construction cores.

K. Key Registration List (Bitting List):

1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
2. Provide transcript list in writing or electronic file as directed by the Owner.

2.6 KEY CONTROL

A. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.

1. Manufacturers:

a. Lund Equipment (LU).
b. MMF Industries (MM).

c. Telkee (TK).

2.7 MECHANICAL LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.

1. Where specified, provide status indicators with highly reflective color and wording for “locked/unlocked” or “vacant/occupied” with custom wording options if required. Indicator to be located above the cylinder with the inside thumb-turn not blocking the visibility of the indicator status. Indicator window size to be a minimum of 2.1” x 0.6” with a curved design allowing a 180 degree viewing angle with protective covering to prevent tampering.

2. Manufacturers:

a. Corbin Russwin Hardware (RU) - ML2000 Series.
b. Sargent Manufacturing (SA) - 8200 Series.

2.8 ELECTROMECHANICAL LOCKING DEVICES

A. Electromechanical Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed, subject to same compliance standards and requirements as mechanical mortise locksets, electrified locksets to be of type and design as specified below and in the hardware sets.

1. Electrified Lock Options: Where indicated in the Hardware Sets, provide electrified options including: outside door lock/unlock trim control, latchbolt and lock/unlock status monitoring, deadbolt monitoring, and request-to-exit signaling. Support end-of-line resistors contained within the lock case. Unless otherwise indicated, provide electrified locksets standard as fail secure.

2. Energy Efficient Design: Provide lock bodies which have a holding current draw of 15mA maximum, and can operate on either 12 or 24 volts. Locks are to be field configurable for fail safe or fail secure operation.

3. Manufacturers:

a. Corbin Russwin Hardware (RU) - ML20900 Series.
b. Sargent Manufacturing (SA) - 8200 Series.

2.9 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.10 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.

2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer’s catalog and template book for specific requirements.

3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.

4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.

5. Flush End Caps: Provide flush end caps made of architectural metal in the same finish as the devices as in the Hardware Sets. Plastic end caps will not be acceptable.

6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.

   a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
   b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.

7. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.

8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.

9. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.

10. Rail Sizing: Provide exit device rails factory sized for proper door width application.

11. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

12. Hurricane and Tornado Resistance Compliance: Conventional exit devices are to be U.L. listed for windstorm assemblies where applicable. Provide the appropriate hurricane or tornado resistant products that have been independent third party tested, certified, and labeled to meet state and local windstorm building codes applicable to project.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.

1. Manufacturers:

a. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.
b. Sargent Manufacturing (SA) - 80 Series.

2.11 ELECTROMECHANICAL EXIT DEVICES

A. Electromechanical Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed panic and fire exit hardware devices subject to same compliance standards and requirements as mechanical exit devices. Electrified exit devices to be of type and design as specified below and in the hardware sets.

1. Energy Efficient Design: Provide devices which have a holding current draw of 15mA maximum, and can operate on either 12 or 24 volts. Locks are to be field configurable for fail safe or fail secure operation.

2. Where conventional power supplies are not sufficient, include any specific controllers required to provide the proper inrush current.

3. Motorized Electric Latch Retraction: Devices with an electric latch retraction feature must use motors which have a maximum current draw of 600mA. Solenoid driven latch retraction is not acceptable.

4. Manufacturers:

a. Corbin Russwin Hardware (RU) - ED5000 Series.
b. Sargent Manufacturing (SA) - 80 Series.

2.12 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.

2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.

3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.

4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.

5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.

6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

B. Door Closers, Surface Mounted (Large Body Cast Iron): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control.

1. Manufacturers:

a. Corbin Russwin Hardware (RU) - DC8000 Series.
b. Norton Rixson (NO) - 9500 Series.
c. Sargent Manufacturing (SA) - 281 Series.

2.13 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.

2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1” LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.

3. Where plates are applied to fire rated doors with the top of the plate more than 16” above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer’s catalog and template book for specific requirements for size and applications.

4. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:

   a. Stainless Steel: 300 grade, 050-inch thick.

5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.

6. Manufacturers:

   a. Hager Companies (HA).
   b. Rockwood (RO).
   c. Trimco (TC).

2.14 DOOR STOPS AND HOLDERS

A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.

B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Manufacturers:

   a. Hager Companies (HA).
   b. Rockwood (RO).
   c. Trimco (TC).

C. Overhead Door Stops and Holders: ANSI/BHMA A156.8, Grade 1 Certified Products Directory (CPD) listed overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.

1. Manufacturers:

   a. Norton Rixson (RF).
   b. Rockwood (RO).
   c. Sargent Manufacturing (SA).

2.15 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Manufacturers:

1. National Guard Products (NG).
2. Pemko (PE).
3. Reese Enterprises, Inc. (RE).

2.16 ELECTRONIC ACCESSORIES

A. Push-Button Switches: Industrial grade momentary or alternate contact, back-lighted push buttons with stainless-steel switch enclosures. 12/24 VDC bi-color illumination suitable for either flush or surface mounting.

1. Manufacturers:

a. Securitron (SU) - PB Series.

B. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.

1. Manufacturers:

a. Securitron (SU) - DPS Series.

C. Linear Power Supplies: Provide Nationally Recognized Testing Laboratory Listed 12VDC or 24VDC (field selectable) filtered and regulated power supplies. Include battery backup option with integral battery charging capability in addition to operating the DC load in event of line voltage failure. Provide the least number of units, at the appropriate amperage level, sufficient to exceed the required total draw plus 50% for the specified electrified hardware and access control equipment.

a. **PROVIDED BY SECURITY CONTRACTOR**

2.17 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.18 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. DHI TDH-007-20: Installation Guide for Doors and Hardware.
3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.5 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.6 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.7 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

1. Quantities listed are for each pair of doors, or for each single door.

2. The supplier is responsible for handing and sizing all products.

3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.

B. Manufacturer’s Abbreviations:

1. MK - McKinney
2. PE - Pemko
3. SU - Securitron
4. RO - Rockwood
5. SA - SARGENT
6. RF - Rixson
7. OT - Other

Hardware Sets

Set: 1.0
Doors: 133A, 151
Description: Ext Alum w/ Access Control

1	Continuous Hinge	CFM SLF-HD1 PT		PE
1	CVR Exit Device w/ ELR	DG264 43 55 56 AD8410 106 x Less Pull	US32D	SA
1	Core	DG2 6300	US15	SA
1	Offset Pull	RM2540-36	US32D	RO
1	Door Closer	TB 281 CPS	EN	SA
1	Door Stop	466-RKW	Black	RO
1	ElectroLynx Harness	QC-C* Qty x Length Wires Req'd		MK
1	Door Position Switch	By Security Contractor (Div 28)		SU
1	Electric Power Transfer	EL-CEPT (cast)	630	SU
1	Card Reader	By Security Contractor (Div 28)		OT
1	Power Supply	By Security Contractor (Div 28)		OT

Notes: Exterior doors shall meet FBC standards for windstorm Level D impact. The hardware specified is listed as a basis of design. If alternate hardware is proposed, please provide third-party test results and compliance information to architect. Balance of hardware including thresholds and perimeter weatherstripping by the aluminum door supplier.

Doors are normally closed and locked. Presenting valid credential to reader temporarily retracts latch bolt permitting entry. Always free egress. Request to exit (55) allows authorized egress.

Set: 2.0
Doors: 109A
Description: Ext Alum Single

1	Continuous Hinge	CFM SLF-HD1		PE
1	CVR Exit Device, Nightlatch	DG264 43 AD8410 106 x Less Pull	US32D	SA
1	Core	DG2 6300	US15	SA
1	Offset Pull	RM2540-36	US32D	RO
1	Door Closer	TB 281 CPS	EN	SA
1	Door Stop	466-RKW	Black	RO
1	Door Position Switch	By Security Contractor (Div 28)		SU

Notes: Exterior doors shall meet FBC standards for windstorm Level D impact. The hardware specified is listed as a basis of design. If alternate hardware is proposed, please provide third-party test results and compliance information to architect. Balance of hardware including thresholds and perimeter weatherstripping by the aluminum door supplier.

Set: 3.0
Doors: 140, 142
Description: Ext HM Mech / Electrical Room Pair

6	Hinge (heavy weight)	T4A3386	US32D	MK
1	Surface Vert Rod Exit	DG264 43 12HC4 8706 ETNJ	US32D	SA
1	Surface Vert Rod Exit, Dummy	43 12HC4 8710 ETNJ	US32D	SA
1	Core	DG2 6300	US15	SA
2	Door Closer	TB 281 CPS	EN	SA
2	Kick Plate	K1050 8" x LAR 4BE CSK	US32D	RO
1	Threshold	2005AV		PE
1	Gasketing	S88D		PE
1	Rain Guard	346C		PE
2	Sweep	315CN		PE
2	Astragal	303ASTST		PE

Notes: Exterior doors shall meet FBC standards for windstorm Level D impact. The hardware specified is listed as a basis of design. If alternate hardware is proposed, please provide third-party test results and compliance information to architect.

Set: 4.0
Doors: 109B, 133B, 141, 152, 154, 201E, 201F, 205A, 206B
Description: Ext HM Single w/ Access Control

3	Hinge (heavy weight)	T4A3386	US32D	MK
1	Rim Exit Device, ELR	DG264 HC 43 55 56 8806 ETNJ	US32D	SA
1	Core	DG2 6300	US15	SA
1	Door Closer	TB 281 CPS	EN	SA
1	Kick Plate	K1050 8" x LAR 4BE CSK	US32D	RO
1	Threshold	2005AV		PE
1	Gasketing	S88D		PE
1	Rain Guard	346C		PE
1	Sweep	315CN		PE
1	ElectroLynx Harness	QC-C* Qty x Length Wires Req'd		MK
1	Door Position Switch	By Security Contractor (Div 28)		SU
1	Electric Power Transfer	EL-CEPT (cast)	630	SU
1	Card Reader	By Security Contractor (Div 28)		OT
1	Power Supply	By Security Contractor (Div 28)		OT

Notes: Exterior doors shall meet FBC standards for windstorm Level D impact. The hardware specified is listed as a basis of design. If alternate hardware is proposed, please provide third-party test results and compliance information to architect.

Doors are normally closed and locked. Entry by presentation of valid credential to retract latch or by mechanical key override. Fail Secure - Power off, door remains locked. Always free egress. Request to exit (55) permits authorized egress.

Provide 12- fire rated device at openings 109B 141 154

Set: 5.0
Doors: 201B, 203A, 203B, 204B
Description: Ext HM Single Warehouse

3	Hinge (heavy weight)	T4A3386	US32D	MK
1	Rim Exit Device	DG264 HC 43 8806 ETNJ	US32D	SA
1	Core	DG2 6300	US15	SA
1	Door Closer	TB 281 CPS	EN	SA
1	Kick Plate	K1050 8" x LAR 4BE CSK	US32D	RO
1	Threshold	2005AV		PE
1	Gasketing	S88D		PE
1	Rain Guard	346C		PE
1	Sweep	315CN		PE
1	Door Position Switch	By Security Contractor (Div 28)		SU

Notes: Exterior doors shall meet FBC standards for windstorm Level D impact. The hardware specified is listed as a basis of design. If alternate hardware is proposed, please provide third-party test results and compliance information to architect.

Set: 6.0
NOT USED

Set: 7.0
Doors: 204A, 205C
Description: Warehouse Storage / Inventory Bays

3	Hinge, Full Mortise	TA2314	US32D	MK
1	Classroom Lock	DG160 8237 LNNJ	US32D	SA
1	Core	DG1 6300	US15	SA
1	Door Closer	TB 281 CPS	EN	SA
1	Kick Plate	K1050 8" x LAR 4BE CSK	US32D	RO
1	Threshold	271A		PE
1	Gasketing	S88D		PE
1	Sweep	315CN		PE

Set: 8.0
Doors: 108
Description: Single w/ Access Control - Vendor Entry

3	Hinge (heavy weight)	T4A3386	US32D	MK
1	Rim Exit Device, ELR	DG264 43 55 56 8806 ETNJ	US32D	SA
1	Core	DG2 6300	US15	SA
1	Door Closer	TB 281 P9	EN	SA
1	Kick Plate	K1050 8" x LAR 4BE CSK	US32D	RO
1	Wall Stop	409	US32D	RO
1	Gasketing	S88D		PE
1	ElectroLynx Harness	QC-C* Qty x Length Wires Req'd		MK
1	Door Position Switch	By Security Contractor (Div 28)		SU
1	Door Release(under desk)	TS-19		AK
1	Electric Power Transfer	EL-CEPT (cast)	630	SU
1	Card Reader	By Security Contractor (Div 28)		OT

Notes: Doors are normally closed and locked. Entry by presentation of valid credential to retract latch or by mechanical key override. Fail Secure - Power off, door remains locked. Always free egress. Request to exit (55) permits authorized egress.

Remote push button will also release lock. Location TBD

Set: 9.0
NOT USED

Set: 10.0
Doors: 102
Description: Conference Room Storage Pair

6	Hinge, Full Mortise	TA2314	US32D	MK
1	Flush Bolt	2805 (TOP ONLY)	US32D	RO
1	Classroom Lock	DG160 8237 LNNJ	US32D	SA
1	Core	DG1 6300	US15	SA
1	Coordinator	2600 Series x Brkt Req	US28	RO
2	Surf Overhead Stop	10-x36	652	RF
2	Door Closer	TB 281 P9	EN	SA
1	Gasketing	S88D		PE

Notes: Astragal Included By Door Mfg

Set: 11.0
Doors: 119A, 122A, 125A
Description: Crew Room

3	Hinge, Full Mortise	TA2314	US32D	MK
1	Office Lock	DG160 8205 LNNJ	US32D	SA
1	Core	DG1 6300	US15	SA
1	Door Closer	TB 281 P9	EN	SA
1	Kick Plate	K1050 8" x LAR 4BE CSK	US32D	RO
1	Wall Stop	409	US32D	RO
1	Gasketing	S88D		PE

Set: 12.0
Doors: 101A, 101B
Description: Conference Room

3	Hinge, Full Mortise	TA2314	US32D	MK
1	Rim Exit Device, Classroom	DG160 43 8813 ETNJ	US32D	SA
1	Core	DG1 6300	US15	SA
1	Door Closer	TB 281 P9	EN	SA
1	Kick Plate	K1050 8" x LAR 4BE CSK	US32D	RO
1	Wall Stop	409	US32D	RO
1	Gasketing	S88D		PE

Set: 13.0
Doors: 104A, 104B
Description: Storage (w/ closer)

3	Hinge, Full Mortise	TA2314	US32D	MK
1	Storeroom Lock	DG160 8204 LNNJ	US32D	SA
1	Core	DG1 6300	US15	SA
1	Door Closer	TB 281 O	EN	SA
1	Kick Plate	K1050 8" x LAR 4BE CSK	US32D	RO
1	Wall Stop	409	US32D	RO
1	Gasketing	S88D		PE

Set: 14.0
Doors: 103B, 110, 111, 113, 114, 115, 116
Description: Restroom

3	Hinge, Full Mortise	TA2314	US32D	MK
1	Privacy Lock w/ IND	V11 8265 LNNJ	US32D	SA
1	Door Closer	TB 281 O	EN	SA
1	Kick Plate	K1050 8" x LAR 4BE CSK	US32D	RO
1	Wall Stop	409	US32D	RO
1	Gasketing	S88D		PE

Set: 15.0
NOT USED

Set: 16.0
Doors: 117
Description: Laundry / Janitor

3	Hinge, Full Mortise	TA2314	US32D	MK
1	Classroom Lock	DG160 8237 LNNJ	US32D	SA
1	Core	DG1 6300	US15	SA
1	Conc Overhead Stop	6ADJ-x36	630	RF
1	Door Closer	TB 281 O	EN	SA
1	Kick Plate	K1050 8" x LAR 4BE CSK	US32D	RO
1	Gasketing	S88D		PE

Set: 17.0
Doors: 105, 106, 107, 118, 120, 121, 123, 124, 126, 127, 128, 129, 130, 131
Description: Office (w/ closer)

3	Hinge, Full Mortise	TA2314	US32D	MK
1	Office Lock	DG160 8205 LNNJ	US32D	SA
1	Core	DG1 6300	US15	SA
1	Door Closer	TB 281 O	EN	SA
1	Kick Plate	K1050 8" x LAR 4BE CSK	US32D	RO
1	Wall Stop	409	US32D	RO
3	Silencer	608		RO

Notes: Provide gasketing at rated openings

Set: 18.0
Doors: 132
Description: Break Room

3	Hinge, Full Mortise	TA2314	US32D	MK
1	Passage Latch	8215 LNNJ	US32D	SA
1	Door Closer	TB 281 P9	EN	SA
1	Kick Plate	K1050 8" x LAR 4BE CSK	US32D	RO
1	Wall Stop	409	US32D	RO
1	Gasketing	S88D		PE

Notes: Template for 180 degree swing

Set: 19.0
Doors: 119B, 122B, 125B
Description: Break Room

3	Hinge, Full Mortise	TA2314	US32D	MK
1	Passage Latch	8215 LNNJ	US32D	SA
1	Conc Overhead Stop	6ADJ-x36	630	RF
1	Door Closer	TB 281 P9	EN	SA
1	Kick Plate	K1050 8" x LAR 4BE CSK	US32D	RO
1	Gasketing	S88D		PE

Set: 20.0
Doors: 103A
Description: Vestibule (PUSH/PULL)

3	Hinge, Full Mortise	TA2314	US32D	MK
1	Push Pull	111x73C/73CL	US32D-MS	RO
1	Door Closer	TB 281 P9	EN	SA
1	Kick Plate	K1050 8" x LAR 4BE CSK	US32D	RO
1	Wall Stop	409	US32D	RO
3	Silencer	608		RO

Set: 21.0
Doors: 201A, 201C, 201D, 204C, 204D, 205B, 206A, 206C
Description: Overhead Doors

1	Mortise Cylinder	Cylinder As Required	US15	SA
1	Core	DG2 6300	US15	SA
1	Door Position Switch	By Security Contractor (Div 28)		SU
1	Card Reader	By Security Contractor (Div 28)		OT

Notes: Verify cylinder requirements, if any

Set: 22.0
Doors: 101C
Description: Operable Wall Panel

1	Specialty Door	All hardware complete by door supplier	OT

END OF SECTION 08 71 00

SECTION 08 80 00
GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Glass.

1.3 DEFINITIONS

A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.

C. FBC: Florida Building Code.

D. Interspace: Space between lites of an insulating-glass unit.

1.4 CODE COMPLIANCE

A. Exterior openings shall meet the requirements of the Florida Building Code.

1. Provide product evaluations and installation requirements indicating compliance with Code requirements.

1.5 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances to achieve proper safety margins for glazing retention under each design load case, load case combination, and service condition.

1.6 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review temporary protection requirements for glazing during and after installation.

1.7 ACTION SUBMITTALS

A. Product Approval: Submit current Product Approval documentation in accordance with the Florida Building Code.

B. Product Data: For each type of product.

C. Glass Samples: For each type of glass product other than clear monolithic vision glass; 12 inches square.

1. Insulating glass.

D. Glazing Accessory Samples: For sealants, in 12-inch lengths. Install sealant Samples between two strips of material representative in color of the adjoining framing system.

E. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

F. Delegated-Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.8 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: For glass.

C. Product Test Reports: For tinted glass, coated glass, insulating glass and glazing sealants, for tests performed by a qualified testing agency.

1. For glazing sealants, provide test reports based on testing current sealant formulations within previous 36-month period.

D. Preconstruction adhesion and compatibility test report.

E. Sample Warranties: For special warranties.

1.9 CLOSEOUT SUBMITTALS

A. Maintenance Data: For glazing to include in maintenance manuals.

1.10 QUALITY ASSURANCE

A. Fabricated-Glass Manufacturer Qualifications: A qualified manufacturer of fabricated glass units who is approved and certified by primary glass manufacturer.

B. Installer Qualifications: A qualified glazing contractor for this Project who is certified under the North American Contractor Certification Program (NACC) for Architectural Glass & Metal (AG&M) contractors and who employs glazing technicians certified under the Architectural Glass and Metal Technician (AGMT) certification program.

C. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.

D. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.

1.11 PRECONSTRUCTION TESTING

A. Preconstruction Adhesion and Compatibility Testing: Test each glass product, sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.

1. Testing is not required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.
2. Determine whether priming and other specific joint-preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, sealants, gaskets, and glazing channel substrates.
3. Test Samples of each type of material, including joint substrates, shims, sealant backings, secondary seals, and miscellaneous materials.
4. Schedule enough time for testing and analyzing results to prevent delaying the Work.
5. For materials failing tests, submit sealant manufacturer's written instructions for corrective measures including the use of specially formulated primers.

1.12 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

B. Comply with insulating-glass manufacturer's written instructions for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.13 FIELD CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F.

1.14 WARRANTY

A. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: 10 years from date of Substantial Completion.

B. Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

1. Warranty Period: 10 years from date of Final Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Glass: Obtain tinted and coated glass from single source from single manufacturer.

B. Source Limitations for Glazing Accessories: For each product and installation method, obtain from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Delegated Design: Engage a qualified professional engineer, to design glazing.

C. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined according to the IBC and ASTM E 1300.

1. Design Wind Pressures: As indicated on Drawings.
2. Design Wind Pressures: Determine design wind pressures applicable to Project according to ASCE/SEI 7, based on heights above grade indicated on Drawings.

D. Windborne-Debris-Impact Resistance: Exterior glazing shall pass ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996 for Wind Zone indicated.

1. Large-Missile Test: For glazing located within 30 feet of grade.

E. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.

F. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

1. For monolithic-glass lites, properties are based on units with lites 6 mm thick.
2. For laminated-glass lites, properties are based on products of construction indicated.
3. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
4. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F.
5. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
6. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

2.3 GLASS PRODUCTS, GENERAL

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction or manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the IGCC.

D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than thickness indicated.

1. Minimum Glass Thickness for Exterior Lites: 6 mm.
2. Thickness of Tinted Glass: Provide same thickness for each tint color indicated throughout Project.

E. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.4 GLASS FABRICATION

A. Flat Glass:

1. Shall comply with ASTM C1036 Standard Specification for Flat Glass, Type 1, Class 1 (clear) or Class 2 (tinted, heat-absorbing and light reducing) and Quality q3.
2. ASTM C 1048 Heat Treated Flat Glass, Kind HS or FT (remove ASTM Standard C 1048 if annealed glass), Condition A (uncoated), B (spandrel glass, one surface coated), or C (other coated glass).

    a. Heat Treated Flat Glass to be by horizontal (roller hearth) process with inherent rollerwave distortion parallel to the bottom edge of the glass as installed.
    b. Maximum peak to valley rollerwave 0.003” (0.08mm) in the central area and 0.008” (0.20mm) within 11.3” (287mm) of the leading and trailing edge
    c. For clear or low-iron glass 1/4” to 3/8” thick without ceramic frit or ink, maximum + or – 100 mD (millidiopter) over 95% of the glass surface.
    d. Maximum bow and warp 1/32” per lineal foot (0.79mm).

B. All tempered architectural safety glass shall conform with ANSI Z97.1 and CPSC 16 CFR 1201.

2.5 GLASS PRODUCTS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. AGC Glass Company North America, Inc.
2. Cardinal Glass Industries.
3. Guardian Glass; SunGuard.
4. Pilkington North America.
5. Viracon, Inc.
6. Vitro.

B. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

C. Heat-Strengthened Float Glass: ASTM C1048, Kind HS (heat strengthened), Type I, Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

2.6 INSULATING GLASS

A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190.

1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
2. Perimeter Spacer: Manufacturer's standard spacer material and construction.
3. Desiccant: Molecular sieve or silica gel, or a blend of both.

2.7 LAMINATED GLASS

A. Laminated Glass: ASTM C 1172. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.

1. Construction: Laminate glass with polyvinyl butyral interlayer to comply with interlayer manufacturer's written instructions.
2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.
3. Interlayer Color: Clear unless otherwise indicated.

B. Windborne-Debris-Impact-Resistant Laminated Glass: Comply with requirements specified above for laminated glass except laminate glass with the following to comply with interlayer manufacturer's written instructions:

1. Polyvinyl butyral interlayer.

2.8 SPANDREL GLASS

A. Silicone-Coated Spandrel Glass: ASTM C 1048, Type I, Condition C, Quality-Q3.

1. Basis of design Manufacturer; Basis of design for Spandrel Coating Opaci-Coat 300, ICD High Performance Coatings.

2.9 FIRE RATED GLAZING

A. Fire Safe Glazing (Fire Rated Glass): Clear fire rated glazing.

1. Manufacturers

a. Glaverbel S.A., distributed by InterEdge Technologies
b. Oldcastle Glass
c. SAFTI *FIRST*
d. SCHOTT North America, Inc.
e. Nippon Electric Glass Co., Ltd.,
f. Vetrotech Saint-Gobain North America Inc.

2. Thickness: As required for fire-ratings indicated.
3. Fire-Protection Rating: As required for the assembly in which glazing material is installed.

a. Glazing for Fire-Rated Door and Window Assemblies: Glazing for assemblies that comply with NFPA 80 and that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA.

B. Impact Safety Rating: As required for the assembly in which glazing material is installed.

1. Glazing products that comply with Category I or II materials, except for hazardous locations where Category II materials are required by 16 CFR 1201 and regulations of authorities having jurisdiction.

C. Glazing Sealants for Fire-Resistive Glazing Products: Identical to products used in test assemblies to obtain fire-protection rating.

D. Perimeter Insulation for Fire-Resistive Glazing: Identical to product used in test assembly to obtain fire-resistance rating.

2.10 GLAZING SEALANTS

A. General:

1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
3. Verify sealant complies with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
4. Colors of Exposed Glazing Sealants: Match Architect's samples.

B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Use NT Class as required to meet performance requirements and adhesion testing.

2.11 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:

1. AAMA 804.3 tape, where indicated.
2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:

1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.12 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, with requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.13 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.

a. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.

C. Grind smooth and polish exposed glass edges and corners.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing glazing, with Installer present, for compliance with the following:

1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Presence and functioning of weep system.
3. Minimum required face or edge clearances.
4. Effective sealing between joints of glass-framing members.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Glazing channel dimensions, as indicated on Drawings, provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.

C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.

E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

G. Provide spacers for glass lites where the length plus width is larger than 50 inches as follows:

1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until right before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant.

G. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

E. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 CLEANING AND PROTECTION

A. Immediately after installation remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.

1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

C. Remove and replace glass that is damaged during construction period.

D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.8 GLAZING SCHEDULE

A. GL-1: Exterior; 1-5/16” Insulating Laminated, clear, Low E Coated Glass as manufactured by Vitro.

1. Exterior Glass Ply: 1/4” Clear heat treated (Temper where required by Code).
2. Coating: Solarban 70 on #2 surface.
3. Space: 1/2” aluminum air filled, black finish.
4. Silicone: black.

5. Interior Glass Ply 1: 1/4” Clear heat treated.
6. Interlayer: select kind and thickness as tested in the Assembly Product Approval for hurricane resistance.
7. Interior Glass Ply 2: 1/4” Clear heat treated.

    a. Winter U-Value 0.28.
    b. Summer U-Value 0.24.
    c. Solar Heat Gain Coefficient 0.27.

B. GL-1: Exterior Entrances; 1” Insulating Laminated, clear, Low E Coated Glass as manufactured by Vitro.

1. Exterior Glass Ply: 3/16” Clear heat treated (Temper where required by Code).
2. Coating: Solarban on #2 surface.
3. Space: 3/8” aluminum air filled, black finish.
4. Silicone: black.
5. Interior Glass Ply 1: 3/16” Clear heat treated.
6. Interlayer: select kind and thickness as tested in the Assembly Product Approval for hurricane resistance.
7. Interior Glass Ply 2: 1/4” Clear heat treated.

    a. Winter U-Value 0.28.
    b. Summer U-Value 0.24.
    c. Solar Heat Gain Coefficient 0.27.

C. SP-1: Exterior; 1-5/16” Insulating Laminated, Low E Coated Spandrel Glass as manufactured by Vitro.

1. Exterior Glass Ply: 1/4” Clear heat treated (Temper where required by Code).
2. Coating: Solarban 70 on #2 surface.
3. Space: 1/2” aluminum air filled, black finish.
4. Silicone: black.
5. Interior Glass Ply 1: 1/4” Clear heat treated.
6. Interlayer: select kind and thickness as tested in the Assembly Product Approval for hurricane resistance.

    a. Interior Lite: 1/4" thick, Clear, fully tempered, Silicone-Coated Spandrel Coating # 4 surface.

        1) Color and Texture of Spandrel Coating: As selected by Architect from Manufacturer’s full range.

    b. Winter U-Value 0.28.
    c. Summer U-Value 0.24.
    d. Solar Heat Gain Coefficient 0.27.

D. Interior 1/4-inch fully tempered glass.

E. Interior Fire rated Glazing: Clear fire rated interior glazing.

1. Basis of Design Manufacturer; SAFTIFIRST.

a. Type FG-20 - 20 minute rated - SuperLite I.
b. Type FG-45 – 45 minute rated - SuperLite II-XL45.

END OF SECTION 08 80 00

SECTION 08 91 19
FIXED LOUVERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Fixed extruded-aluminum louvers.

1.3 ACTION SUBMITTALS

A. Product Control Approval: Submit current Product Control Notice of Acceptance in accordance with the Florida Building Code and FAC 9N-3.

B. Product Data: For each type of product.

1. For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Ratings Seals.

C. Shop Drawings: For louvers and accessories. Include plans, elevations, sections, details, and attachments to other work. Show frame profiles and blade profiles, angles, and spacing.

1. Show weep paths, gaskets, flashings, sealants, and other means of preventing water intrusion.
2. Show mullion profiles and locations.

D. Samples: For each type of metal finish required.

E. Delegated-Design Submittal: For louvers indicated to comply with structural performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Based on evaluation of comprehensive tests performed according to AMCA 500-L by a qualified testing agency or by manufacturer and witnessed by a qualified testing agency, for each type of louver and showing compliance with performance requirements specified.

B. Windborne-debris-impact-resistance test reports.

C. Sample Warranties: For manufacturer's special warranties.

1.5 FIELD CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.6 WARRANTY

A. Special Finish Warranty: Manufacturer agrees to repair or replace components on which finishes fail in materials or workmanship within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain fixed louvers from single source from a single manufacturer where indicated to be of same type, design, or factory-applied color finish.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design louvers, including comprehensive engineering analysis by a qualified professional engineer, using structural performance requirements and design criteria indicated.

B. Structural Performance: Louvers shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated without permanent deformation of louver components, noise or metal fatigue caused by louver-blade rattle or flutter, or permanent damage to fasteners and anchors. Wind pressures shall be considered to act normal to the face of the building.

1. Wind Loads: Determine loads based on pressures as indicated on Drawings.

C. Windborne-Debris-Impact Resistance: Louvers located within 30 feet of grade shall pass basic protection, when tested according to AMCA 540.

D. Louver Performance Ratings: Provide louvers complying with requirements specified, as demonstrated by testing manufacturer's stock units identical to those provided, except for length and width according to AMCA 500-L.

E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

F. SMACNA Standard: Comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" for fabrication, construction details, and installation procedures.

2.3 FIXED EXTRUDED-ALUMINUM LOUVERS

A. Horizontal Drainable-Blade Louver:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Ruskin Company; EME520MD or a comparable product by one of the following:

a. Airolite Company, LLC (The).
b. American Warming and Ventilating; a Mestek Architectural Group company.
c. Construction Specialties, Inc.
d. Greenheck.
e. Ruskin.

2. Louver Depth: 5-inches.
3. Blade Profile: Plain blade without center baffle.
4. Frame and Blade Nominal Thickness: Not less than 0.080 inch.
5. Finish: Clear Anodized.
6. Louver Performance Ratings:

a. Free Area: Not less than 7.5 sq. ft. for 48-inch-wide by 48-inch-high louver.
b. Point of Beginning Water Penetration: Not less than 950 fpm.
c. Air Performance: Not more than 0.10-inch wg static pressure drop at 700-fpm free-area exhaust velocity.

7. AMCA Seal: Mark units with AMCA Certified Ratings Seal.

2.4 LOUVER SCREENS

A. General: Provide screen at each exterior louver.

1. Screen Location for Fixed Louvers: Interior face.
2. Screening Type: Insect screening.

B. Secure screen frames to louver frames with machine screws with heads finished to match louver, spaced a maximum of 6 inches from each corner and at 12 inches o.c.

C. Louver Screen Frames: Fabricate with mitered corners to louver sizes indicated.

1. Metal: Same type and form of metal as indicated for louver to which screens are attached. Reinforce extruded-aluminum screen frames at corners with clips.
2. Finish: Same finish as louver frames to which louver screens are attached.
3. Type: Non-rewirable, U-shaped frames.

D. Louver Screening for Aluminum Louvers:

1. Insect Screening: Aluminum, 18-by-16 mesh, 0.012-inch wire.

2.5 MATERIALS

A. Aluminum Extrusions: ASTM B 221, Alloy 6063-T5, T-52, or T6.

B. Aluminum Sheet: ASTM B 209, Alloy 3003 or 5005, with temper as required for forming, or as otherwise recommended by metal producer for required finish.

C. Fasteners: Use types and sizes to suit unit installation conditions.

1. Use tamper-resistant screws for exposed fasteners unless otherwise indicated.
2. For fastening aluminum, use aluminum or 300 series stainless-steel fasteners.
3. For color-finished louvers, use fasteners with heads that match color of louvers.

D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

2.6 FABRICATION

A. Factory assemble louvers to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

B. Vertical Assemblies: Where height of louver units exceeds fabrication and handling limitations, fabricate units to permit field-bolted assembly with close-fitting joints in jambs and mullions, reinforced with splice plates.

1. Continuous Vertical Assemblies: Fabricate units without interrupting blade-spacing pattern unless horizontal mullions are indicated.

C. Maintain equal louver blade spacing, including separation between blades and frames at head and sill, to produce uniform appearance.

D. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints.

1. Frame Type: Exterior flange unless otherwise indicated.

E. Include supports, anchorages, and accessories required for complete assembly.

F. Provide vertical mullions of type and at spacings indicated, but not more than is recommended by manufacturer, or 72 inches o.c., whichever is less.

G. Join frame members to each other and to fixed louver blades with fillet welds concealed from view, threaded fasteners, or both, as standard with louver manufacturer unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

2.7 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and openings, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

3.3 INSTALLATION

A. Locate and place louvers level, plumb, and at indicated alignment with adjacent work.

B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.

C. Form closely fitted joints with exposed connections accurately located and secured.

D. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.

E. Install concealed gaskets, flashings, joint fillers, and insulation as louver installation progresses, where weathertight louver joints are required. Comply with Section 07 92 00 "Joint Sealants" for sealants applied during louver installation.

3.4 ADJUSTING AND CLEANING

A. Clean exposed louver surfaces that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate during construction period.

B. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.

C. Restore louvers damaged during installation and construction, so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.

1. Touch up minor abrasions in finishes with air-dried coating that matches color and gloss of, and is compatible with, factory-applied finish coating.

END OF SECTION 08 91 19

Division 09

Finishes

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SECTION 09 22 16
NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Non-load-bearing steel framing systems for interior gypsum board assemblies.
2. Suspension systems for interior gypsum ceilings and soffits.

1.3 SUBMITTALS

A. Product Data: For each type of product.

1. Studs and Runners: Provide documentation that framing members' certification is according to SFIA's "Code Compliance Certification Program for Cold-Formed Steel Structural and Non-Structural Framing Members". SFIA's program certifies that studs and runners comply with the IBC, ASTM C 645, AISI S100, and AISI S220. Mechanical properties, coatings, dimensions, and labeling are checked.
2. Manufacturers' limiting tables indicating products provided.
3. Manufacturer's Certification: Submit manufacturer's certification of product compliance with codes and standards along with product literature and data sheets for specified products.
4. Evaluation Reports: For Metal Framing, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

B. Delegated-Design by Specialty Structural Engineer (SSE) Delegated-Design Submittal: For steel framing, fasteners, accessories and support. The design professional, individual or organization having responsibility for the design of the specialty items. This responsibility shall be in accordance with the state's statues and regulations governing the professional registration and certification of architects or engineers.

1.4 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer to design steel framing systems.

1. Design framing systems in accordance with American Iron and Steel Institute Publication S220 “North American Specification for the Design of Cold-Formed Steel Framing – Non-Structural Members”, except as otherwise shown or specified.
2. Design loads: 5 PSF minimum as required by the Building Code.
3. Design framing systems to accommodate deflection of primary building structure and construction tolerances and to withstand design loads with a maximum deflection of 1/240 inches and including finish material.

B. Fire-Test-Response Characteristics: Provide materials and construction identical to those tested according to ASTM E 119.

C. STC-Rated Assemblies: Provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413.

2.2 NON-LOAD-BEARING STEEL FRAMING, GENERAL

A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.

1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
2. Protective Coating: ASTM A 653/A 653M, G40, hot-dip galvanized unless otherwise indicated.

B. Studs and Tracks: ASTM C 645. Use either steel studs and runners or embossed steel studs and tracks.

1. Steel Studs and Tracks:

a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1) CEMCO; California Expanded Metal Products Co.
2) Custom Stud.
3) MRI Steel Framing, LLC.
4) Steel Network, Inc. (The).

b. Minimum Base-Metal Thickness: As indicated on the drawings, but no less than 20 ga. Must meet deflection requirements, including service load.
c. Depth: As Indicated on Drawings.

C. Slip-Type Head Joints: Where indicated, provide one of the following:

1. Clip System: Clips designed for use in head-of-wall deflection conditions that provide a positive attachment of studs to runners while allowing 1-1/2-inch minimum vertical movement.

    a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

        1) CEMCO; California Expanded Metal Products Co.
        2) ClarkDietrich Building Systems.
        3) Steel Network, Inc. (The).

2. Single Long-Leg Runner System: ASTM C 645 top runner with 2-inch-deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top runner and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.
3. Double-Runner System: ASTM C 645 top runners, inside runner with 2-inch-deep flanges in thickness not less than indicated for studs and fastened to studs, and outer runner sized to friction fit inside runner.
4. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.

    a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

        1) CEMCO; California Expanded Metal Products Co.
        2) ClarkDietrich Building Systems.
        3) Steel Network, Inc. (The).

D. Firestop Tracks: Top runner manufactured to allow partition heads to expand and contract with movement of structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. CEMCO; California Expanded Metal Products Co.
    b. ClarkDietrich Building Systems.
    c. Steel Network, Inc. (The).

E. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. ClarkDietrich Building Systems.
    b. MRI Steel Framing, LLC.

2. Minimum Base-Metal Thickness: 0.0329 inch.

F. Cold-Rolled Channel Bridging: Steel, 0.0538-inch minimum base-metal thickness, with minimum 1/2-inch-wide flanges.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. ClarkDietrich Building Systems.
b. MRI Steel Framing, LLC.

2. Depth: 1-1/2 inches.
3. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch-thick, galvanized steel.

G. Hat-Shaped, Rigid Furring Channels: ASTM C 645.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. ClarkDietrich Building Systems.
b. MRI Steel Framing, LLC.

2. Minimum Base-Metal Thickness: 0.0296 inch.
3. Depth: As indicated on Drawings.

H. Resilient Furring Channels: 1/2-inch-deep, steel sheet members designed to reduce sound transmission.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. ClarkDietrich Building Systems.
b. MRI Steel Framing, LLC.

2. Configuration: Asymmetrical or hat shaped.

I. Cold-Rolled Furring Channels: 0.053-inch uncoated-steel thickness, with minimum 1/2-inch-wide flanges.

1. Depth: 3/4 inch.
2. Furring Brackets: Adjustable, corrugated-edge-type steel sheet with minimum uncoated-steel thickness of 0.0329 inch.
3. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch-diameter wire, or double strand of 0.048-inch-diameter wire.

J. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches, wall attachment flange of 7/8 inch, minimum uncoated-metal thickness of 0.0179 inch, and depth required to fit insulation thickness indicated.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. ClarkDietrich Building Systems.
b. MRI Steel Framing, LLC.

2.3 SUSPENSION SYSTEMS

A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch-diameter wire, or double strand of 0.048-inch-diameter wire.

B. Hanger Attachments to Concrete:

1. Expansion Anchors: Fabricated from corrosion-resistant materials, with allowable load or strength design capacities calculated according to ICC-ES AC193 and ACI 318 greater than or equal to the design load, as determined by testing per ASTM E 488/E 488M conducted by a qualified testing agency.
2. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with allowable load capacities calculated according to ICC-ES AC70, greater than or equal to the design load, as determined by testing per ASTM E 1190 conducted by a qualified testing agency.

C. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.16 inch in diameter.

D. Flat Hangers: Steel sheet, 1 by 3/16 inch by length indicated.

E. Carrying Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.0538 inch and minimum 1/2-inch-wide flanges.

1. Depth: 2-1/2 inches.

F. Furring Channels (Furring Members):

1. Cold-Rolled Channels: 0.0538-inch uncoated-steel thickness, with minimum 1/2-inch-wide flanges, 3/4 inch deep.
2. Steel Studs and Runners: ASTM C 645.

a. Minimum Base-Metal Thickness: 0.0296 inch.
b. Depth: 2-1/2 inches.

3. Embossed Steel Studs and Runners: ASTM C 645.

a. Minimum Base-Metal Thickness: 0.0190 inch.
b. Depth: 2-1/2 inches.

4. Hat-Shaped, Rigid Furring Channels: ASTM C 645, 7/8 inch deep.

a. Minimum Base-Metal Thickness: 0.0296 inch.

5. Resilient Furring Channels: 1/2-inch-deep members designed to reduce sound transmission.

a. Configuration: Asymmetrical or hat shaped.

G. Grid Suspension System for Gypsum Board Ceilings: ASTM C 645, direct-hung system composed of main beams and cross-furring members that interlock.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Armstrong World Industries, Inc.
b. Chicago Metallic Corporation.
c. United States Gypsum Company.

2.4 AUXILIARY MATERIALS

A. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

B. Isolation Strip at Exterior Walls: Provide one of the following:

1. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.
2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8-inch-thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Installation Standard: ASTM C 754.

1. Gypsum Plaster Assemblies: Also comply with requirements in ASTM C 841 that apply to framing installation.
2. Portland Cement Plaster Assemblies: Also comply with requirements in ASTM C 1063 that apply to framing installation.
3. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.

B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

C. Install bracing at terminations in assemblies.

D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.2 INSTALLING FRAMED ASSEMBLIES

A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types and other assembly components indicated.

B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

C. Install studs so flanges within framing system point in same direction.

D. Stud Spacing: 16-inches on center unless otherwise indicated.

E. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.

1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.

    a. Install two studs at each jamb unless otherwise indicated.
    b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
    c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.

3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.

    a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.

5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.

F. Direct Furring:

1. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.

G. Z-Furring Members:

1. Erect insulation vertically and hold in place with Z-furring members spaced 24 inches o.c.
2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches from corner and cut insulation to fit.

H. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.3 INSTALLING SUSPENSION SYSTEMS

A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.

B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

C. Suspend hangers from building structure as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.

    a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
3. Do not attach hangers to steel roof deck.
4. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
5. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
6. Do not connect or suspend steel framing from ducts, pipes, or conduit.

D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.

E. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 09 22 16

SECTION 09 24 00
CEMENT PLASTERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Metal lath and accessories.
2. Portland cement plaster.
3. Stucco finishes.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: When used with an entity, "experienced" means having successfully completed a minimum of 5 projects similar in size and scope to this Project; being familiar with special requirements indicated.

B. Mockups:

1. Size: 4-feet by 4-feet by full thickness with finish specified, using materials specified including all metal support systems and built on site.
2. Obtain Architect’s approval of mockups prior to installation of Portland cement plaster work.
3. Fire-Test-Response Characteristics: ASTM E 119.

1.4 SUBMITTALS

A. Product Data: Submit product data for each product specified.

B. Material Certificates: Submit certificate signed by manufacturer for each kind of plaster aggregate certifying that materials comply with requirements.

C. Shop Drawings: Show locations and installation of control and expansion joints including plans, elevations, sections, details of components and attachments to other work.

D. Samples for Verification: For each type of finish coat indicated; 12 by 12 inches and prepared on rigid backing.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portland Cement: ASTM C1550-92, Type 1, natural color.

B. Masonry Cement: ASTM C90-93, Type S, natural white color.

C. Lime: ASTM C206-84 (1992), Type S, special finishing hydrating lime.

D. Aggregate: ASTM C987, natural sand.

E. Water: Clean, potable, without deposits harmful to stucco.

2.2 LATH

A. Expanded-Metal Lath: ASTM C 847 with ASTM A 653, G60, hot-dip galvanized zinc coating.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Alabama Metal Industries Corporation; a Gibraltar Industries Company.
b. Clark Western Building Systems, inc.
c. Marino/Ware; Division of Ware Industries, Inc.
d. Cemco.

2. Diamond-Mesh Lath: Self-furring.

a. Weight: 3.4 lb/sq. yd.

B. Paper Backing: FS UU-B-790, Type I Grade D, Style 2, water-vapor permeable, uncreped, unreinforced, asphalt saturated; 60-minute water resistance.

1. Provide paper backing for lath at all locations.

2.3 ACCESSORIES

A. Plastic Accessories: Manufactured from high-impact PVC.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Alabama Metal Industries Company; a Gibraltar Industries company.
b. Plastic Components, Inc.
c. Vinyl Corp; a division of ClarkDietrich Building Systems.

2. Cornerbeads: With perforated flanges.

a. Smallnose cornerbead; use unless otherwise indicated.

b. Bullnose cornerbead, radius 3/4-inch minimum; use at locations indicated on Drawings.

3. Casing Beads: With perforated flanges in depth required to suit plaster bases indicated and flange length required to suit applications indicated.

a. Square-edge style; use unless otherwise indicated.
b. Bullnose style, radius 3/4-inch minimum; use at locations indicated on Drawings.

4. Control Joints: One-piece-type, folded pair of unperforated screeds in M-shaped configuration; with perforated flanges and removable protective tape on plaster face of control joint.

5. Reveal Joints: Provide reveal joints in size and shape as indicated on the drawings. At corners provide prefabricated corners with welded joints. Accessory shall have grounds to gage depth of plaster, and keyed flanges.

2.4 MISCELLANEOUS MATERIALS

A. Fiber for Base Coat: Alkaline-resistant glass or polypropylene fibers, 1/2 inch long, free of contaminants, manufactured for use in portland cement plaster.

B. Bonding Compound: ASTM C 932.

C. Steel Drill Screws: For metal-to-metal fastening, ASTM C 1002 or ASTM C 954, as required by thickness of metal being fastened; with pan head that is suitable for application; in lengths required to achieve penetration through joined materials of no fewer than three exposed threads.

2.5 PLASTER MIXES AND COMPOSITIONS

A. General: Comply with ASTM C 926 for base, scratch, and finish-coat mixes as applicable to plaster bases, materials, and other requirements indicated.

B. Base-Coat Mixes and Compositions: Proportion materials for respective base coats in parts by volume per sum of cementitious materials for each method of application and plaster base indicated. Adjust mix proportions to attain workability.

C. Scratch Coat Mix: Proportion by volume in accordance with ASTM C926, for substrates indicated.

D. Base-Coat Mixes for Use over Metal Lath: Scratch and brown coats for three-coat plasterwork as follows:

1. Portland Cement Mixes:

a. Scratch Coat: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 2-1/2 to 4 parts aggregate per part of cementitious material (sum of separate volumes of each component material).
b. Brown Coat: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 3 to 5 parts aggregate per part of cementitious material (sum of separate volumes of each component material).

E. Base-Coat Mixes for Use over Unit Masonry and Concrete: Single base (scratch) coat for two-coat plasterwork on high-absorption plaster bases as follows:

1. Portland Cement Mix: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 2-1/2 to 4 parts aggregate per part of cementitious material.

F. Job-Mixed Finish Coats: Proportion materials for finish coats in accordance with ASTM C926; finish to match Architect's samples.

G. Mixing: Mechanically mix cementitious and aggregate materials for plasters to comply with applicable referenced application standard and with recommendations of plaster manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION OF LATH AND FURRING, GENERAL

A. Standards: Comply with ML/SFA 920, "Guide Specifications for Metal Lathing and Furring," and with requirements of ASTM C 1063.

3.2 INSTALLATION OF PLASTERING ACCESSORIES

A. General: Comply with referenced lathing and furring installation standards for provision and location of plaster accessories of type indicated. Miter or cope accessories at corners; install with tight joints and in alignment. Attach accessories securely to plaster bases to hold accessories in place and in alignment during plastering.

1. Install according to ASTM C 1063 and at locations indicated on Drawings.

B. Control Joints: Install at locations indicated or, if not indicated, at locations complying with the following criteria and approved by Architect:

1. As required to delineate plasterwork into areas (panels) of the following maximum sizes:

   a. Vertical Surfaces: 144 square feet.
   b. Horizontal and other Non-vertical Surfaces: 100 square feet.

2. At distances between control joints of not greater than 18 feet on center.
3. As required to delineate plasterwork into areas (panels) with length-to-width ratios of not greater than 2-1/2:1.
4. Where control joints occur in surface of construction directly behind plaster.
5. Where plasterwork areas change dimensions, to delineate rectangular-shaped areas (panels) and to relieve the stress that occurs at the corner formed by the dimension change.

3.3 PLASTER APPLICATION

A. General: Comply with ASTM C 926.

1. Do not deviate more than plus or minus 1/4 inch in 10 feet from a true plane in finished plaster surfaces when measured by a 10-foot straightedge placed on surface.
2. Finish plaster flush with metal frames and other built-in metal items or accessories that act as a plaster ground unless otherwise indicated. Where casing bead does not terminate plaster at metal frame, cut base coat free from metal frame before plaster sets and groove finish coat at junctures with metal.
3. Provide plaster surfaces that are ready to receive field-applied finishes indicated.

B. Bonding Compound: Apply on unit masonry and concrete substrates for direct application of plaster.

C. Walls; Base-Coat Mixes for Use over Metal Lath: For scratch and brown coats, for three-coat plasterwork with 3/4-inch total thickness, as follows:

1. Portland cement mixes.

D. Walls; Base-Coat Mix: For base (scratch) coat, for two-coat plasterwork and having 3/8-inch thickness on masonry 1/4-inch thickness on concrete, as follows:

1. Portland cement mix.

E. Finish Coats: Apply finish coats to comply with PCA Portland Cement Plaster (Stucco) Manual, and the following requirements:

1. Texture: Fine Sand.

F. Cut, patch, replace, repair, and point up plaster as necessary to accommodate other work. Repair cracks and indented surfaces. Point-up finish plaster surfaces around items that are built into or penetrate plaster surfaces. Repair or replace work to eliminate blisters, buckles, check cracking, dry outs, efflorescence, excessive pinholes, and similar defects. Repair or replace work as necessary to comply with required visual effects.

G. Remove temporary covering and other provisions made to minimize spattering of plaster on other work. Promptly remove plaster from door frames, windows, and other surfaces not to be plastered. Repair surfaces stained, marred or otherwise damaged during plastering work. When plastering work is completed, remove unused materials, containers, equipment, and plaster debris.

1. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer that ensure plaster work is without damage or deterioration at the time of Substantial Completion.

END OF SECTION 09 24 00

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SECTION 09 29 00
GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Interior gypsum board.
2. Acoustically enhanced gypsum board.
3. Tile backing panels.
4. Partition closure.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples for Initial Selection: For each type of trim accessory.

C. Samples for Verification: For the following products:

1. Trim Accessories: Full-size Sample in 12-inch-long length for each trim accessory indicated.

1.4 QUALITY ASSURANCE

A. Mockups: Build mockups of at least 100 sq. ft. in surface area to demonstrate aesthetic effects and to set quality standards for materials and execution.

1. Build mockups for the following:

a. Each level of gypsum board finish indicated for use in exposed locations.

2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
3. Simulate finished lighting conditions for review of mockups.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.

B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

B. Provide gypsum wall board that has been manufactured using synthetic gypsum to the fullest extent possible.

C. Provide gypsum board of types indicated in standard lengths available, minimizing waste.

2.3 INTERIOR GYPSUM BOARD

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Gypsum Board and Related Products:

a. Georgia-Pacific Corp.
b. Gold Bond Building Products Div., National Gypsum Co.
c. Fry Reglet.

d. Lafarge Gypsum.
e. Pittcon Industries.
f. United States Gypsum Company.
g. National Gypsum Co.

B. Gypsum Board, Type X: ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch.
2. Long Edges: Tapered.

C. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396. With moisture- and mold-resistant core and paper surfaces.

1. Thickness: As indicated on Drawings.
2. Long Edges: Tapered.
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

D. Abuse-Resistant Gypsum Board: ASTM C1396/C1396M gypsum board, tested according to ASTM C1629/C1629M.

1. Core: 5/8 inch, Type X.
2. Surface Abrasion: ASTM C1629/C1629M, meets or exceeds Level 3 requirements.
3. Indentation: ASTM C1629/C1629M, meets or exceeds Level 3 requirements.
4. Soft-Body Impact: ASTM C1629/C1629M, meets or exceeds Level 3 requirements.
5. Long Edges: Tapered.
6. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

E. Impact-Resistant Gypsum Board: ASTM C1396/C1396M gypsum board, tested according to ASTM C1629/C1629M.

1. Core: 5/8 inch, Type X.
2. Surface Abrasion: ASTM C1629/C1629M, meets or exceeds Level 3 requirements.
3. Indentation: ASTM C1629/C1629M, meets or exceeds Level 3 requirements.
4. Soft-Body Impact: ASTM C1629/C1629M, meets or exceeds Level 3 requirements.
5. Hard-Body Impact: ASTM C1629/C1629M, meets or exceeds Level 3 requirements according to test in Annex A1.
6. Long Edges: Tapered.
7. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

2.4 SPECIALTY GYPSUM BOARD

A. Acoustically Enhanced Gypsum Board: ASTM C1766. Multilayer products constructed of two layers of gypsum boards sandwiching a viscoelastic sound-absorbing polymer core.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on the Interior Finish Schedule, or comparable product by one of the following:

a. Certainteed; SAINT-GOBAIN.
b. Gold Bond Building Products, LLC provided by National Gypsum Company.

2. Core: 5/8 inch, Type X.
3. Long Edges: Tapered.

2.5 TILE BACKING PANELS

A. Glass-Mat, Water-Resistant Backing Board: ASTM C 1178/C 1178M, with manufacturer's standard edges.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. American Gypsum.
    b. CertainTeed Corporation.
    c. Georgia-Pacific Building Products.
    d. National Gypsum Company.

2. Core: As indicated on Drawings.
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

B. Cementitious Backer Units (For Showers): ANSI A118.9 and ASTM C1288 or ASTM C1325, with manufacturer's standard edges.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Custom Building Products.
    b. National Gypsum Company.
    c. USG Corporation.

2. Core: As indicated on Drawings.
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.6 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Formed metal, Zinc Alloy.
2. Shapes:

    a. Cornerbead.
    b. LC-Bead: J-shaped; exposed long flange receives joint compound.
    c. L-Bead: L-shaped; exposed long flange receives joint compound.
    d. U-Bead: J-shaped; exposed short flange does not receive joint compound.
    e. Expansion (control) joint.

2.7 PARTITION CLOSURE

A. Basis of design product and Manufacturer; Mullion Mate by Gordon Interior Specialties Division.

1. Model and size; as required for configuration.
2. STC of 38.
3. Finish: Clear anodized to match curtain wall and storefront.

2.8 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.
2. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

D. Joint Compound for Tile Backing Panels:

1. Glass-Mat, Water-Resistant Backing Panel: As recommended by backing panel manufacturer.
2. Cementitious Backer Units: As recommended by backer unit manufacturer.

2.9 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.

B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

C. Steel Drill Screws: ASTM C 1002 unless otherwise indicated.

1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION AND FINISHING OF PANELS, GENERAL

A. Comply with ASTM C840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch-wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch-wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

I. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members or provide control joints to counteract wood shrinkage.

J. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C919 and with manufacturer's written instructions for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

K. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 INSTALLATION OF INTERIOR GYPSUM BOARD

A. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.

2. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

    a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
    b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.

3. On Z-shaped furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

B. Multilayer Application:

1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints one framing member, 16 inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
3. On Z-shaped furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
4. Fastening Methods: Fasten base layers with screws; fasten face layers with adhesive and supplementary fasteners.

C. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written instructions and temporarily brace or fasten gypsum panels until fastening adhesive has set.

D. Curved Surfaces:

1. Install panels horizontally (perpendicular to supports) and unbroken, to extent possible, across curved surface plus 12-inch-long straight sections at ends of curves and tangent to them.
2. For double-layer construction, fasten base layer to studs with screws 16 inches o.c. Center gypsum board face layer over joints in base layer, and fasten to studs with screws spaced 12 inches o.c.

3.4 INSTALLATION OF TILE BACKING PANELS

A. Glass-Mat, Water-Resistant Backing Panels: Comply with manufacturer's written installation instructions and install at locations indicated to receive tile. Install with 1/4-inch gap where panels abut other construction or penetrations.

B. Cementitious Backer Units: ANSI A108.11, at showers, tubs, and where indicated.

C. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.5 INSTALLATION OF TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints at locations indicated on Drawings and according to ASTM C840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners unless otherwise indicated.
2. Bullnose Bead: Use where indicated.
3. LC-Bead: Use at exposed panel edges.
4. L-Bead: Use where indicated.
5. U-Bead: Use at exposed panel edges.
6. Curved-Edge Cornerbead: Use at curved openings.

D. Aluminum Trim: Install in locations indicated on Drawings.

3.6 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints, rounded or beveled edges, and damaged surface areas.

C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 2: Panels that are substrate for tile.
3. Level 3: Where indicated on Drawings.
4. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
5. Level 5: Where indicated on Drawings.

E. Glass-Mat Faced Panels: Finish according to manufacturer's written instructions.

F. Cementitious Backer Units: Finish according to manufacturer's written instructions.

3.7 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

C. Remove and replace panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 29 00

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SECTION 09 30 00
TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general and special provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Tile.
2. Waterproofing and crack suppression membrane.
3. Metal Edge Strips.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

C. Samples for Verification:

1. Full-size units of each type and composition of tile and for each color and finish required.
2. Waterproofing.
3. Stone thresholds in 6-inch lengths.
4. Metal edge strips in 6-inch lengths.

1.4 QUALITY ASSURANCE

A. Source Limitations for Tile: Obtain all tile of same type and color or finish from one source or producer.

1. Obtain tile from same production run and of consistent quality in appearance and physical properties for each contiguous area.

B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.

C. Source Limitations for Other Products: Obtain each of the following products specified in this Section through one source from a single manufacturer for each product:

1. Waterproof membrane.
2. Crack isolation membrane.
3. Metal edge strips

D. Preinstallation Conference: Conduct conference at Project site.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement in ANSI A137.1 for labeling sealed tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

1.7 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 5 percent of amount installed, for each type, composition, color, pattern, and size indicated.
2. Grout: Furnish quantity of grout equal to 5 percent of amount installed for each color and type indicated.

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated.

1. Provide tile complying with Standard grade requirements, unless otherwise indicated.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI standards referenced in "Setting and Grouting Materials" Article.

2.2 TILE PRODUCTS

A. Basis of Design Product and Manufacturer; As Indicated on the Interior Finish Schedule, or a comparable product by one of the following:

1. American Olean Tile Co. Inc.
2. Ceramics Technics, Ltd.
3. Interceramic Tile Company.
4. Metropolitan Ceramics.
5. United States Ceramics.
6. Summitville Tiles, Inc.

2.3 WATERPROOFING AND CRACK SUPPRESSION MEMBRANE

A. Thin Set Applications

1. Basis-of-Design Product: Subject to compliance with requirements, provide Custom Building Products; RedGard Waterproofing and Crack Prevention Membrane or a comparable product by one of the following:

   a. Bostik, Inc.
   b. LATICRETE SUPERCAP, LLC.
   c. MAPEI Corporation.

B. Thick Set Applications

1. "Chloraloy 240" chlorinated polyethylene (CPE) shower pan membrane by The Noble Company, or “Kerdi-Drain” by Schluter Systems.
2. Membrane shall comply with ASTM D 4068.
3. Waterproof membrane shall be installed on sloped mortar to provide minimum slope to drains as required by the manufacturer’s written installation instructions.

2.4 SETTING MATERIALS

A. Subject to compliance with requirements, provide products by one of the following:

1. Bostik, Inc.
2. Custom Building Products.
3. LATICRETE SUPERCAP, LLC.

B. Portland Cement Mortar (Thickset) Installation Materials: ANSI A108.02.

C. Modified Dry-Set Mortar (Thinset): ANSI A118.4 and 118.11..

1. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
2. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

2.5 GROUT MATERIALS

A. Basis of Design Product and Manufacturer; As Indicated on the Interior Finish Schedule, or a comparable product by one of the following:

1. Bostik, Inc.
2. Custom Building Products.
3. LATICRETE SUPERCAP, LLC.

B. Water-Cleanable Epoxy Grout: ANSI A118.3.

2.6 SEALANTS

A. Products and Manufacturers: Subject to compliance with requirements, available products and manufacturers that may be incorporated into the Work include, but are not limited to, the following:

1. Keracaulk S (sanded); MAPEI Corporation

a. Colors: To be selected by the Architect from manufacturer's full line.

2.7 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications, stainless steel; ASTM A 666, 300 Series exposed-edge material.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include:

a. Blanke Corporation.
b. Ceramic Tool Company, Inc.
c. Schluter Systems L.P.

2. Where not flush, Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch or less above adjacent floor surface.

C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

2.8 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

1. Verify that substrates for setting tile are firm; dry; clean; free of oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 Series of tile installation standards for installations indicated.
2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare surfaces to receive waterproofing materials in accordance with the manufacturer’s instructions and recommendations.

B. Remove coatings, including curing compounds and other substances that contain soap, wax, oil, or silicone, that are incompatible with tile-setting materials.

C. Provide concrete substrates for tile floors installed with thin-set mortar that comply with flatness tolerances specified in referenced ANSI A108 Series of tile installation standards.

1. Fill cracks, holes, and depressions with trowelable leveling and patching compound according to tile-setting material manufacturer's written instructions. Use product specifically recommended by tile-setting material manufacturer.
2. Remove protrusions, bumps, and ridges by sanding or grinding.

D. Blending: For tile exhibiting color variations within ranges selected during Sample submittals, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

E. Field-Applied Temporary Protective Coating: Where recommended by the tile manufacturer or as needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 INSTALLATION, GENERAL

A. Waterproofing Materials: Install at all floor tile locations. Install in accordance with manufacturer's instructions and recommendations.

B. Workmanship and Visual Appearance: All tile shall be installed with zero-lippage, with straight and even joints, and smooth and flat. The intent is that all tile installations are to be installed using the best of techniques. Any tile that does not meet or exceed the requirements indicated shall be removed and replaced in accordance with specified requirements.

C. ANSI Tile Installation Standards: Comply with parts of ANSI A108 Series "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.

D. TCA Installation Guidelines: TCA's "Handbook for Ceramic Tile Installation."

E. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

F. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

G. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.

1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.

H. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Locate joints in tile surfaces directly above joints in concrete substrates.
2. Prepare joints and apply sealants to comply with requirements in Section 07 92 00 "Joint Sealants."

3.4 FLOOR TILE INSTALLATION

A. General: Install tile to comply with requirements in the Floor Tile Installation Schedule, including those referencing TCA installation methods and ANSI A108 Series of tile installation standards.

B. Joint Widths: Install tile on floors with the following joint widths:

1. Tile: 1/8 inch

C. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.

1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in modified dry-set mortar (thinset).
2. Do not extend waterproofing or crack isolation membrane under thresholds set in modified dry-set mortar. Fill joints between such thresholds and adjoining tile set on waterproofing or crack isolation membrane with elastomeric sealant.

D. Metal Edge Strips: Install at locations indicated.

3.5 WALL TILE INSTALLATION

A. General: Install types of tile designated for wall installations to comply with requirements in the Wall Tile Installation Schedule, including those referencing TCA installation methods and ANSI setting-bed standards.

B. Joint Widths: Install tile on walls with the following joint widths:

1. Tile: 1/8 inch

3.6 CLEANING AND PROTECTING

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove latex-portland cement grout residue from tile as soon as possible.
2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
3. Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent it from clogging drains.

B. When recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.

C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION 09 30 00

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SECTION 09 51 13
ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:

1. Acoustical Lay-in ceiling panels.
2. Exposed suspension systems for interior ceilings.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples for Initial Selection: For components with factory-applied finishes.

C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of sizes indicated below:

1. Acoustical Panels: Set of 6-inch-square Samples of each type, color, pattern, and texture.
2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch- long Samples of each type, finish, and color.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Ceiling suspension-system members.
2. Structural members to which suspension systems will be attached.
3. Method of attaching hangers to building structure.

a. Furnish layouts for cast-in-place anchors, clips, and other ceiling attachment devices whose installation is specified in other Sections.

4. Carrying channels or other supplemental support for hanger-wire attachment where conditions do not permit installation of hanger wires at required spacing.
5. Size and location of initial access modules for acoustical panels.
6. Items penetrating finished ceiling and ceiling-mounted items.
7. Show operation of hinged and sliding components covered by or adjacent to acoustical panels.
8. Minimum Drawing Scale: 1/4 inch = 1 foot.

B. Evaluation Reports: For each acoustical panel ceiling suspension system and anchor and fastener type, from ICC-ES.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For finishes to include in maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Acoustical Ceiling Units: Full-size panels equal to 10 percent of amount installed for each type indicated, but not more than 2 boxes.

1.8 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Build mockup of typical ceiling area as shown on Drawings.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels, suspension-system components, and accessories to Project site and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

1.10 FIELD CONDITIONS

A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain each type of acoustical ceiling panel and its supporting suspension system from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: Class A according to ASTM E 1264.
2. Smoke-Developed Index: 50 or less.

2.3 ACOUSTICAL PANELS

A. Type A1 - Basis-of-Design Product: Subject to compliance with requirements, provide Armstrong Ceiling & Wall Solutions, Item No. 1821, Fine Fissured; or a comparable product by one of the following:

1. CertainTeed Corporation.
2. USG Corporation.

a. Size: 24 inches by 24 inches.
b. Thickness: 3/4-inch
c. Edge: Tegular.
d. NRC of .70 and a CAC minimum of 35.
e. Color: White.

B. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.

1. Antimicrobial Treatment: Manufacturer's standard broad spectrum, antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273, ASTM D 3274, or ASTM G 21 and evaluated according to ASTM D 3274 or ASTM G 21.

2.4 METAL SUSPENSION SYSTEM

A. Basis-of-Design Product: Subject to compliance with requirements, provide Armstrong Ceiling & Wall Solutions, Prelude XL 15/16”; or a comparable product by one of the following:

1. CertainTeed Corporation; Saint-Gobain North America.
2. Rockfon (Rockwool International).
3. USG Corporation.

B. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, metal suspension system and accessories according to ASTM C635/C635M and designated by type, structural classification, and finish indicated.

1. High-Humidity Finish: Where indicated, provide coating tested and classified for "severe environment performance" according to ASTM C635/C635M.

C. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized, G30 coating designation; with prefinished 15/16-inch-wide metal caps on flanges.

1. Structural Classification: Heavy-duty system.
2. End Condition of Cross Runners: Override (stepped) type.
3. Face Design: Flat, flush.
4. Cap Material: Cold-rolled steel or aluminum.
5. Cap Finish: Match Architect’s sample.

2.5 ACCESSORIES

A. Attachment Devices: Size for five times the design load indicated in ASTM C635/C635M, Table 1, "Direct Hung," unless otherwise indicated.

1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing according to ASTM E488/E488M or ASTM E1512 as applicable, conducted by a qualified testing and inspecting agency.

a. Type: Postinstalled expansion anchors.
b. Corrosion Protection: Carbon-steel components zinc plated according to ASTM B633, Class SC 1 (mild) service condition.
c. Corrosion Protection: Components fabricated from nickel-copper-alloy rods complying with ASTM B164 for UNS No. N04400 alloy.

2. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing according to ASTM E1190, conducted by a qualified testing and inspecting agency.

B. Wire Hangers, Braces, and Ties: Provide wires as follows:

1. Zinc-Coated, Carbon-Steel Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper.
2. Size: Wire diameter sufficient for its stress at three times hanger design load (ASTM C635/C635M, Table 1, "Direct Hung") will be less than yield stress of wire, but not less than 0.106-inch-diameter wire.

C. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.

D. Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.

E. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch-thick, galvanized-steel sheet complying with ASTM A653/A653M, G90 coating designation; with bolted connections and 5/16-inch-diameter bolts.

F. Hold-Down Clips: Manufacturer's standard hold-down, install at vestibules.

2.6 MISCELLANEOUS MATERIALS

A. Concealed Acoustical Sealant: Nondrying, nonhardening, nonskinning, nonstaining, non-bleeding gunnable sealant complying with requirement specified in Section 07 92 00 “Joint Sealants.”

2.7 METAL EDGE MOLDINGS AND TRIM

A. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.

1. Edge moldings shall fit acoustical panel edge details and suspension systems indicated and match width and configuration of exposed runners unless otherwise indicated.
2. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.

2.8 ACOUSTICAL SEALANT

A. Refer to Section 07 92 00 “Joint Sealants.”

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.

B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated, and comply with layout shown on reflected ceiling plans.

B. Layout openings for penetrations centered on the penetrating items.

3.3 INSTALLATION

A. Install acoustical panel ceilings according to ASTM C636/C636M and manufacturer's written instructions.

B. Suspend ceiling hangers from building's structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly to structure or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.

5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
8. Do not attach hangers to steel deck tabs.
9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
10. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.

D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.

1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends. Miter corners accurately and connect securely.
3. Do not use exposed fasteners, including pop rivets, on moldings and trim.

E. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

F. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide precise fit.

1. Arrange directionally patterned acoustical panels as follows:

   a. As indicated on reflected ceiling plans.
   b. Install panels in a basket-weave pattern.

2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
3. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
4. For reveal-edged panels on suspension-system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension-system surfaces and panel faces flush with bottom face of runners.
5. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.

6. Install hold-down clips at vestibules and in areas indicated; space according to panel manufacturer's written instructions unless otherwise indicated.

   a. Hold-Down Clips: Space 24 inches o.c. on all cross runners.

7. Protect lighting fixtures and air ducts according to requirements indicated for fire-resistance-rated assembly.

3.4 ERECTION TOLERANCES

A. Suspended Ceilings: Install main and cross runners level to a tolerance of 1/8 inch in 12 feet, non-cumulative.

B. Moldings and Trim: Install moldings and trim to substrate and level with ceiling suspension system to a tolerance of 1/8 inch in 12 feet, non-cumulative.

3.5 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.

B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 51 13

SECTION 09 65 13
RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Resilient Wall Base.
2. Resilient Accessories

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples for Initial Selection: For each type of product indicated.

C. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches long.

D. Product Schedule: For resilient base and accessory products. Use same designations indicated on Drawings.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

1.5 FIELD CONDITIONS

A. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 RESILIENT BASE

A. Basis of Design Product and Manufacturer; As Indicated on the Interior Finish Schedule, or comparable product by one of the following:

1. Armstrong World Industries, Inc.
2. Burke Mercer Flooring Products; a division of Burke Industries Inc.
3. Roppe Corporation, USA.

B. Height: As indicated on the Interior Finish Schedule.

C. Lengths: Coils in manufacturer's standard length.

D. Outside Corners: Preformed.

E. Inside Corners: Preformed.

F. Colors and Patterns: As indicated on the Interior Finish Schedule.

2.2 RESILIENT ACCESSORIES

A. Provide Products by one of the following:

1. Armstrong World Industries, Inc.
2. Burke Mercer Flooring Products; a division of Burke Industries Inc.
3. Roppe Corporation, USA.

B. Profile and Dimensions: As indicated.

C. Locations: Provide molding accessories in areas and conditions indicated.

D. Colors and Patterns: As selected by Architect from Manufacturers full range.

2.3 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by manufacturers to suit base and substrate conditions indicated.

2.4 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

1. Installation of resilient products indicates acceptance of surfaces and conditions.

2.5 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

C. Do not install resilient products until materials are the same temperature as space where they are to be installed.

1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

2.6 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Preformed Corners: Install preformed corners before installing straight pieces.

2.7 RESILIENT ACCESSORY INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient accessories.

B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

2.8 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Perform the following operations immediately after completing resilient-product installation:

1. Remove adhesive and other blemishes from surfaces.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

END OF SECTION 09 65 13

SECTION 09 65 40
LUXURY VINYL TILE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Luxury Vinyl Tile

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For each type of flooring.

1. Include flooring layouts, locations of seams, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
2. Show details of special patterns.

C. Samples for Initial Selection: For each type of flooring indicated, and metal edge strips in 6-inch lengths.

D. Samples for Verification: For each type of flooring indicated, and metal edge strips in 6-inch lengths.

E. Product Schedule: For flooring. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of flooring to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for flooring installation and seaming methods indicated.

1. Engage an installer who employs workers for this Project who are trained or certified by flooring manufacturer for installation techniques required.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Coordinate mockups in this Section with mockups specified in other Sections.

a. Size: Minimum 100 sq. ft. for each type, color, and pattern in locations directed by Architect.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store flooring and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 65 deg F or more than 90 deg F.

1. Floor Tile: Store on flat surfaces.
2. Sheet Flooring: Store rolls upright.

1.8 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive flooring during the following periods:

1. 72 hours before installation.
2. During installation.
3. 72 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

C. Close spaces to traffic during flooring installation.

D. Close spaces to traffic for 72 hours after flooring installation.

E. Install flooring after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For resilient sheet flooring, as determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.2 LUXURY VINYL TILE

A. Basis of Design Product and Manufacturer; As Scheduled on the Interior Finish Schedule, subject to compliance with requirements other Manufacturers offering products which may be incorporated into the work are but not limited to the following:

1. Armstrong World Industries.
2. Mohawk Flooring.
3. Shaw Contract.
4. Tandus Centiva.

a. Thickness: As indicated on the Interior Finish Schedule.
b. Wearing Surface: As selected by Architect from Manufacturer's full range of textures.
c. Colors and Patterns: As selected by Architect from full range of industry colors.

2.3 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by floor plank manufacturer for applications indicated.

B. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications, stainless steel; ASTM A 666, 300 Series exposed-edge material.

1. Basis of Design Product and Manufacturer; As Indicated on the Interior Finish Schedule.

C. Adhesives: Water-resistant type recommended by floor plank and adhesive manufacturers to suit floor plank and substrate conditions indicated.

PART 3 - EXECUTION

A. Prepare substrates according to floor plank manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates: Prepare according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.

2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor plank manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by floor plank manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing.
4. Moisture Testing: Proceed with installation only after substrates pass testing according to floor plank manufacturer's written recommendations, but not less stringent than the following:

    a. Perform anhydrous calcium chloride test according to ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
    b. Perform relative humidity test using in situ probes according to ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install floor planks until they are the same temperature as the space where they are to be installed.

E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor plank.

3.2 FLOOR PLANK INSTALLATION

A. Comply with manufacturer's written instructions for installing floor plank.

B. Lay out floor planks from center marks established with principal walls, discounting minor offsets, so planks at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half plank at perimeter.

1. Lay planks in pattern indicated.

C. Match floor planks for color and pattern by selecting planks from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed planks.

1. Lay planks in pattern of colors and sizes indicated.

D. Scribe, cut, and fit floor planks to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend floor planks into toe spaces, door reveals, closets, and similar openings. Extend floor planks to center of door openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor planks as marked on substrates. Use chalk or other nonpermanent marking device.

G. Install floor planks on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of plank installed on covers and adjoining planks. Tightly adhere plank edges to substrates that abut covers and to cover perimeters.

H. Adhere floor planks to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

I. Metal Edge Strips: Install where exposed edge of tile flooring meets carpet, vinyl, wood, or other flooring that finishes flush with top of tile.

3.3 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting floor plank.

END OF SECTION 09 65 40

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SECTION 09 67 23
RESINOUS FLOOR COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Resinous flooring.
2. Integral cove base accessories.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review manufacturer's written instructions for substrate preparation and environmental conditions affecting resinous flooring installation.
2. Review details of integral cove bases.
3. Review manufacturer's written instructions for installing resinous flooring systems.
4. Review protection measures for adjacent construction and installed flooring, floor drainage requirements, curbs, base details, and so forth.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include manufacturer's technical data, installation instructions, and recommendations for each resinous flooring component required.

B. Samples for Initial Selection: For each type of exposed finish required.

C. Samples for Verification: For each resinous flooring system required and for each color and texture specified, 6 inches square, applied to a rigid backing by Installer for this Project.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Material Certificates: For each resinous flooring component.

C. Material Test Reports: For each resinous flooring system, by a qualified testing agency.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For resinous flooring to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1. Engage an installer who is certified in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Apply full-thickness mockups on 96-inch-square floor area selected by Architect.

a. Include 96-inch length of integral cove base with inside and outside corner.

2. Simulate finished lighting conditions for Architect's review of mockups.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring installation.

B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring installation.

C. Close spaces to traffic during resinous flooring installation and for 24 hours after installation unless manufacturer recommends a longer period.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Flooring products shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

B. Flammability: Self-extinguishing according to ASTM D 635.

2.2 MANUFACTURERS

A. Source Limitations: Obtain flooring materials, including primers, resins, leveling agent, hardening agents, grouting coats, and topcoats, from single source from single manufacturer.

2.3 ACCEPTABLE MANUFACTURERS

A. Basis of Design Manufacturer; As indicated on the Finish Schedule, or subject to compliance with requirement other Manufacturer offering products which may be incorporated into the work are but not limited to the following:

   a. Stonhard.
   b. Tnemec Inc.

B. Resinous flooring system: Seamless floor consisting of a clear epoxy binder, broadcast with multicolor vinyl chips and sealed with transparent, or UV stable topcoats. System to consist of the following components:

   1. Primer: Sikafloor 161 applied between 8 – 10 mils.
   2. Body Coat: Sikafloor 264 with Broadcast Decorative Flakes to Rejection applied at 10 - 12 mils.
   3. Top Coat: Sikafloor 217 applied at 10 - 12 mils.
   4. 2nd Top Coat: Sikafloor 304 W NA applied at 4 - 6 mils.

C. System Characteristics:

   1. Color and Pattern: As selected by Architect from Manufacturer’s standard range.

2.4 MATERIALS

A. Underlayment: Type recommended by resinous coating manufacturer for substrate and system indicated.

2.5 ACCESSORIES

A. General: Provide accessories recommended by the materials manufacturer for applications indicated.

B. Patching and Fill Material: Type recommended by manufacturer for application indicated.

C. Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service and joint condition indicated.

D. Termination strips: Metal terminations strips product and Manufacturer as indicated on the drawings.

1. Finish: as indicated.
2. Shape/ profile: as indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to receive resinous coating system. Do not begin surface preparation or application until unacceptable conditions have been corrected. Do not apply to substrate treatments for moisture, repair, or leveling not of the same Manufacturer.

B. Surface must be clean, sound and dry. Remove dust, laitance, grease, curing compounds bond inhibiting impregnations, waxes and any other contaminates. All projections, rough spots, etc. should be dressed off to achieve a level surface prior to the application.

C. Concrete substrate to have a minimum compressive strength of 3,500 psi at 28 days and a minimum of 215 psi in tension at time of application.

D. Substrate moisture:

1. Measure and confirm Substrate Moisture Content, Ambient Relative Humidity, Ambient and Surface Temperature and Dew Point.
2. Confirm and record above values at least once every 3 hours during installation, or more frequently whenever conditions change (e.g. Ambient Temperature rise/fall, Relative Humidity increase/decrease, etc.).

E. Ensure concrete substrate conforms to the minimum requirements of the manufacturer.

3.2 SURFACE PREPARATION

A. Prepare surface to receive coating systems in accordance with manufacturer's written instructions.

B. Remove dirt, oil, grease, wax, laitance, curing compounds, water-soluble concrete hardeners, and other surface contaminants. Remove top coats, finishes, and paints. Remove unsound concrete by appropriate mechanical means.

C. Concrete: Shall be cleaned and prepared to achieve laitance-free and contaminant-free, open textured surface by shot blasting or equivalent mechanical means (CSP level as per ICRI guidelines and manufacturer’s written recommendation).

D. Chemical Surface Preparation: Chemical surface preparation (acid etching) is unacceptable.

E. Control joints and cracks: Provide repair and treatment of control joints and surface cracks utilizing manufacturer's standard materials and installation details.

3.3 APPLICATION

A. Mix and apply material with strict adherence to manufacturer's written installation procedures and coverage rates.

B. Follow Manufacturer's written recommendations on terminations and connections to walls, drains, doorways, columns and transitions.

C. Do not apply while ambient and substrate temperatures are rising.

D. Apply resinous coatings with care to ensure that no laps, voids, or other marks or irregularities are visible, and with an appearance of uniform color, sheen and texture, all within limitations of materials and areas concerned.

E. Install cove base in height as indicated on the Finish Schedule, in accordance with manufacturer's written instructions.

3.4 CLEAN UP

A. Disposal of this product, solution and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

B. Empty containers should be taken to an approved waste handling site for recycling or disposal.

3.5 PROTECTION

A. Freshly applied material should be protected from dampness, condensation and water for at least 72 hrs.

B. Beware of air flow and changes in air flow. Introduction of dust, debris, and particles, etc. may result in surface imperfections and other defects.

C. Protect resinous coating from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous coating manufacturer.

END OF SECTION 09 67 23

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SECTION 09 68 13
CARPET TILE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes carpet tile and accessories.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to carpet tile installation including, but not limited to, the following:

    a. Review delivery, storage, and handling procedures.
    b. Review ambient conditions and ventilation procedures.
    c. Review subfloor preparation procedures.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
2. Include manufacturer's written installation recommendations for each type of substrate.

B. Shop Drawings: For carpet tile installation, plans showing the following:

1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
2. Carpet tile type, color, and dye lot.
3. Type of subfloor.
4. Type of installation.
5. Pattern of installation.
6. Pattern type, location, and direction.
7. Pile direction.
8. Type, color, and location of insets and borders.
9. Type, color, and location of edge, transition, and other accessory strips.
10. Transition details to other flooring materials.

C. Samples for Initial Selection: For each type of carpet tile.

1. Include Samples of exposed edge, transition, and other accessory stripping involving color or finish selection.

D. Samples for Verification: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

1. Carpet Tile: Full-size Sample.
2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch- long Samples.

E. Product Schedule: For carpet tile. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.

1. Smoke and flammability reports

C. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:

1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

B. Video recording of instruction class for the Owner’s maintenance staff.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Carpet Tile: Full-size units equal to 10 percent of amount installed for each type indicated, but not more than 2 boxes.

1.8 QUALITY ASSURANCE

A. Contractor’s Qualifications:

1. Employ only experienced installers, skilled in installation of the specified systems.
2. Installation company shall employ a minimum of three qualified installers with a minimum of three years experience each of installing similar systems.

B. Manufacturer's Qualifications:

1. Employ only manufacturers making the specified materials as a current production item.
2. Manufacturers shall have a minimum of five years of production experience with carpet of similar types to that specified.

C. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.

1. Build mockups at locations and in sizes shown on Drawings.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

D. Source Limitations: Obtain carpet from a single source, unless otherwise directed by Architect.

E. Carpet shall have been tested against and passed the Indoor Air Quality Carpet Testing Program requirements of CRI.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Comply with CRI's "CRI Carpet Installation Standard."

B. Deliver materials in the original factory packaging, labeled with identification of manufacturer, brand name, lot number, and test data.

C. Store materials on site, in original packaging, inside a well-ventilated area protected from weather, moisture, soilage, extreme temperatures, and humidity.

1.10 FIELD CONDITIONS

A. Comply with CRI's "CRI Carpet Installation Standard" for temperature, humidity, and ventilation limitations.

B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.

C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

D. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

1.11 PROJECT CONDITIONS

A. Dimensions supplied in these Specifications and Drawings are approximate. Field verify dimensions and other conditions affecting Work.

1.12 WARRANTIES

A. Manufacturer's Warranty: Non-pro-rated, not less than 15 year warranty against surface pile wear, zippering, edge ravel, excessive static, loss of resiliency, moisture barrier, and delamination of secondary backing.

B. Installer's Warranty: Guarantee installation against defects in workmanship, seaming, and loss of adhesion for not less than 3 years from Date of Substantial Completion.

C. Warranties shall begin on the date of Substantial Completion.

D. Upon written notice from the Architect, correct or replace improper work and material that may become apparent within the warranty period. Repairs will be made in accordance with this specification.

1. Exception: Any problems arising from improper adherence to the manufacturer's recommended maintenance program.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Carpeting shall have a minimum critical radiant flux of 0.45 watts per square centimeter (radiant panel test) per ASTM E-648 "Standard Test Methods for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source", latest edition.

B. Carpet Fire-Test-Response Characteristics: Provide carpeting with the following characteristics as determined by testing identical products per test method indicated below by U.L. or another nationally recognized testing laboratory acceptable to the authorities having jurisdiction. Identify carpet with appropriate markings of applicable agency.

1. Surface Flammability: Passes CPSC 16 CFR, Part 1630
2. Flame Spread 25 or less per ASTM E 84, latest edition
3. Smoke Development: 450 or less per ASTM E 84, latest edition
4. Static: Under 3.5 kv. Below the average level of human sensitivity

C. Dry Breaking Strength: Not less than 100 lbf according to ASTM D 2646.

D. At locations indicated: Electrostatic Propensity: Less than 2 kV according to AATCC 134.

2.2 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, as indicated on the Interior Finish Schedule, or a comparable product by one of the following:

1. Interface, LLC.
2. Milliken & Company.
3. Shaw Contract.
4. Tandus; a Tarkett company.

2.3 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.

B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.

C. Vinyl Carpet Trims: Products and colors shall be as selected by Architect from available products and accessories similar to those manufactured by Johnsonite.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance.

B. Examine carpet tile for type, color, pattern, and potential defects.

C. Concrete Slabs: Verify that finishes comply with requirements specified in Section 03 30 00 "Cast-in-Place Concrete" and that surfaces are free of cracks, ridges, depressions, scale, and foreign deposits.

1. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

a. Anhydrous Calcium Chloride Test: ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Comply with CRI's "Carpet Installation Standards" and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile.

B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8-inch-wide or wider, and protrusions more than 1/32 inch unless more stringent requirements are required by manufacturer's written instructions.

C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet tile manufacturers.

D. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

A. General: Comply with CRI's "CRI Carpet Installation Standard," Section 18, "Modular Carpet" and with carpet tile manufacturer's written installation instructions.

B. Installation Method: Glue down; install every tile with full-spread, releasable, pressure-sensitive adhesive.

C. Maintain dye-lot integrity. Do not mix dye lots in same area.

D. Maintain pile-direction patterns, match mock-up.

E. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, and thresholds. Bind or seal cut edges as recommended by carpet tile manufacturer.

F. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.

H. Install pattern parallel to walls and borders.

I. Separate waste in accordance with the Waste Management Plan. Manufacturer to reclaim all scrap not retained by Owner.

3.4 CLEANING AND PROTECTION

A. All scrap carpet shall be palletized and returned to the manufacturer.

B. Immediately after installation, remove visible cement, dirt, wrappings, cartons, clippings, and other foreign substances. Vacuum carpet.

1. Remove excess adhesive and other surface blemishes using cleaner recommended by carpet tile manufacturer.
2. Remove yarns that protrude from carpet tile surface.
3. Vacuum carpet tile using commercial machine with face-beater element.

C. Protect installed carpet tile to comply with CRI's "Carpet Installation Standard," Section 20, "Protecting Indoor Installations."

D. Provide final protection and maintain conditions in a manner acceptable to the manufacturer and installer until the Date of Substantial Completion.

E. Conduct an instruction class for the Owner's maintenance staff prior to the Date of Substantial Completion.

1. Instruct personnel on the proper method of cleaning the material as recommended by the manufacturer.
2. Videotape this session.

END OF SECTION 09 68 13

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SECTION 09 75 23
STONE WINDOW SILLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes marble windowsills.

1.3 SUBMITTALS

A. Product data for each type of marble, marble accessory, and other manufactured products required.

B. Shop drawings detailing fabrication and installation of marble. Include cutting and setting drawings indicating sizes, dimensions, and sections; arrangement and provisions for jointing, supporting, anchoring, and bonding stonework; and details showing relationship with, attachment to, and reception of related work.

C. Samples for verification purposes of marble in form of sets for each color, grade, finish, type, and variety required and consisting of marble not less than 12 inches square. Include 2 in each set of samples showing the full range of variations in appearance characteristics to be expected in completed work.

1.4 QUALITY ASSURANCE

A. Single-Source Responsibility for marble: Obtain each color, grade, finish, type, and variety of stone from a single quarry with resources to provide materials of consistent quality in appearance and physical properties, including the capacity to cut and finish material without delaying the progress of the work.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project Site in undamaged condition.

B. Store and handle stone and related materials to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion, breakage, chipping, or other causes.

1. Do not use pinch or wrecking bars.

2. Store stone on wood skids or pallets covered with nonstaining, waterproof membrane. Place and stack skids and stones to distribute weight evenly and to prevent breakage or cracking of stones.
3. Protect stored stone from weather with waterproof, nonstaining covers or enclosures, but allow air to circulate around stones.
4. Store cementitious materials off the ground, under cover, and in dry location.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Comply with referenced standards and other requirements indicated applicable to each type of material required.

B. Provide matched marble from a single quarry for each type, variety, color, and quality of stone required.

2.2 MARBLE

A. "Alabama" as manufactured by the Georgia Marble Dimension Stone, Polycor, Inc., Tate, Georgia. The following are approved manufacturers: (Equal products are at the approval of the Architect by the following manufacturers. Other manufacturers shall submit request for product approval at least 10 days prior to bid due date.)

1. Amlink Marble, Ypsilanti, Michigan
2. Central Marble Products, Rice, Minnesota
3. "Pure White Thazoz" by StonExchange, Miami, Florida.

B. Physical Properties: per ASTM C503:

1. Absorption by weight, % 0.09
2. Density, lb/cu.ft 169
3. Compressive strength, PSI 9333
4. Modulus of rupture, PSI 1364
5. Abrasion resistance, hardness 16.6
6. Flexural strength, PSI 1296

2.3 ANCHORS AND ATTACHMENTS

A. Provide anchors and attachments of type and size required to support dimension stonework and fabricated from the following metals for conditions and anchors indicated below:

1. Stainless Steel: ASTM A666, AISI Type 304, temper as required to support loads imposed without exceeding allowable design stresses, for anchors in direct contact with stone and the fasteners connecting them to other anchors and to building structure.

2.4 DIMENSION STONE FABRICATION

A. General: Fabricate dimension stonework in sizes and shapes required to comply with requirements indicated, including details on Drawings and final shop drawings.

1. For marble comply with recommendations of Marble Institute of America, Inc. (MIA) as published in "Dimensional Stone - Design Manual III."

B. Cut stones to produce pieces of thickness, size, and shape indicated to comply with fabrication and construction tolerances recommended by applicable stone association or, if none, by stone source, for faces, edges, beds, and backs.

C. Finish exposed faces and edges of stones to comply with requirements indicated for finish under each type and application of stone required and to match approved samples and field-constructed mock-ups.

D. Carefully inspect finished stones at fabrication plant for compliance with requirements relative to qualities of appearance, material, and fabrication; replace defective stones with ones that do comply.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to receive marble, and conditions under which marble will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of dimension stonework. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. All materials used in installation of marble shall be installed in accordance with the manufacturer's requirements.

B. Installation shall be in accordance with the Drawings, reviewed shop drawings, and manufacturers recommendations.

3.3 CLEANING

A. After completion of work, all marble surfaces shall be carefully cleaned to remove dirt, stains, or other defacements. Under no circumstances shall wire brushes, harsh abrasive cleansers or acid be used to clean marble.

3.4 PROTECTION

A. Protect and maintain conditions in a manner acceptable to Fabricator and Installer to ensure stonework is not damaged at time of Substantial Completion.

END OF SECTION 09 75 23

SECTION 09 77 19
DECORATIVE WALL PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes: Decorative Wall Panels.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product data and detailed specifications for each system component and installation accessory required, including installation methods.

B. Shop drawings showing locations, seam locations, placement of " in-wall blocking" and or plywood skinned walls, pattern orientation, installation method, corner conditions and installation details of wall panel products.

C. Samples for initial selection: Submit the following samples, as proposed for this work, for verification of color, texture, pattern and thickness:

D. Samples for verification purposes: Submit the following samples, as proposed for this work, for verification of color, texture, pattern and thickness:

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Elevations and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Electrical outlets, switches, and thermostats.
2. Items penetrating or covered by panel systems including the following:

    a. Lighting fixtures.
    b. Air outlets and inlets.
    c. Speakers.
    d. Alarms.

e. Access panels.

B. Qualification Data: For Installer.

C. Product Certificates: For each type of panel system.

D. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For panel systems to include in maintenance manuals. Include panel manufacturer's written cleaning and stain-removal.

1.7 QUALITY ASSURANCE

A. Installer qualifications: Engage an installer who has no less than 3 years experience in installation of wall panels similar in complexity to those required for this project.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in accordance with manufacturer’s written instructions.

1. Deliver materials on strong pallets in manufacturer’s original, unopened, undamaged containers with identification labels intact and product name and manufacturer clearly visible and in sizes to suit project.
2. Inspect each package for damage and promptly contact Marlite, Inc. directly to report damaged packages or missing components

1.9 PROJECT CONDITIONS

A. Materials must be acclimated in an environment of 65-75ºF (18-24ºC) with maintained relative humidity levels of 25-55% for at least 48 hours prior to beginning the installation.

B. Installation areas must be enclosed and weatherproofed before installation commences.

1.10 WARRANTY

A. Manufacturer’s warranty: Submit, for Owner’s acceptance, manufacturer’s standard warranty document executed by authorized company official.

1. Manufacturer’s warranty is in addition to and not intended to limit other rights Owner may have under Contract Conditions.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: Wall systems shall comply with "Surface-Burning Characteristics" or "Fire Growth Contribution" Subparagraph below, or both, as determined by testing identical products by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

1. Surface-Burning Characteristics: Comply with ASTM E84 or UL 723; testing by a qualified testing agency on systems prepared according to ASTM E2573. Identify products with appropriate markings of applicable testing agency.

a. Flame-Spread Index: 25 or less.
b. Smoke-Developed Index: 450 or less.

2. Fire Growth Contribution: Comply with acceptance criteria of local code and authorities having jurisdiction when tested according to NFPA 286.

2.2 DECORATIVE WALL PANELS - DP-1

A. Product quality standard: To comply with AWI section 500 for flush fitting wood paneling. Quality grade to be premium.

B. Basis of Design Product and Manufacturer; As indicated on the Interior Finish Schedule.

C. Panel Configuration: As indicated.

1. Panel thickness: 3/4 inches maximum.
2. Product Category: Elements.
3. High Density Fiberboard.
4. Design: CNC Routed, as Indicated.
5. Finish: As Indicated.
6. Size: 48” X 96”.
7. Core: (IDF) Interlam Density Fiber Board.
8. Carving Depth: .35” Deep.

2.3 ACCESSORIES

A. Adhesives: Solvent based low VOC adhesive.

1. Acceptable Material: Marlite C-109 Solvent Based Adhesive.

2.4 MOUNTING

A. Mount on Z-Clips provided there is sufficient material thickness to allow screw attachment of the clips to the Art Diffusion panel. Panels shall be thick enough or with a thick enough backer to accommodate the screws that are to be used. Panels of minimum recommended thickness can be used for Z-Clip installation, but the installer must first glue wood screw cleats to the back of the panel. Z-Clips should run the full panel width to insure adequate support across the entire panel. A minimum of four (4) rows of z-clips are required per 8 foot high panel specified. The rows should be situated at the extreme top and bottom of the panel with the remaining rows centered. Plywood or solid wood “in-wall” blocking is required with metal stud construction and recommended with wood framing.

2.5 FABRICATION

A. General: Fabricate wall panels to comply with requirements indicated for design, dimensions, detail, finish and sizes. All based upon required field verified dimensions.

2.6 FINISHES

A. Seal backs and edges prior to finishing faces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.

B. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface preparation: Prior to installation, clean substrate to remove dirt, debris and loose particles.

B. Protection: Take all necessary steps to prevent damage to material during installation as required in manufacturer's installation instructions.

3.3 INSTALLATION

A. Install the work of this section in strict accordance with the manufacturer's recommendations and the required field verified dimensions.

B. Temperature at the time of installation must be between 65-75ºF (18-24ºC) and be maintained for at least 48 hours after the installation to allow for proper adhesive set up.

C. Relative humidity should be maintained within the range of 25-55%.

3.4 CLEANING

A. General: Immediately upon completion of installation, clean wall panels and accessories in accordance with manufacturer's recommended cleaning method.

B. Remove surplus materials, rubbish and debris resulting from installation as work progresses and upon completion of work.

3.5 PROTECTION

A. Protect installed materials to prevent damage by other trades. Use materials that may be easily removed without leaving residue or permanent stains.

END OF SECTION 09 77 19

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SECTION 09 91 00
PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Exposed exterior items and surfaces.
2. Exposed interior items and surfaces.
3. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.

B. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Architect will select from standard colors and finishes available. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment installed and application of paint coats to all finish coated mechanical and electrical equipment in exterior locations, except as otherwise indicated.

C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.

D. Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

1.3 SUBMITTALS

A. Product Data: For each paint system specified. Include block fillers and primers.

1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
2. Manufacturer's Information: Provide manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material proposed for use.

B. Samples for Initial Selection: Manufacturer's color charts showing the range of colors available for each type of finish-coat material indicated.

1. After color selection, the Architect will furnish color chips for surfaces to be coated.

C. Samples for Verification: Of each color and material to be applied, with texture to simulate actual conditions, on representative Samples of the actual substrate.

1. Provide stepped Samples, defining each separate coat, including block fillers and primers. Use representative colors when preparing Samples for review. Resubmit until required sheen, color, and texture are achieved.
2. Provide a list of materials and applications for each coat of each sample. Label each sample for location and application.
3. On actual wall surfaces and other exterior and interior building components, duplicate painted finishes of prepared samples. On at least 100 square feet of surface, as directed, provide full-coat finish samples until required sheen level., color and texture is obtained; simulate finished lighting conditions for review of in-place work.

D. Qualification Data: For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to that indicated for this Project with a record of successful in-service performance.

B. Source Limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:

1. Product name or title of material.
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.
8. VOC content.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain containers used in storage in a clean condition, free of foreign materials and residue.

1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.6 PROJECT CONDITIONS

A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 90 degrees F.

B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 and 95 degrees F.

C. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products and Manufacturers: Subject to compliance with requirements, products and manufacturers specified include, but are not limited to, the following:

1. The Sherwin-Williams Company

a. Other Products and Manufacturers: Subject to compliance with requirements, available products and manufacturers that may be incorporated into the Work include, but are not limited to, the following:

1) Benjamin Moore & Company (Moore).
2) Glidden Professional.
3) PPG Industries, Inc. (PPG).

2.2 PAINT PRODUCTS, GENERAL

A. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

B. Colors: Provide color selections made by the Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements.

1. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.

B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

1. Notify the Architect about anticipated problems using the materials specified over substrates primed by others.

3.2 PREPARATION

A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning.

1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.

D. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.

E. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of the same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.

3.4 CLEANING

A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.

1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

3.5 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.

B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.

1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.6 INTERIOR PAINT SCHEDULE

A. Concrete Masonry Units:

1. Acrylic Finish, two finish coats over block filler.

a. Block Filler: SW Heavy Duty Block Filler (B42W46).
b. Second and Third Coats: SW Promar 200 Zero VOC Latex (B31 Series).
c. Sheen: See Interior Finish Schedule.

2. Epoxy Finish: two finish coats over primer.

a. Primer: SW Promar 200 Zero VOC Latex Primer (B28 Series).
b. Second and Third Coats: Pro-Industrial water based Catalyzed Epoxy.
c. Sheen: See Interior Finish Schedule.

B. Concrete Floors (Sealer): Sealed concrete.

1. Acrylic, clear. Two coats over prepared substrate.

a. Finish Coats: Groundworks 3214, Water-Based Clear Acrylic Concrete Sealer; Glidden Professional

C. Gypsum Board:

1. Water based enamel, two finish coats over primer.

a. Primer: SW Promar 200 Zero VOC Latex Primer (B28 Series).
b. Second and Third Coats: SW Scuff Tuff Enamel.
c. Sheen: See Interior Finish Schedule.

2. Epoxy Finish: Two finish coats over primer.

    a. Primer: SW Promar 200 Zero VOC Latex Primer (B28 Series).
    b. Second and Third Coats: Pro-Industrial water based Catalyzed Epoxy.
    c. Sheen: See Interior Finish Schedule.

D. Overhead Steel Structure:

1. Dryfall; Two Finish Coats over Primer.

    a. Finish Coats: 1-coat Tnemec Series 115 Uni-Bond.
    b. Application: 2.0 - 4.0 DFT
    c. Sheen: Semi-Gloss.

E. Ferrous Metal at enclosed conditioned space.

1. Epoxy Finish: two finish coats over primer.

    a. Primer: SW Pro Industrial Pro-Cryl Primer.
    b. Second and Third Coats: Pro-Industrial water based Catalyzed Epoxy.
    c. Sheen: See Interior Finish Schedule.

3.7 EXTERIOR PAINT SCHEDULE

A. Masonry and Cement Plaster:

1. Paint System, Acrylic Finish; two Finish Coats over block filler at Masonry.

    a. Primer: Loxon Block Surfacer for Masonry.
    b. Second and Third Coats: Loxon XP.
    c. Sheen: Satin.

B. Ferrous Metal, Primed and Unprimed; for exterior or non-conditioned spaces and secondary framing at all PEMB.

1. Primer: Tnemac: Series 66 Polyamide Epoxy. 2.5 - 3.5 DFT.
2. Tnemac: Series 1095 Semi-Gloss Acrylic Polyurethane 2.5 - 3.5 DFT.

END OF SECTION 09 91 00

SECTION 09 96 56
RESINOUS WALL COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Resinous Wall Coatings.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review manufacturer's written instructions for substrate preparation and environmental conditions affecting resinous wall coating installation.
2. Review manufacturer's written instructions for installing resinous wall coating systems.
3. Review protection measures for adjacent construction and installed wall coating.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include manufacturer's technical data, installation instructions, and recommendations for each resinous wall coating component required.

B. Samples for Initial Selection: For each type of exposed finish required.

C. Samples for Verification: For each resinous wall coating system required and for each color and texture specified, 6 inches square, applied to a rigid backing by Installer for this Project.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Material Certificates: For each resinous wall coating component.

C. Material Test Reports: For each resinous wall coating system, by a qualified testing agency.

D. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For resinous wall coating to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1. Engage an installer who is certified in writing by resinous wall coating manufacturer as qualified to apply resinous wall coating systems indicated.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Apply full-thickness mockups on 96-inch-square wall area selected by Architect.
2. Simulate finished lighting conditions for Architect's review of mockups.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Comply with resinous wall coating manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous wall coating installation.

B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous wall coating installation.

C. Close spaces to traffic during resinous wall coating installation and for 24 hours after installation unless manufacturer recommends a longer period.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Wall coating products shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

B. Flammability: Self-extinguishing according to ASTM D 635.

2.2 MANUFACTURERS

A. Source Limitations: Obtain wall coating materials, including primers, resins, leveling agent, hardening agents, grouting coats, and topcoats, from single source from single manufacturer.

2.3 ACCEPTABLE MANUFACTURERS

A. Basis of Design Manufacturer; As indicated on the Finish Schedule, or subject to compliance with requirement other Manufacturer offering products which may be incorporated into the work are but not limited to the following:

   a. Stonhard.
   b. Tnemec Inc.

B. High performance, flexible, hybrid acrylic hygiene wall coating system:

   1. Primer Sikagard Bonding Primer applied at 5-6 mils wft.
   2. Base Coat : 1 Coat of Sikagard 203W Steridex spray applied at 10 mils wft.
   3. Top Coat : 2 Coats of Sikagard 307W Waterbased aliphatic urethane at 4 mils wft per coat.

C. System Characteristics:

   1. Color and Pattern: As selected by Architect from Manufacturer's standard range.

2.4 MATERIALS

A. Underlayment: Type recommended by resinous coating manufacturer for substrate and system indicated.

2.5 ACCESSORIES

A. General: Provide accessories recommended by the materials manufacturer for applications indicated.

B. Patching and Fill Material: Type recommended by manufacturer for application indicated.

C. Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service and joint condition indicated.

D. Termination strips: Metal terminations strips product and Manufacturer as indicated on the drawings.

   1. Finish: as indicated.
   2. Shape/ profile: as indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to receive resinous coating system. Do not begin surface preparation or application until unacceptable conditions have been corrected. Do not apply to substrate treatments for moisture, repair, or leveling not of the same Manufacturer.

B. Surface must be clean, sound and dry. Remove dust, laitance, grease, curing compounds bond inhibiting impregnations, waxes and any other contaminates. All projections, rough spots, etc. should be dressed off to achieve a level surface prior to the application.

C. Substrate moisture:

1. Measure and confirm Substrate Moisture Content, Ambient Relative Humidity, Ambient and Surface Temperature and Dew Point.
2. Confirm and record above values at least once every 3 hours during installation, or more frequently whenever conditions change (e.g. Ambient Temperature rise/fall, Relative Humidity increase/decrease, etc.).

D. Ensure concrete substrate conforms to the minimum requirements of the manufacturer.

3.2 SURFACE PREPARATION

A. Prepare surface to receive coating systems in accordance with manufacturer's written instructions.

B. Remove dirt, oil, grease, wax, laitance, curing compounds, water-soluble concrete hardeners, and other surface contaminants. Remove top coats, finishes, and paints. Remove unsound concrete by appropriate mechanical means.

C. Concrete: Shall be cleaned and prepared to achieve laitance-free and contaminant-free, open textured surface by shot blasting or equivalent mechanical means (CSP level as per ICRI guidelines and manufacturer’s written recommendation).

D. Chemical Surface Preparation: Chemical surface preparation (acid etching) is unacceptable.

E. Control joints and cracks: Provide repair and treatment of control joints and surface cracks utilizing manufacturer’s standard materials and installation details.

3.3 APPLICATION

A. Mix and apply material with strict adherence to manufacturer’s written installation procedures and coverage rates.

B. Follow Manufacturer’s written recommendations on terminations and connections to floors, drains, doorways, columns and transitions.

C. Do not apply while ambient and substrate temperatures are rising.

D. Apply resinous coatings with care to ensure that no laps, voids, or other marks or irregularities are visible, and with an appearance of uniform color, sheen and texture, all within limitations of materials and areas concerned.

3.4 CLEAN UP

A. Disposal of this product, solution and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

B. Empty containers should be taken to an approved waste handling site for recycling or disposal.

3.5 PROTECTION

A. Freshly applied material should be protected from dampness, condensation and water for at least 72 hrs.

B. Beware of air flow and changes in air flow. Introduction of dust, debris, and particles, etc. may result in surface imperfections and other defects.

C. Protect resinous coating from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous coating manufacturer.

END OF SECTION 09 96 56

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Division 10

Specialties

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SECTION 10 14 23
INTERIOR SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Interior signage.
2. Cast-metal plaque. City of Port Orange logo signs.

1.3 DEFINITIONS

A. ADA-ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines."

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication and installation details for signs.

1. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
2. Provide message list, typestyles, graphic elements, including tactile characters and Braille, and layout for each sign.

C. Samples for Initial Selection: Manufacturer's color charts consisting of actual units or sections of units showing the full range of colors available for the following:

1. Include representative Samples of available typestyles and graphic symbols.

D. Samples for Verification: For each of the following products and for the full range of color, texture, and sign material indicated, of sizes indicated:

1. Room-Identification Signs: Full-size Sample.
2. Variable Component Materials: Full-size Sample of each base material, character (letter, number, and graphic element) in each exposed color and finish not included in Samples above.
3. Exposed Accessories: Full-size Sample of each accessory type.

4. Full-size Samples, if approved, will be returned to Contractor for use in Project.

E. Sign Schedule: Use same designations indicated on Drawings.

F. Maintenance Data: For signs to include in maintenance manuals.

G. Warranty: Special warranty specified in this Section.

1.5 QUALITY ASSURANCE

A. Source Limitations for Signs: Obtain each sign type indicated from one source from a single manufacturer.

B. Regulatory Requirements: Comply with applicable provisions in ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1.6 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit installation of signs in exterior locations to be performed according to manufacturers' written instructions and warranty requirements.

B. Field Measurements: Verify recess openings by field measurements before fabrication and indicate measurements on Shop Drawings.

1.7 COORDINATION

A. Coordinate placement of anchorage devices with templates for installing signs.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design," the ABA standards of the Federal agency having jurisdiction and ICC A117.1.

2.2 MANUFACTURERS

A. Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. APCO Graphics, Inc.
2. ASI Sign Systems, Inc.
3. InPro Corporation.

2.3 SIGNS

A. Panel Sign: Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:

1. Solid-Sheet Sign: Acrylic sheet with integral sheet color, and as follows:

a. Thickness: Manufacturer's standard for size of sign.
b. Surface-Applied, Raised Graphics: Applied polymer characters and Braille.
c. Size and Shape: As indicated.
d. Font type and Size: As indicated.
e. Color: As indicated.
f. Braille Style: As indicated.

B. Modular Signs: Sign system with removable inserts for graphics and copy attached to a receiver frame system using clips, splines, or comparable method. Provide system with modular increments of height and width, permitting assembly of units with multiple inserts of varying size.

1. Sign Size: As indicated.
2. Provide tamper-resistant feature requiring special tool to change inserts.
3. Backer Panel: Shaped, decorative backing panel mounted behind modular signage system as selected from manufacturer's full range.
4. Inserts:

a. Module Height: As indicated.
b. Type: Rigid plastic for applied graphics.
c. Size and Shape: As indicated.
d. Font type and Size: As indicated.
e. Color: As indicated.

C. Aluminum Castings for City of Port Orange Logo:

1. Size: Refer to Interior Elevations for Logo size.
2. Graphic and requirements provided by Owner.
3. Mounting: Concealed studs for substrates encountered.

2.4 MATERIALS

A. Acrylic Sheet: ASTM D4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).

2.5 ACCESSORIES

A. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

B. Adhesive: As recommended by sign manufacturer.

2.6 FABRICATION

A. General: Provide manufacturer's standard signs of configurations indicated.

B. Graphics: Digitally printed graphics applied direct to acrylic sheet.

2.7 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Locate signs and accessories where indicated, using mounting methods of types described and complying with manufacturer's written instructions.

1. Install signs level, plumb, and at heights indicated, with sign surfaces free of distortion and other defects in appearance.

B. Wall-Mounted Signs: Comply with sign manufacturer's written instructions and as follows.

1. Silicone-Adhesive Mounting: Attach signs to irregular, porous, or vinyl-covered surfaces.

3.3 CLEANING AND PROTECTION

A. After installation, clean soiled sign surfaces according to manufacturer's written instructions. Protect signs from damage until acceptance by Owner.

END OF SECTION 10 14 23

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SECTION 10 22 39
FOLDING PANEL PARTITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Manually operated, acoustical panel partitions.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For operable panel partitions.

1. Include plans, elevations, sections, attachment details, and numbered panel installation sequence.
2. Indicate stacking and operating clearances. Indicate location and installation requirements for hardware and track, blocking, and direction of travel.

C. Samples for Initial Selection: For each type of exposed material, finish, covering, or facing.

1. Include Samples of accessories involving color selection.

D. Samples for Verification: For each type of exposed material, finish, covering, or facing, prepared on Samples of size indicated below:

1. Facing Material: Full width by not less than 36-inch-long section of fabric from dye lot to be used for the Work, with specified treatments applied. Show complete pattern repeat.
2. Panel Facing Material: Manufacturer's standard-size unit, not less than 3 inches square.
3. Panel Edge Material: Not less than 3 inches long.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Partition track, track supports and bracing, switches, turning space, and storage layout.
2. Suspended ceiling components.
3. Structural members to which suspension systems will be attached.
4. Size and location of initial access modules for acoustical tile.
5. Items penetrating finished ceiling including the following:

a. Lighting fixtures.
b. HVAC ductwork, outlets, and inlets.
c. Speakers.
d. Sprinklers.
e. Smoke detectors.
f. Access panels.

6. Plenum fire, smoke and acoustical barriers.

B. Setting Drawings: For embedded items and cutouts required in other work, including support-beam, mounting-hole template.

C. Qualification Data: For Installer.

D. Product Certificates: For each type of operable panel partition.

E. Product Test Reports: For each operable panel partition, for tests performed by a qualified testing agency.

F. Sample Warranty: For manufacturer's special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Product Data: For each type of Product indicated.

B. Operation and Maintenance Data: For operable panel partitions to include in maintenance manuals, include the following:

1. Panel finish facings and finishes for exposed trim and accessories. Include precautions for cleaning materials and methods that could be detrimental to finishes and performance.
2. Seals, hardware, track, track switches, carriers, and other operating components.

C. Video recording of Owner training session.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protectively package and sequence panels in order for installation. Clearly mark packages and panels with numbering system used on Shop Drawings. Do not use permanent markings on panels.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of operable panel partitions that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Faulty operation of operable panel partitions.
b. Deterioration of metals, metal finishes, and other materials beyond normal use.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Acoustical Performance: Provide operable panel partitions tested by a qualified testing agency for the following acoustical properties according to test methods indicated:

1. Sound-Transmission Requirements: Operable panel partition assembly tested for laboratory sound-transmission loss performance according to ASTM E90, determined by ASTM E413, and rated for not less than the STC indicated.

B. Fire-Test-Response Characteristics: Provide panels with finishes complying with one of the following as determined by testing identical products by a testing and inspecting agency acceptable to authorities having jurisdiction:

1. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

a. Flame-Spread Index: 25 or less.
b. Smoke-Developed Index: 450 or less.

2. Fire Growth Contribution: Complying with acceptance criteria of local code and authorities having jurisdiction when tested according to NFPA 265 Method B Protocol or NFPA 286.

2.2 OPERABLE ACOUSTICAL PANELS

A. Operable Acoustical Panels: Partition system, including panels, seals, finish facing, suspension system, operators, and accessories.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Hufcor, Inc; Series 642.

B. Panel Operation: Manually operated, paired panels.

C. Panel Construction: As required to support panel from suspension components and with reinforcement for hardware attachment. Fabricate panels with tight hairline joints and concealed fasteners. Fabricate panels so finished in-place partition is rigid; level; plumb; aligned, with tight joints and uniform appearance; and free of bow, warp, twist, deformation, and surface and finish irregularities.

D. Dimensions: Fabricate operable acoustical panel partitions to form an assembled system of dimensions indicated and verified by field measurements.

1. Panel Width: Standard widths.

E. STC: Not less than 56.

F. Panel Weight: 12 lb/sq. ft. maximum.

G. Panel Thickness: Nominal dimension of 4 inches.

1. Steel Frame: Steel sheet, manufacturer's standard nominal minimum thickness for uncoated steel.
2. Steel Face/Liner Sheets: Tension-leveled steel sheet, manufacturer's standard minimum nominal thickness for uncoated steel.

a. Frame Reinforcement: Manufacturer's standard steel or aluminum.

H. Panel Closure: Manufacturer's standard unless otherwise indicated.

1. Initial Closure: Fixed jamb.
2. Final Closure: Constant-force, lever-operated mechanical closure expanding from panel edge to create a constant-pressure acoustical seal.

I. Hardware: Manufacturer's standard as required to operate operable panel partition and accessories; with decorative, protective finish.

1. Hinges: Manufacturer's standard.

J. Finish Facing: Carpet wall covering.

2.3 SEALS

A. Description: Seals that produce operable panel partitions complying with performance requirements and the following:

1. Manufacturer's standard seals unless otherwise indicated.
2. Seals made from materials and in profiles that minimize sound leakage.
3. Seals fitting tight at contact surfaces and sealing continuously between adjacent panels and between operable panel partition perimeter and adjacent surfaces, when operable panel partition is extended and closed.

B. Vertical Seals: Deep-nesting, interlocking steel astragals mounted on each edge of panel, with continuous, resilient acoustical seal.

C. Horizontal Top Seals: Continuous-contact, resilient seal exerting uniform constant pressure on track or resilient, mechanical, retractable, constant-force-contact seal exerting uniform constant pressure on track when extended.

D. Horizontal Bottom Seals: Manufacturer's standard continuous-contact seal exerting uniform constant pressure on floor.

2.4 PANEL FINISH FACINGS

A. Description: Finish facings for panels that comply with indicated fire-test-response characteristics and that are factory applied to operable panel partitions with appropriate backing, using mildew-resistant nonstaining adhesive as recommended by facing manufacturer's written instructions.

1. Apply one-piece, seamless facings free of air bubbles, wrinkles, blisters, and other defects, with edges tightly butted, and with invisible seams complying with Shop Drawings for location, and with no gaps or overlaps. Horizontal seams are not permitted. Tightly secure and conceal raw and selvage edges of facing for finished appearance.
2. Where facings with directional or repeating patterns or directional weave are indicated, mark facing top and attach facing in same direction.
3. Match facing pattern 72 inches above finished floor.

B. Carpet Wall Covering: Manufacturer's standard, from same dye lot, treated to resist stains.

1. Color/Pattern: As selected by Architect from manufacturer's full range.

C. Cap-Trimmed Edges: Protective perimeter-edge trim with tight hairline joints concealing edges of panel and finish facing, finished as follows:

1. Aluminum: Finished with manufacturer's standard clear anodic finish.

2.5 SUSPENSION SYSTEMS

A. Tracks: Steel or aluminum with adjustable steel hanger rods for overhead support, designed for operation, size, and weight of operable panel partition indicated. Size track to support partition operation and storage without damage to suspension system, operable panel partitions, or adjacent construction. Limit track deflection to no more than 0.10 inch between bracket supports. Provide a continuous system of track sections and accessories to accommodate configuration and layout indicated for partition operation and storage.

1. Panel Guide: Aluminum guide on both sides of the track to facilitate straightening of the panels; finished with factory-applied, decorative, protective finish.
2. Head Closure Trim: As required for acoustical performance; primed for field finish.

B. Basis of Design product and Manufacturer; Hufcor Uni-Span Self-supporting system Series, U900.

1. Panel Guide: Aluminum guide on both sides of the track to facilitate straightening of the panels; finished with factory-applied, decorative, protective finish.
2. Head Closure Trim: As required for acoustical performance; with factory-applied, decorative, protective finish.

C. Carriers: Trolley system as required for configuration type, size, and weight of partition and for easy operation; with ball-bearing wheels.

1. Multidirectional Carriers: Capable of negotiating intersections without track switches.

D. Track Intersections, Switches, and Accessories: As required for operation, storage, track configuration, and layout indicated for operable panel partitions, and compatible with partition assembly specified. Fabricate track intersections and switches from steel or aluminum.

1. Curve-and-Diverter Switches: Allow radius turns to divert panels to an auxiliary track.
2. L Intersections: Allow panels to change 90 degrees in direction of travel.
3. T Intersections: Allow panels to pass through or change 90 degrees to another direction of travel.
4. X Intersections: Allow panels to pass through or change travel direction full circle in 90-degree increments, and allow one partition to cross track of another.
5. Multidirectional Switches: Adjustable switch configuring track into L, T, or X intersections and allowing panels to be moved in all pass-through, 90-degree change, and cross-over travel direction combinations.
6. Center carrier stop.

E. Aluminum Finish: Mill finish or manufacturer's standard, factory-applied, decorative finish unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine flooring, floor levelness, structural support, and opening, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of operable panel partitions.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install operable panel partitions and accessories after other finishing operations, including painting, have been completed in area of partition installation.

B. Install panels in numbered sequence indicated on Shop Drawings.

C. Broken, cracked, chipped, deformed, or unmatched panels are not acceptable.

D. Broken, cracked, deformed, or unmatched gasketing or gasketing with gaps at butted ends is not acceptable.

E. Light-Leakage Test: Illuminate one side of partition installation and observe vertical joints and top and bottom seals for voids. Adjust partitions for alignment and full closure of vertical joints and full closure along top and bottom seals.

3.3 ADJUSTING

A. Adjust operable panel partitions, hardware, and other moving parts to function smoothly, and lubricate as recommended by manufacturer.

B. Verify that safety devices are properly functioning.

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain operable panel partitions. Video tape training session.

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SECTION 10 26 00
WALL PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Mop Sink Wall Protection.

1.3 SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each type of wall-protection indicated

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Surface Burning Characteristics: Comply with ASTM E 84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: 25 or less.
2. Smoke-Developed Index: 450 or less.

B. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities.

2.2 MOP SINK WALL PROTECTION

A. Type 304, Stainless Steel backsplash with hemmed edges installed on walls above mop sink.

1. Thickness: As Indicated.
2. Height: As Indicated.

B. Fasteners Type 316 Stainless Steel countersinking wood screws with matching domed finishing washers.

C. Seal all edges with Clear Sanitary Sealant See Section 07 92 00 “Joint Sealants.”

2.3 MATERIALS

A. Fasteners: Aluminum, nonmagnetic stainless-steel, or other noncorrosive metal screws, bolts, and other fasteners compatible with items being fastened. Use security-type fasteners where exposed to view.

2.4 FABRICATION

A. Fabricate wall protection according to requirements indicated for design, performance, dimensions, and member sizes, including thicknesses of components.

2.5 FINISHES

A. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and wall areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

3.2 PREPARATION

A. Complete finishing operations, including painting, before installing wall and door protection.

B. Before installation, clean substrate to remove dust, debris, and loose particles.

3.3 INSTALLATION

A. Installation Quality: Install wall protection according to manufacturer's written instructions, level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.

B. Mounting Heights: Install wall protection in locations and at mounting heights indicated on Drawings.

C. Accessories: Provide mounting hardware, anchors, trim, and other accessories required for a complete installation.

END OF SECTION 10 26 00

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SECTION 10 28 13
TOILET ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes toilet accessory items as scheduled and specified. Refer to the Toilet Accessory Schedule on the Drawings for product numbers.

1.2 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.

B. Samples: Full size, for each exposed product and for each finish specified.

1. Approved full-size Samples will be returned and may be used in the Work.

C. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

1. Identify locations using room designations indicated.
2. Identify accessories using designations indicated.

1.4 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For manufacturer's special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For accessories to include in maintenance manuals.

1.6 WARRANTY

A. Toilet Accessory Warranty: Provide manufacturers one (1) year warranty from the Date of Substantial Completion, against defects in material and workmanship.

B. Mirror Warranty: Submit a written warranty executed by mirror manufacturer, agreeing to replace any mirrors that develop visible silver spoilage defects within 15 years from the Date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PUBLIC-USE WASHROOM ACCESSORIES

A. Basis-of-Design Manufacturer; Bobrick Washroom Equipment, Inc., Subject to compliance with requirements, provide product indicated on the Toilet Accessory Schedule, or comparable product by one of the following:

1. American Specialties, Inc.
2. Bradley Corporation.
3. A&J Washroom Accessories.

2.2 MATERIALS

A. Stainless Steel: ASTM A 666, Type 304, 0.031-inch (0.8-mm) minimum nominal thickness unless otherwise indicated.

B. Brass: ASTM B 19, flat products; ASTM B 16/B 16M, rods, shapes, forgings, and flat products with finished edges; or ASTM B 30, castings.

C. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), 0.036-inch (0.9-mm) minimum nominal thickness.

D. Galvanized-Steel Sheet: ASTM A 653/A 653M, with G60 (Z180) hot-dip zinc coating.

E. Galvanized-Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.

F. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.

G. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).

H. Stainless Steel Mirror Surfaces: Not less than 0.04-inch (20-gage) AISI Type 302/304 stainless steel sheet, stretcher-leveled with No. 8 polished mirror finish. Bond to 1/4-inch minimum hardboard backing.

2.3 FABRICATION

A. No names or labels are permitted on exposed faces of toilet and bath accessory units. On either interior surface not exposed to view or on back surface, provide identification of each accessory item either by a printed, waterproof label or a stamped nameplate indicating Manufacturer's name and product model number.

B. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

C. Surface-Mounted Toilet Accessories, General: Except where otherwise indicated, fabricate units with tight seams and joints, exposed edges rolled. Hang doors or access panels with continuous stainless steel piano hinge. Provide concealed anchorage wherever possible.

D. Recessed Toilet Accessories, General: Except where otherwise indicated, fabricate units of all-welded construction, without mitered corners. Hang doors or access panels with full-length, stainless steel piano hinge. Provide anchorage that is fully concealed when unit is closed.

E. Mirror Unit Hangers: Provide system for mounting mirror units that will permit rigid, tamperproof, and theftproof installation, as follows:

1. One-piece, galvanized-steel, wall-hanger device with spring-action locking mechanism to hold mirror unit in position with no exposed screws or bolts.
2. Heavy-duty wall brackets of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.

F. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION PROVISIONS

A. Inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

B. Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.

C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.

D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.

E. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.

F. Recheck measurements and dimensions, before starting each installation.

G. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect for final decision.

3.2 INSTALLATION

A. Secure mirrors to walls in concealed, tamperproof manner with special hangers, toggle bolts, or screws. Set units plumb, level, and square at locations indicated, according to Manufacturer's instructions for type of substrate involved.

B. Grab Bars: Install to withstand a downward load of at least 250 lbf (1112 N), when tested according to ASTM F 446.

C. Provide all items and accessories as required for a complete and total installation in every respect, whether or not specified or indicate don the Drawings.

3.3 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean and polish exposed surfaces according to manufacturer's written instructions.

END OF SECTION 10 28 13

SECTION 10 41 16
EMERGENCY KEY CABINETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general and special provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Security lock box.

1.3 SUBMITTALS

A. Product data; include rough-in dimensions, details showing mounting methods.

B. Shop Drawings:
   1. Include plans, elevations, sections, details, and attachments to other work.

C. Warranty Requirements: One (1) year warranty, from date of Substantial Completion.

1.4 QUALITY ASSURANCE

A. Contractor Qualifications: Employ only experienced Contractors (Installers) skilled in the successful installation of the specified or similar products for a minimum of five years. Installers shall be state-certified or licensed Sub-Contractors, or locally registered Sub-Contractors.

B. Manufacturer(s) Qualifications: Employ only manufacturers making the specified materials as a current catalog and regular production item.

C. Verify that product submittals have been successfully submitted, reviewed and returned.

1.5 WARRANTY

A. General: Provide manufacturer's standard Warranty. Comply with requirements stated in Division 01.
   1. Duration of all warranties shall start from date of installation.

1.6 COMMISSIONING

A. General: All corrections in emergency key cabinet installation shall be the responsibility of the emergency key cabinet installer.

B. Statement of Compliance: The installer shall provide certification that the specified products or assemblies have been installed in accordance with manufacturer's instructions and recommendations.

PART 2 - PRODUCTS

2.1 MATERIALS, PRODUCTS, EQUIPMENT, MANUFACTURED UNITS

A. Manufacturers:
1. FAIL-SAFE, Rapid Access System
2. KNOX RAPID ENTRY SYSTEM
3. SUPRA, 4001.

B. Component Performance Characteristics:
1. System Description:
   a. Dimensions: Approximately 4" wide X 5" high X 4" deep; six sided.
   b. Wall Thickness: ¼".
   c. Construction: Cold-Formed Hollow Structural Steel sections conforming to ASTM A 500 grade A.
   d. Finish: Manufacturers standard powder coat finish for exterior applications.
   e. Color: Gloss Black.
   f. Rating: UL listed as a Fire Control Accessory.
   g. Keying: The emergency key cabinet shall be equipped with a removable cover that has two (2) different cylinders (the Owners and the Fire Departments) to open the removable cover.
      1) Fire Department Key: It shall be the responsibility of the Manufacturer to do the Master Keying for the Fire Department's access key. Coordinate keying with Owners requirements.
   h. Facility Key: Opening the emergency key cabinet will allow access to a Facility Master Key or Keys. The Master Key shall be on a chain or a hook.
   i. Hardware: Each emergency key cabinet shall be supplied with four (4) tamper proof (security) bolts, nuts and washers that allow installation of the cabinet into the wall. A bolt pattern template shall also be supplied with the cabinet.

C. System Mounting:
1. Emergency key cabinet (lock box) shall be installed by the Contractor.
2. Location: As Indicated.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. Installation Requirements: Installation of the emergency key cabinet (lock box) shall include the recess mounting into the wall including escutcheon plate.

END OF SECTION 10 41 16

SECTION 10 44 00
FIRE PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Fire-protection cabinets.
2. Section includes portable, hand-carried fire extinguishers and mounting brackets for fire extinguishers.

1.3 PREINSTALLATION CONFERENCE

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to fire-protection cabinets and fire extinguishers, including, but not limited to, the following:

a. Schedules and coordination requirements.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher and mounting brackets.

B. Product Schedule: For fire extinguishers. Coordinate final fire-extinguisher schedule with fire-protection cabinet schedule to ensure proper fit and function.

1. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing semi-recessed method and relationships of box and trim to surrounding construction.
2. Show location of knockouts for hose valves.

C. Shop Drawings: For fire-protection cabinets.

1. Include plans, elevations, sections, details, and attachments to other work.

D. Samples for Initial Selection: For each type of exposed finish required.

E. Samples for Verification: For each type of exposed finish required, prepared on samples 6 by 6 inches square.

F. Product Schedule: For fire-protection cabinets. Coordinate final fire-protection cabinet schedule with fire-extinguisher schedule to ensure proper fit and function.

1.5 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

1.7 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

B. Coordinate sizes and locations of fire-protection cabinets with wall depths.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Failure of hydrostatic test according to NFPA 10 when testing interval required by NFPA 10 is within the warranty period.
b. Faulty operation of valves or release levers.

2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

1. Provide fire extinguishers approved, listed, and labeled by FM Global.

2.2 MANUFACTURERS

A. Source Limitations: Obtain fire-protection cabinets, accessories, and fire extinguishers from single source from single manufacturer.

2.3 PERFORMANCE REQUIREMENTS

A. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements in ASTM E814 for fire-resistance rating of walls where they are installed.

2.4 FIRE-PROTECTION CABINET

A. Cabinet Type: Suitable for fire extinguisher.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Babcock-Davis.
b. Guardian Fire Equipment, Inc.
c. Larsens Manufacturing Company.
d. Nystrom.

B. Cabinet Construction: Nonrated and rated to match adjacent wall rating.

1. Fire-Rated Cabinets: Construct fire-rated cabinets with double walls fabricated from 0.043-inch-thick cold-rolled steel sheet lined with minimum 5/8-inch-thick fire-barrier material. Provide factory-drilled mounting holes.

C. Cabinet Material: Stainless steel sheet.

1. Shelf: Same metal and finish as cabinet.

D. Semi-recessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).

1. Rolled-Edge Trim: 2-1/2-inch backbend depth.

E. Cabinet Trim Material: Stainless steel sheet.

F. Door Material: Stainless steel sheet.

G. Door Style: Vertical duo panel with frame.

H. Door Glazing: Tempered float glass (clear).

I. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

1. Provide projecting door pull and friction latch.
2. Provide concealed hinge, permitting door to open 180 degrees.

J. Accessories:

1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
2. Lettered Door Handle: One-piece, cast-iron door handle with the word "FIRE" embossed into face.
3. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as directed by Architect.

    a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER."

        1) Location: Applied to cabinet glazing.
        2) Application Process: Silk-screened.
        3) Lettering Color: As selected by Architect.
        4) Orientation: Vertical.

K. Materials:

1. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304.

    a. Finish: ASTM A480/A480M No. 4 directional satin finish,

2. Tempered Float Glass: ASTM C1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

2.5 FABRICATION

A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.

1. Weld joints and grind smooth.
2. Miter corners and grind smooth.
3. Provide factory-drilled mounting holes.
4. Prepare doors and frames to receive locks.
5. Install door locks at factory.

B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles.

1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.
2. Fabricate door frames of one-piece construction with edges flanged.
3. Miter and weld perimeter door frames and grind smooth.

C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.6 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.7 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

A. Fire Extinguishers: Type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Babcock-Davis.
    b. Guardian Fire Equipment, Inc.
    c. Larsens Manufacturing Company.
    d. Nystrom.

2. Source Limitations: Obtain fire extinguishers, fire-protection cabinets, and accessories, from single source from single manufacturer.
3. Valves: Manufacturer's standard.
4. Handles and Levers: Manufacturer's standard.
5. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B, and bar coding for documenting fire-extinguisher location, inspections, maintenance, and recharging.

B. Multipurpose Dry-Chemical Type in Steel Container: UL-rated 2-A:10-B:C, 5-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

C. Purple-K Dry-Chemical Type in Aluminum Container: UL-rated 30-B:C, 5-lb nominal capacity, with potassium bicarbonate-based dry chemical in enameled-aluminum container.

2.8 MOUNTING BRACKETS

A. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or red baked-enamel finish.

1. Source Limitations: Obtain mounting brackets and fire extinguishers from single source from single manufacturer.

B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.

1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.

    a. Orientation: Vertical.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and partitions for suitable framing depth and blocking where semi-recessed cabinets will be installed.

B. Examine fire extinguishers for proper charging and tagging.

1. Remove and replace damaged, defective, or undercharged fire extinguishers.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare recesses for semi-recessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION

A. General: Install fire-protection cabinets in locations and at mounting heights indicated or, if not indicated, at heights acceptable to authorities having jurisdiction.

B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.

1. Unless otherwise indicated, provide semi-recessed fire-protection cabinets.
2. Provide inside latch and lock for break-glass panels.
3. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.

C. Identification:

1. Apply decals at locations indicated.
2. Apply decals on field-painted fire-protection cabinets after painting is complete.

D. General: Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.

1. Mounting Brackets: Top of fire extinguisher to be at 42 inches above finished floor.

E. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

3.4 ADJUSTING AND CLEANING

A. Remove temporary protective coverings and strippable films, if any, as fire-protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.

B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.

C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.

D. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 10 44 00

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SECTION 10 51 29
PHENOLIC LOCKERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Phenolic Lockers.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of locker.

B. Shop Drawings: For lockers.

1. Include plans, elevations, sections, and attachment details.
2. Show details full size.
3. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
4. Show locations and sizes of cutouts and holes for items installed in lockers.
5. Show locker fillers, trim, base, sloping tops, and accessories.
6. Show locker identification system and numbering sequence.

C. Samples for Initial Selection: For each type of the following:

1. Phenolic panels.

D. Samples for Verification: For the following products:

1. Phenolic panels, not less than 8 by 10 inches, for each type, color, pattern, and surface finish.
2. Corner pieces of locker front frame joints between stiles and rail, as well as exposed end pieces, not less than 18 inches wide by 18 inches high by 6 inches deep.
3. Exposed cabinet hardware and accessories, one unit for each type and finish.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For adjusting, repairing, and replacing locker doors and latching mechanisms to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Locker doors, complete with specified door hardware. Furnish no fewer than five doors of each type and color installed.
2. Units of the following locker hardware items equal to 10 percent of amount installed for each type and finish installed, but no fewer than five units:

a. Hinges.
b. Pulls.
c. Shelf rests.
d. Cylinder locks.
e. Blank identification plates and holders.
f. Hooks.

1.7 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Build mockup of typical corner, including door panel with specified door hardware, as shown on Drawings.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver lockers until painting and similar operations that could damage lockers have been completed in installation areas. If lockers must be stored in other-than-installation areas, store only in areas where environmental conditions are the same as those in final installation location, and comply with requirements specified in "Field Conditions" Article.

B. Deliver master and control keys to Owner by registered mail or overnight package service.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install lockers until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F and relative humidity between 43 and 70 percent during the remainder of the construction period.

B. Field Measurements: Where lockers are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings.

1. Locate concealed framing, blocking, and reinforcements that support lockers by field measurements before being enclosed, and indicate measurements on Shop Drawings.

C. Established Dimensions: Where lockers are indicated to fit to other construction, establish dimensions for areas where lockers are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.10 COORDINATION

A. Coordinate sizes and locations of support bases.

B. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of work specified in other Sections to ensure that lockers can be supported and installed as indicated.

1.11 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of lockers that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures.
b. Faulty operation of locks or hardware.
c. Deterioration of finishes, and other materials beyond normal use.

2. Warranty Period: Ten years for defect in materials, and two years for system warranty, from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Accessibility Standard: For lockers indicated to be accessible, comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design," the ABA standards of the Federal agency having jurisdiction and ICC A117.1.

B. Phenolic lockers shall meet or exceed all requirements for Class B Flame Spread Rating (not to exceed 75) and Smoke Developed (not to exceed 450) and shall carry a Class B Fire Rating Certification.

2.2 PHENOLIC LOCKERS

A. Basis-of-Design Manufacturer: As indicated on the Equipment Schedule, or subject to compliance with requirements, a comparable product by the following:

1. List Industries Inc.
2. Spectrum Lockers.

B. Configuration: As indicated.

2.3 MATERIALS

A. Panel Material: Decorative papers impregnated with the melamine resin on faces with a clear protective overcoat and integrally compression molded within a core consisting of solid phenolic impregnated kraft papers.

B. Doors:

1. Material: 1/2” thick solid phenolic composite material.
2. Corners: Rounded
3. Color: As indicated.
4. Edges: Standard profile is straight edge no profile.
5. Door Fastening: Through Bolted.

C. Locker Bodies

1. Exposed edges: Straight profile; eased edges to remove sharpness; machine polished and free from tooling imperfections.
2. Tops, bottoms, and intermediate shelves: 1/2” thick solid phenolic composite material with ventilation holes.
3. Locker backs: +/- 1/4” thick solid composite material.
4. Locker Sides: 3/8” thick solid phenolic composite material.

D. Ancillary Panels

1. Finished end panels and closures shall be 1/2” thick solid phenolic composite material.

E. Hardware

1. Hinges:
2. Material: 304-grade stainless steel.
3. Quantity: Three (3) for full height doors and two (2) for multi-tier units.
4. Interior hooks: As indicated.
5. Material: Stainless steel.
6. Fasteners: Exposed fasteners, where present, shall be 304 stainless steel.
7. Fastener Application: Apply directly into or through the material.

F. Ventilation

1. Door Vent: Provide minimum front ventilation 1.43 square inches per lineal foot of door perimeter.

G. Base: As indicated.

H. Accessories and Options

1. Locking System: Stainless Steel Hasp Plate and Bar with Integrated Handle.
2. Locker Top: ½'' top shall be Sloped width ¼" thick solid phenolic composite material.

I. Door Identification

1. Number Plates: Identification laser engraved on integrated hasp handle.
2. Fonts to be a minimum 1/2" high and up to four alphanumeric characters
3. Numbering sequence match approved submittal.

2.4 FABRICATION

A. Fabricate each locker with shelves, an individual door and frame, an individual top, a bottom, and a back, and with common intermediate uprights separating compartments.

1. Fabricate lockers to dimensions, profiles, and details indicated.

B. Fabricate lockers square, rigid, without warp, and with finished faces flat and free of dents, scratches, and chips. Accurately factory machine components for attachments. Make joints tight and true.

1. Fabricate lockers using manufacturer's standard construction.

C. Accessible Lockers: Fabricate as follows:

1. Locate bottom shelf no lower than 15 inches above the floor.
2. Where hooks, coat rods, or additional shelves are provided, locate no higher than 48 inches above the floor.

D. Number Identification Plates: Inlay number plates flush in each locker door, near top, centered.

E. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible, before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

1. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that the parts fit as intended, and check measurements of assemblies against field measurements indicated on Shop Drawings before disassembling for shipment.
2. Use only manufacturer's nuts, bolts, screws, and other devices for assembly.

F. Shop cut openings, to maximum extent possible, to receive hardware, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and floors or support bases, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Verify that furring is attached to concrete and masonry walls that are to receive lockers.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Condition lockers to average prevailing humidity conditions in installation areas before installation.

B. Before installing lockers, examine factory-fabricated work for completeness and complete work as required, including removal of packing.

3.3 INSTALLATION

A. Install lockers level, plumb, and true; use concealed shims.

B. Connect groups of lockers together with manufacturer's standard fasteners, through predrilled holes, with no exposed fasteners on face frames. Fit lockers accurately together to form flush, tight, hairline joints.

C. Install lockers without distortion so doors fit openings properly and are accurately aligned. Adjust hardware to center doors in openings, providing unencumbered operation. Complete installation of hardware and accessory items as indicated.

1. Installation Tolerance: No more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line. Shim as required with concealed shims.

D. Locker Anchorage:

1. Fasten lockers through locker base, at ends, and not more than 36 inches o.c. with No. 8 flush-head wood screws sized for 1-inch penetration into wood base.
2. Fasten lockers through back, near top and bottom, at ends with No. 8 pan-head sheet metal screws through metal backing or metal framing behind wall finish and spaced not more than 16 inches o.c.

E. Scribe and cut corner and filler panels to fit adjoining work using fasteners concealed where practical. Repair damaged finish at cuts.

F. Attach sloping-top units to lockers, with end panels covering exposed ends.

G. Install number identification plates name identification plates and holders after lockers are in place.

1. Attach number identification plate on each locker door, near top, centered, with at least two screws with finish matching the plate.
2. Attach name identification plate holder on each locker door, centered below number plate, with at least two screws, with finish matching the name identification plate holder.
3. Insert name identification plate into matching nameplate holder on each door.

3.4 ADJUSTING

A. Clean, lubricate, and adjust hardware. Adjust doors to operate easily without binding. Verify that integral locking devices operate properly.

3.5 PROTECTION

A. Protect lockers from damage, abuse, dust, dirt, stain, or paint. Do not permit use during construction.

B. Touch up marred finishes, or replace lockers that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by locker manufacturer.

END OF SECTION 10 51 29

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SECTION 10 75 00
FLAGPOLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Aluminum flagpoles.

1.3 SUBMITTALS

A. Product Data: For each type of flagpole required. Include installation instructions.

B. Shop Drawings: Show general layout, jointing, grounding method, and anchoring and supporting systems.

1. Include details of foundation system for ground-set poles.

C. Structural Calculations: For flagpoles indicated to comply with design loadings, include structural analysis data signed and sealed by the professional engineer responsible for their preparation, registered in the state of Florida.

D. Finish Samples for Verification: For each finished metal used for flagpoles and accessories.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each flagpole as a complete unit from a single manufacturer, including fittings, accessories, bases, and anchorage devices.

1.5 DELIVERY, STORAGE, AND HANDLING

A. General: Spiral wrap flagpoles with heavy kraft paper or other weather tight wrapping and enclose in a hard fiber tube or other protective container.

PART 2 - PRODUCTS

2.1 PERFORMANCE

A. Structural Performance: Provide flagpoles capable of withstanding the effects of wind loads as determined according to the building code in effect for this Project or NAAMM FP 1001, "Guide Specifications for Design Loads of Metal Flagpoles," whichever is more stringent.

1. Base flagpole design on maximum standard-size flag suitable for use with pole.
2. Wind Speed: Refer to the Structural Drawings.

2.2 MANUFACTURERS

A. Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include:

1. Baartol Co., Inc.
2. Eder Flag Manufacturing Co., Inc.
3. Concord Industries

2.3 FLAGPOLES

A. Aluminum Flagpoles: Fabricate from seamless, extruded tubing complying with ASTM B 241, alloy 6063, with a minimum wall thickness of 3/16 inch. Heat treat after fabrication to comply with ASTM B 597, temper T6. Provide cone-tapered flagpoles fabricated from seamless extruded tubing. Provide steel bottom and support plate, steel ground spike, steel centering wedges. Galvanize steel after assembly. Construct flagpole in one piece.

1. Flagpole Interior Finish: Treat the interior to prevent corrosion.
2. Exposed Height: 30 Feet.

B. Foundation Tube: Galvanized corrugated-steel foundation tube, 0.0635-inch minimum wall thickness, sized to suit flagpole and installation. Provide with 3/16-inch steel bottom plate and support plate; 3/4-inch- diameter, steel ground spike; and steel centering wedges all welded together. Galvanize steel parts, including foundation tube, after assembly. Provide loose hardwood wedges at top of foundation tube for plumbing pole.

C. Flashing Collar: Match Flagpole.

2.4 FITTINGS

A. Finial Ball: Manufacturer's standard flush-seam ball, sized to match pole-butt diameter.

1. 0.063-inch cast aluminum, with clear anodic finish. Manufacturer’s standard flush-seam ball, match flagpole butt diameter. Spun aluminum with gold anodic finish.
2. Exposed chrome plated Bronze Halyard swivel snap hooks, with braided polypropylene halyard, cleat with lockable cover box, external stationary truck assembly.

B. Internal Halyard, Winch System: Manually operated winch with control stop device and removable handle, stainless-steel cable halyard, and concealed revolving truck assembly with plastic-coated counterweight and sling. Furnish flush access door secured with cylinder lock. Finish truck assembly to match flagpole.

1. Halyard Flag Snaps: Stainless-steel swivel snap hooks with neoprene or vinyl covers. Furnish two per halyard.
2. Plastic Halyard Flag Clips: Made from injection-molded, UV-stabilized, acetal resin (Delrin). Clips attach to flag and have two eyes for inserting both runs of halyards. Furnish two per halyard.

2.5 MISCELLANEOUS MATERIALS

A. Concrete: Provide concrete composed of portland cement, coarse and fine aggregate, and water mixed in proportions to attain a 28-day compressive strength of not less than 3000 psi, complying with ASTM C 94.

B. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107.

C. Sand: ASTM C 33, fine aggregate.

D. Flags: Owner furnished.

2.6 FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

B. Manufacturer’s Standard treatment for interior to prevent corrosion.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prepare in-ground flagpoles by painting below-grade portions with a heavy coat of bituminous paint.

B. Excavation: For foundation, excavate to neat clean lines in undisturbed soil. Remove loose soil and foreign matter from excavation and moisten earth before placing concrete.

C. Provide forms where required due to unstable soil conditions and for perimeter of flagpole base at grade. Secure forms, foundation tube, fiberglass sleeve, or anchor bolts in position, braced to prevent displacement during concreting.

D. Place concrete immediately after mixing. Compact concrete in place by using vibrators. Moist-cure exposed concrete for not less than 7 days or use a nonstaining curing compound.

E. Trowel exposed concrete surfaces to a smooth, dense finish, free of trowel marks, and uniform in texture and appearance. Provide positive slope for water runoff to base perimeter.

3.2 FLAGPOLE INSTALLATION

A. General: Install flagpoles where shown and according to Shop Drawings and manufacturer's written instructions.

B. Foundation-Tube Installation: Install flagpole in foundation tube, seated on bottom plate between steel centering wedges. Plumb flagpole and install hardwood wedges to secure flagpole in place. Place and compact sand in foundation tube and remove hardwood wedges. Seal top of foundation tube with a 2-inch layer of elastomeric sealant and cover with flashing collar.

END OF SECTION 10 75 00

Division 11

Equipment

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SECTION 11 94 13
MISCELLANEOUS EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes Requirements for Equipment as indicated on the Equipment Schedule.

B. Product Data: Include material descriptions, dimensions, profiles, fastening and mounting methods, and finishes for equipment specified.

1.3 QUALITY ASSURANCE

A. Source Limitations: Provide products of same manufacturer for each type of equipment or unit and for units exposed to view in same areas, unless otherwise approved by Architect.

1.4 COORDINATION

A. Coordinate equipment locations with other work to prevent interference with clearances required for access by disabled persons, proper installation, adjustment, operation, cleaning, and servicing.

1.5 WARRANTY

A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Manufacturer's Warranty: Written warranty, executed by the individual equipment manufacturer agreeing to replace defective units.

1. Minimum Warranty Period: One year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MISCELLANEOUS EQUIPMENT

A. Basis of Design Product and Manufacturer; As indicated on the Equipment Schedule.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install equipment units according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by the manufacturer. Install equipment units level, plumb, and firmly anchored in locations and at heights indicated.

3.2 ADJUSTING AND CLEANING

A. Adjust equipment units for unencumbered, smooth operation and verify that mechanisms function properly. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 11 94 13

Division 12

Furnishings

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SECTION 12 24 13
ROLLER WINDOW SHADES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Manually operated roller shades.

1.3 SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, features, finishes, and operating instructions for roller shades.

B. Shop Drawings: Show fabrication and installation details for roller shades, including shadeband materials, their orientation to rollers, and their seam and batten locations.

C. Samples: For each exposed product and for each color and texture specified.

D. Product Schedule: For roller shades. Use same designations indicated on Drawings.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For roller shades to include in maintenance manuals.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver roller shades in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.

1.6 FIELD CONDITIONS

A. Field Measurements: Verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 MANUALLY OPERATED SHADES

A. Basis-of-Design Product: Subject to compliance with requirements, provide MechoShade Systems, Inc; or a comparable product by one of the following:

1. Draper Inc.
2. Hunter Douglas Contract.
3. Lutron Electronics Co., Inc.

B. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller mounting configuration, roller assemblies, operating mechanisms, installation accessories, and installation locations and conditions indicated.

1. Provide Mechoshade Brand Slimline Brackets.

C. Spring Lift-Assist Mechanisms: Manufacturer's standard for balancing roller shade weight and for lifting heavy roller shades.

1. Provide for shadebands that weigh more than 10 lb or for shades as recommended by manufacturer, whichever criterion is more stringent.

2.2 SHADEBAND MATERIALS

A. Shadeband Material Flame-Resistance Rating: Comply with NFPA 701. Testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

B. Basis of Design Product and Manufacturer; Mechoshade, ThermoVeil Basket Weave 1300 Series (5% open).

1. Color: As selected by Architect from Manufacturers full range.

C. Shadebands:

1. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum, exposed with endcaps and integral light seal at bottom where it meets the sill.

a. Type: Enclosed in sealed pocket of shadeband material.

D. Installation Accessories:

1. Fascia: Aluminum extrusion that conceals front and underside of roller and operating mechanism and attaches to roller endcaps without exposed fasteners.

    a. Height: Manufacturer's standard height required to conceal roller and shadeband assembly when shade is fully open.

2. Side Channels: With light seals and designed to eliminate light gaps at sides of shades as shades are drawn down. Provide side channels with shadeband guides or other means of aligning shadebands with channels at tops.

    a. Color: White.

3. Bottom (Sill) Channel or Angle: With light seals and designed to eliminate light gaps at bottoms of shades when shades are closed.
4. Installation Accessories Color and Finish: As selected by Architect from Manufacturers full range.

2.3 ROLLER SHADE FABRICATION

A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1.

B. Shadeband Fabrication: Fabricate shadebands without battens or seams to extent possible, except as follows:

1. Vertical Shades: Where width-to-length ratio of shadeband is equal to or greater than 1:4, provide battens and seams at uniform spacings along shadeband length to ensure shadeband tracking and alignment through its full range of movement without distortion of the material.
2. Railroaded Materials: Railroad material where material roll width is less than the required width of shadeband and where indicated. Provide battens and seams as required by railroaded material to produce shadebands with full roll-width panel(s) plus, if required, one partial roll-width panel located at top of shadeband.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ROLLER SHADE INSTALLATION

A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.

3.3 ADJUSTING

A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean roller shade surfaces, after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer that ensure that roller shades are without damage or deterioration at time of Substantial Completion.

C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

END OF SECTION 12 24 13

SECTION 12 36 61
SIMULATED STONE COUNTERTOPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Simulated stone countertops.

1.3 SUBMITTALS

A. Product Data: For countertop materials.

B. Shop Drawings: For countertops. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.

C. Samples for Initial Selection: For each type of material exposed to view.

D. Samples for Verification: For the following products:

1. Countertop material, 6 inches square.
2. One full-size quartz agglomerate countertop, with front edge and backsplash, 8 by 10 inches, of construction and in configuration specified.

1.4 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions of countertops by field measurements before countertop fabrication is complete.

PART 2 - PRODUCTS

2.1 SIMULATED STONE COUNTERTOPS

A. Quartz Agglomerate: Solid sheets consisting of quartz aggregates bound together with a matrix of filled plastic resin and complying with ICPA SS-1, except for composition.

1. Basis of Design Product and Manufacturer: As indicated on the Interior Finish Schedule or comparable product by one of the following:

a. Cambria.
b. E. I. du Pont de Nemours and Company.
c. Wilsonart LLC..

2. Colors and Patterns: Match Architect's samples.

2.2 COUNTERTOP FABRICATION

A. Fabricate countertops according to manufacturer's written instructions and the AWI/AWMAC/WI's "Architectural Woodwork Standards."

B. Configuration:

1. Front: Straight, slightly eased at top.
2. Backsplash: Straight, slightly eased at corner.
3. End Splash: Matching backsplash.

C. Countertops: Thickness as indicated on the Interior Finish Schedule.

D. Backsplashes: Match thickness of tops.

E. Fabricate tops with shop-applied edges unless otherwise indicated. Comply with manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.

1. Fabricate with loose backsplashes for field assembly.

F. Joints: Fabricate countertops without joints.

1. Counter-Mounted Plumbing Fixtures: Prepare countertops in shop for field cutting openings for counter-mounted fixtures. Mark tops for cutouts and drill holes at corners of cutout locations. Make corner holes of largest radius practical.
2. Fittings: Drill countertops in shop for plumbing fittings, undercounter soap dispensers, and similar items.

G. Joint Adhesives: Types recommended by the manufacturer for applications indicated. Adhesives shall not contain urea formaldehyde.

H. Plywood: 3/4-inch Exterior softwood plywood complying with DOC PS 1, Grade C-C Plugged, touch sanded.

2.3 INSTALLATION MATERIALS

A. Adhesive: Product recommended by countertop manufacturer.

B. Sealant for Countertops: Comply with applicable requirements in Section 07 92 00 "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates to receive countertops and conditions under which countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of countertops.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install countertops level to a tolerance of 1/8 inch in 8 feet, 1/4 inch maximum. Do not exceed 1/64-inch difference between planes of adjacent units.

B. Fasten countertops by screwing through corner blocks of base units into underside of countertop. Predrill holes for screws as recommended by manufacturer. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

C. Install backsplashes and end splashes by adhering to wall and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears.

D. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.

E. Apply sealant to gaps at walls; comply with Section 07 92 00 "Joint Sealants."

END OF SECTION 12 36 61

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Division 13

Special Construction

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SECTION 13 34 19
METAL BUILDING SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Structural-steel framing.
2. Metal roof panels.
3. Metal wall panels.
4. Metal soffit panels.
5. Thermal insulation.

1.3 DEFINITIONS

A. Terminology Standard: See MBMA's "Metal Building Systems Manual" for definitions of terms for metal building system construction not otherwise defined in this Section or in standards referenced by this Section.

1.4 COORDINATION

A. Coordinate sizes and locations of concrete foundations and casting of anchor-rod inserts into foundation walls and footings. Anchor rod installation, concrete, reinforcement, and formwork requirements are specified in Section 03 30 00 "Cast-in-Place Concrete."

B. Coordinate metal panel assemblies with rain drainage work, flashing, trim, and construction of supports and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to metal building systems including, but not limited to, the following:

a. Condition of foundations and other preparatory work performed by other trades.
b. Structural load limitations.
c. Construction schedule. Verify availability of materials and erector's personnel, equipment, and facilities needed to make progress and avoid delays.

d. Required tests, inspections, and certifications.
e. Unfavorable weather and forecasted weather conditions and impact on construction schedule.

2. Review methods and procedures related to metal roof panel assemblies including, but not limited to, the following:

a. Compliance with requirements for purlin and rafter conditions, including flatness and attachment to structural members.
b. Structural limitations of purlins and rafters during and after roofing.
c. Flashings, special roof details, roof drainage, roof penetrations, and condition of other construction that will affect metal roof panels.
d. Temporary protection requirements for metal roof panel assembly during and after installation.
e. Roof observation and repair after metal roof panel installation.

3. Review methods and procedures related to metal wall panel assemblies including, but not limited to, the following:

a. Compliance with requirements for support conditions, including alignment between and attachment to structural members.
b. Structural limitations of girts and columns during and after wall panel installation.
c. Flashings, special siding details, wall penetrations, openings, and condition of other construction that will affect metal wall panels.
d. Temporary protection requirements for metal wall panel assembly during and after installation.
e. Wall observation and repair after metal wall panel installation.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of metal building system component.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:

a. Metal roof panels.
b. Metal wall panels.
c. Metal soffit panels.
d. Thermal insulation and vapor-retarder facings.

B. Shop Drawings: Indicate components by others. Include full building plan, elevations, sections, details and the following:

1. Anchor-Rod Plans: Submit anchor-rod plans and templates before foundation work begins. Include location, diameter, and minimum required projection of anchor rods required to attach metal building to foundation. Indicate column reactions at each location.
2. Structural-Framing Drawings: Show complete fabrication of primary and secondary framing; include provisions for openings. Indicate welds and bolted connections, distinguishing between shop and field applications. Include transverse cross-sections.

3. Metal Roof and Wall Panel Layout Drawings: Show layouts of panels including methods of support. Include details of edge conditions, joints, panel profiles, corners, anchorages, clip spacing, trim, flashings, closures, and special details. Distinguish between factory- and field-assembled work; show locations of exposed fasteners.

    a. Show roof-mounted items including roof hatches, equipment supports, pipe supports and penetrations, and lighting fixtures.
    b. Show wall-mounted items including personnel doors, vehicular doors, windows, louvers, and lighting fixtures.

4. Accessory Drawings: Include details of the following items, at a scale of not less than 1-1/2 inches per 12 inches:

    a. Flashing and trim.
    b. Gutters.
    c. Downspouts.

C. Samples for Initial Selection: For units with factory-applied finishes.

D. Samples for Verification: For the following products:

1. Panels: Nominal 12 inches long by actual panel width. Include fasteners, closures, and other exposed panel accessories.
2. Flashing and Trim: Nominal 12 inches long. Include fasteners and other exposed accessories.
3. Vapor-Retarder Facings: Nominal 6-inch-square Samples.
4. Accessories: Nominal 12-inch-long Samples for each type of accessory.

E. Delegated-Design Submittal: For metal building systems.

1. Include analysis data indicating compliance with performance requirements and design data signed and sealed by the qualified professional engineer responsible for their preparation.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For erector and manufacturer.

B. Welding certificates.

C. Letter of Design Certification: Signed and sealed by a qualified professional engineer. Include the following:

1. Name and location of Project.
2. Order number.
3. Name of manufacturer.
4. Name of Contractor.
5. Building dimensions including width, length, height, and roof slope.
6. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
7. Governing building code and year of edition.
8. Design Loads: Include dead load, roof live load, collateral loads, deflection, wind loads/speeds and exposure, and auxiliary loads (cranes).

9. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.
10. Building-Use Category: Indicate category of building use and its effect on load importance factors.

D. Erector Certificates: For qualified erector, from manufacturer.

E. Material Test Reports: For each of the following products:

1. Structural steel including chemical and physical properties.
2. Bolts, nuts, and washers including mechanical properties and chemical analysis.
3. Tension-control, high-strength, bolt-nut-washer assemblies.
4. Shop primers.
5. Nonshrink grout.

F. Source quality-control reports.

G. Field quality-control reports.

H. Surveys: Show final elevations and locations of major members. Indicate discrepancies between actual installation and the Contract Documents. Have surveyor who performed surveys certify their accuracy.

I. Sample Warranties: For special warranties.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panel finishes to include in maintenance manuals.

1.9 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer.

1. Accreditation: Manufacturer's facility accredited according to the International Accreditation Service's AC472, "Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems."
2. Engineering Responsibility: Preparation of comprehensive engineering analysis and Shop Drawings by a professional engineer who is legally qualified to practice in jurisdiction where Project is located.

B. Erector Qualifications: An experienced erector who specializes in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3, "Structural Welding Code - Sheet Steel."

D. Land Surveyor Qualifications: A professional land surveyor who practices in jurisdiction where Project is located and who is experienced in providing surveying services of the kind indicated.

E. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Build mockup of typical wall area as shown on Drawings.
2. Build mockups for typical wall metal panel including accessories.

a. Size: 48 inches long by 48 inches.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, sheets, panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

1.11 FIELD CONDITIONS

A. Weather Limitations: Proceed with panel installation only when weather conditions permit metal panels to be installed according to manufacturers' written instructions and warranty requirements.

1.12 WARRANTY

A. Special Warranty on Metal Panel Finishes: Manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

B. Special Weathertightness Warranty for Standing-Seam Metal Roof Panels: Manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that leak or otherwise fail to remain weathertight within specified warranty period.

1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Varco-Pruden Buildings; a division of BlueScope Buildings North America, Inc.; or a comparable product by one of the following:

1. American Buildings Company; a Nucor Company.
2. Butler Manufacturing Company; a division of BlueScope Buildings North America, Inc.
3. Inland Buildings; a Schulte Building Systems Company.
4. Trident Building Systems, Inc.
5. Varco-Pruden Buildings, a division of BlueScope Buildings North America, Inc.

B. Source Limitations: Obtain metal building system components, including primary and secondary framing and metal panel assemblies, from single source from single manufacturer.

2.2 SYSTEM DESCRIPTION

A. Provide a complete, integrated set of mutually dependent components and assemblies that form a metal building system capable of withstanding structural and other loads, thermally induced movement, and exposure to weather without failure or infiltration of water into building interior.

B. Primary-Frame Type:

1. Rigid Clear Span: Solid-member, structural-framing system without interior columns. See plan for locations.
2. Rigid Modular: Solid-member, structural-framing system with interior columns. See plan for locations.

C. End-Wall Framing: Manufacturer's standard, for buildings not required to be expandable, consisting of primary frame, capable of supporting one-half of a bay design load, and end-wall columns

D. Secondary-Frame Type: Manufacturer's standard purlins and joists and exterior-framed (bypass) girts.

E. Eave Height: Manufacturer's standard height, as indicated by nominal height on Drawings.

F. Bay Spacing: As indicated on Drawings.

G. Roof Slope: As indicated on Drawings.

H. Roof System: Manufacturer's standard standing-seam, tapered vertical-rib, metal roof panels.

I. Exterior Wall System: Manufacturer's standard exposed-fastener, tapered-rib, metal wall panels.

1. Liner Panels: Flush profile.

2.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer to design metal building system.

B. Structural Performance: Metal building systems shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to procedures in MBMA's "Metal Building Systems Manual."

1. Design Loads: As indicated on Drawings.
2. Deflection and Drift Limits: As indicated on Drawings.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

D. Structural Performance for Metal Roof and Wall Panels: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592:

1. Wind Loads: As indicated on Drawings.

E. Air Infiltration for Metal Roof Panels: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E 1680 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft..

F. Air Infiltration for Metal Wall Panels: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E 283 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft..

G. Water Penetration for Metal Roof Panels: No water penetration when tested according to ASTM E 1646 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft..

H. Water Penetration for Metal Wall Panels: No water penetration when tested according to ASTM E 331 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft..

I. Solar Reflectance Index (SRI) for roof slope 2:12 or less: Three-year-aged SRI not less than 64 or initial SRI not less than 82 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.

J. Solar Reflectance Index (SRI) for roof slopes steeper than 2:12: Three-year-aged SRI not less than 32 or initial SRI not less than 39 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.

2.4 STRUCTURAL-STEEL FRAMING

A. Structural Steel: Comply with AISC 360, "Specification for Structural Steel Buildings."

B. Bolted Connections: Comply with RCSC's "Specification for Structural Joints Using High-Strength Bolts."

C. Cold-Formed Steel: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" for design requirements and allowable stresses.

D. Primary Framing: Manufacturer's standard primary-framing system, designed to withstand required loads and specified requirements. Primary framing includes transverse and lean-to frames; rafters, rake, and canopy beams; sidewall, intermediate, end-wall, and corner columns; and wind bracing.

1. General: Provide frames with attachment plates, bearing plates, and splice members. Factory drill for field-bolted assembly. Provide frame span and spacing indicated.

a. Slight variations in span and spacing may be acceptable if necessary to comply with manufacturer's standard, as approved by Architect.

2. Rigid Clear-Span Frames: I-shaped frame sections fabricated from shop-welded, built-up steel plates or structural-steel shapes. Interior columns are not permitted. See plan for locations.
3. Rigid Modular Frames: I-shaped frame sections fabricated from shop-welded, built-up steel plates or structural-steel shapes. Provide interior columns fabricated from round steel pipes or tubes, or shop-welded, built-up steel plates. See plan for locations.
4. Frame Configuration: Single gable and One-directional, sloped, see plan for locations.
5. Exterior Column: Tapered.
6. Rafter: Uniform depth.
7. Finish: Primed for field painting.

E. End-Wall Framing: Manufacturer's standard primary end-wall framing fabricated for field-bolted assembly to comply with the following:

1. End-Wall and Corner Columns: I-shaped sections fabricated from structural-steel shapes; shop-welded, built-up steel plates; or C-shaped, cold-formed, structural-steel sheet.
2. End-Wall Rafters: C-shaped, cold-formed, structural-steel sheet; or I-shaped sections fabricated from shop-welded, built-up steel plates or structural-steel shapes.

F. Secondary Framing: Manufacturer's standard secondary framing, including purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other miscellaneous structural members. Unless otherwise indicated, fabricate framing from metallic-coated steel sheet, to comply with the following:

1. Purlins: C- or Z-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes; minimum 2-1/2-inch-wide flanges.

a. Depth: As needed to comply with system performance requirements.

2. Girts: C- or Z-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes. Form ends of Z-sections with stiffening lips angled 40 to 50 degrees from flange, with minimum 2-1/2-inch-wide flanges.

a. Depth: As required to comply with system performance requirements.

3. Eave Struts: Unequal-flange, C-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes; to provide adequate backup for metal panels.
4. Flange Bracing: Minimum 2-by-2-by-1/8-inch structural-steel angles or 1-inch-diameter, cold-formed structural tubing to stiffen primary-frame flanges.
5. Sag Bracing: Minimum 1-by-1-by-1/8-inch structural-steel angles.
6. Base or Sill Angles: Manufacturer's standard base angle, minimum 3-by-2-inch, fabricated from zinc-coated (galvanized) steel sheet.
7. Purlin and Girt Clips: Manufacturer's standard clips fabricated from steel sheet. Provide galvanized clips where clips are connected to galvanized framing members.
8. Framing for Openings: Channel shapes; fabricated from cold-formed, structural-steel sheet or structural-steel shapes. Frame head and jamb of door openings and head, jamb, and sill of other openings.
9. Miscellaneous Structural Members: Manufacturer's standard sections fabricated from cold-formed, structural-steel sheet; built-up steel plates; or zinc-coated (galvanized) steel sheet; designed to withstand required loads.
10. Finish for all Secondary framing.

a. G90, prime secondary framing with zinc rich primer for field painting.

G. Bracing: Provide adjustable wind bracing as follows:

1. Rods (At roof plane): ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50; or ASTM A 529/A 529M, Grade 50; minimum 1/2-inch-diameter steel; threaded full length or threaded a minimum of 6 inches at each end.
2. Rigid Portal Frames: Fabricated from shop-welded, built-up steel plates or structural-steel shapes to match primary framing; of size required to withstand design loads.

H. Anchor Rods: Headed anchor rods as indicated in Anchor Rod Plan for attachment of metal building to foundation.

I. Materials:

1. W-Shapes: ASTM A 992/A 992M; ASTM A 572/A 572M, Grade 50 or 55; or ASTM A 529/A 529M, Grade 50 or 55.
2. Channels, Angles, M-Shapes, and S-Shapes: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50 or 55; or ASTM A 529/A 529M, Grade 50 or 55.
3. Plate and Bar: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50 or 55; or ASTM A 529/A 529M, Grade 50 or 55.
4. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.
5. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B or C, structural tubing.
6. Structural-Steel Sheet: Hot-rolled, ASTM A 1011/A 1011M, Structural Steel (SS), Grades 30 through 55, or High-Strength Low-Alloy Steel (HSLAS) or High-Strength Low-Alloy Steel with Improved Formability (HSLAS-F), Grades 45 through 70; or cold-rolled, ASTM A 1008/A 1008M, Structural Steel (SS), Grades 25 through 80, or HSLAS, Grades 45 through 70.
7. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, SS, Grades 33 through 80, or HSLAS or HSLAS-F, Grades 50 through 80; with G60 coating designation; mill phosphatized.
8. Metallic-Coated Steel Sheet Prepainted with Coil Coating: Steel sheet, metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

a. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, SS, Grades 33 through 80, or HSLAS or HSLAS-F, Grades 50 through 80; with G90 coating designation.
b. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, SS, Grade 50 or 80; with Class AZ50 coating.

9. Non-High-Strength Bolts, Nuts, and Washers: ASTM A 307, Grade A, carbon-steel, hex-head bolts; ASTM A 563 carbon-steel hex nuts; and ASTM F 844 plain (flat) steel washers.

    a. Finish: Hot-dip zinc coating, ASTM F 2329, Class C.

10. Structural Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563 heavy-hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.

    a. Finish: Hot-dip zinc coating, ASTM F 2329, Class C.

11. High-Strength Bolts, Nuts, and Washers: ASTM A 490, Type 1, heavy-hex steel structural bolts or tension-control, bolt-nut-washer assemblies with spline ends; ASTM A 563 heavy-hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers, plain.
12. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, heavy-hex-head steel structural bolts with spline ends.

    a. Finish: Mechanically deposited zinc coating, ASTM B 695, Class 50.

13. Unheaded Anchor Rods: ASTM F 1554, Grade 36.

    a. Configuration: Straight.
    b. Nuts: ASTM A 563 heavy-hex carbon steel.
    c. Plate Washers: ASTM A 36/A 36M carbon steel.
    d. Washers: ASTM F 436 hardened carbon steel.
    e. Finish: Hot-dip zinc coating, ASTM F 2329, Class C.

14. Headed Anchor Rods: ASTM F 1554, Grade 36.

    a. Configuration: Straight.
    b. Nuts: ASTM A 563 heavy-hex carbon steel.
    c. Plate Washers: ASTM A 36/A 36M carbon steel.
    d. Washers: ASTM F 436 hardened carbon steel.
    e. Finish: Hot-dip zinc coating, ASTM F 2329, Class C.

15. Threaded Rods: ASTM A 193/A 193M ASTM A 572/A 572M, Grade 50 ASTM A 36/A 36M ASTM A 307, Grade A.

    a. Nuts: ASTM A 563 heavy-hex carbon steel.
    b. Washers: ASTM F 436 hardened carbon steel.
    c. Finish: Hot-dip zinc coating, ASTM F 2329, Class C.

J. Finish: Factory primed. Apply specified primer immediately after cleaning and pretreating.

1. Clean and prepare in accordance with SSPC-SP2.
2. Coat with manufacturer's standard primer. Apply primer to primary and secondary framing to a minimum dry film thickness of 1 mil.

a. Prime secondary framing formed from uncoated steel sheet to a minimum dry film thickness of 0.5 mil on each side.

2.5 METAL ROOF PANELS

A. Standing-Seam, Trapezoidal-Rib, Metal Roof Panels: Formed with raised trapezoidal ribs at panel edges and intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels and engaging opposite edge of adjacent panels.

1. Material: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.028-inch nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

a. Color: As selected by Architect from manufacturer's standard range.

2. Clips: Stainless Steel, Two-piece fixed to accommodate thermal movement.
3. Joint Type: Mechanically seamed.
4. Panel Coverage: 24 inches.
5. Panel Height: 3 inches.

B. Finishes:

1. Exposed Coil-Coated Finish:

a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

2.6 METAL WALL PANELS

A. Concealed-Fastener, Horizontal corrugated profile, Metal Wall Panels: Formed with vertical panel edges; designed to be installed by lapping and interconnecting top edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners and factory-applied sealant in side laps.

1. Material: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.024-inch nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A755/A755M.

a. Color: As selected by Architect from manufacturer's standard range.

2. Panel Coverage: 16 inches.
3. Panel Height: 3 inches.

B. Finishes:

1. Exposed Coil-Coated Finish:

    a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

C. Flush-Profile, Metal Liner Panels: Solid panels formed with vertical panel edges and flat pan between panel edges; with flush joint between panels; designed for interior side of metal wall panel assemblies and installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners and factory-applied sealant in side laps.

1. Material: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.024-inch nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A755/A755M.

    a. Color: As selected by Architect from manufacturer's standard range.

2. Panel Coverage: 12 inches.
3. Panel Height: 1.5 inches.

D. Finishes:

1. Exposed Coil-Coated Finish:

    a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

2.7 METAL SOFFIT PANELS

A. General: Provide factory-formed metal soffit panels designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners and factory-applied sealant in side laps. Include accessories required for weathertight installation.

1. Material: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.024-inch nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A755/A755M.

    a. Color: As selected by Architect from manufacturer's standard range.

2. Panel Coverage: 12 inches.
3. Panel Height: 1 inch.

B. Finishes:

1. Exposed Coil-Coated Finish:

a. Three-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

2.8 THERMAL INSULATION

A. Basis-of-Design Product: Subject to compliance with requirements, provide Bay Insulation Systems; a division of Bay Industries ; BayMax. or a comparable product by one of the following:

B. Faced Metal Building Insulation: ASTM C991, Type II, glass-fiber-blanket insulation; 0.5-lb/cu. ft. density; 2-inch- wide, continuous, vapor-tight edge tabs; with a flame-spread index of 25 or less.

1. Nonreflective Faced: Type II (blankets with nonreflective membrane covering), Category 1 (membrane is a vapor retarder), Class A (membrane-faced surface with a flame-spread index of 25 or less).

C. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

a. White metallized-polypropylene film facing, fiberglass scrim reinforcement, and kraft-paper backing.

2.9 ACCESSORIES

A. General: Provide accessories as standard with metal building system manufacturer and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.

1. Form exposed sheet metal accessories that are without excessive oil-canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.

B. Roof Panel Accessories: Provide components required for a complete metal roof panel assembly including copings, fasciae, corner units, ridge closures, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.

1. Closures: Provide closures at eaves and ridges, fabricated of same material as metal roof panels.
2. Clips: Manufacturer's standard, formed from stainless-steel sheet, designed to withstand negative-load requirements.
3. Cleats: Manufacturer's standard, mechanically seamed cleats formed from stainless-steel sheet or nylon-coated aluminum sheet.
4. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
5. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch-thick, flexible closure strips; cut or premolded to match metal roof panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
6. Thermal Spacer Blocks: Where metal panels attach directly to purlins, provide thermal spacer blocks of thickness required to provide 1-inch standoff; fabricated from extruded polystyrene.

C. Wall Panel Accessories: Provide components required for a complete metal wall panel assembly including copings, fasciae, mullions, sills, corner units, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal wall panels unless otherwise indicated.

1. Closures: Provide closures at eaves and rakes, fabricated of same material as metal wall panels.
2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch-thick, flexible closure strips; cut or premolded to match metal wall panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

D. Flashing and Trim: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch nominal uncoated steel thickness, prepainted with coil coating; finished to match adjacent metal panels.

1. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers.
2. Opening Trim: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.030-inch nominal uncoated steel thickness, prepainted with coil coating. Trim head and jamb of door openings, and head, jamb, and sill of other openings.

E. Gutters:

1. Refer to Section 07 62 00 “Sheet Metal Flashing and Trim.”

F. Downspouts:

1. Refer to Section 07 62 00 “Sheet Metal Flashing and Trim.”

G. Pipe Flashing: Premolded, EPDM pipe collar with flexible aluminum ring bonded to base.

H. Materials:

1. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide fasteners with heads matching color of materials being fastened by means of plastic caps or factory-applied coating.

    a. Fasteners for Metal Roof Panels: Self-drilling, Type 410 stainless steel or self-tapping, Type 304 stainless-steel or zinc-alloy-steel hex washer head, with EPDM washer under heads of fasteners bearing on weather side of metal panels.
    b. Fasteners for Metal Wall Panels: Self-drilling, Type 410 stainless steel or self-tapping, Type 304 stainless-steel or zinc-alloy-steel hex washer head, with EPDM sealing washers bearing on weather side of metal panels.
    c. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws with hex washer head.
    d. Blind Fasteners: High-strength aluminum or stainless-steel rivets.

2. Corrosion-Resistant Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
3. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107/C 1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.
4. Metal Panel Sealants:

    a. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene-compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape of manufacturer's standard size.
    b. Joint Sealant: ASTM C 920; one part elastomeric polyurethane or polysulfide; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended by metal building system manufacturer.

2.10 FABRICATION

A. General: Design components and field connections required for erection to permit easy assembly.

1. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.
2. Fabricate structural framing to produce clean, smooth cuts and bends. Punch holes of proper size, shape, and location. Members shall be free of cracks, tears, and ruptures.

B. Tolerances: Comply with MBMA's "Metal Building Systems Manual" for fabrication and erection tolerances.

C. Primary Framing: Shop fabricate framing components to indicated size and section, with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.

1. Make shop connections by welding or by using high-strength bolts.

2. Join flanges to webs of built-up members by a continuous, submerged arc-welding process.
3. Brace compression flange of primary framing with steel angles or cold-formed structural tubing between frame web and purlin web or girt web, so flange compressive strength is within allowable limits for any combination of loadings.
4. Weld clips to frames for attaching secondary framing if applicable, or punch for bolts.
5. Shop Priming: Prepare surfaces for shop priming according to SSPC-SP 2. Shop prime primary framing with specified primer after fabrication.

D. Secondary Framing: Shop fabricate framing components to indicated size and section by roll forming or break forming, with baseplates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.

1. Make shop connections by welding or by using non-high-strength bolts.
2. Shop Priming: Prepare uncoated surfaces for shop priming according to SSPC-SP 2. Shop prime uncoated secondary framing with specified primer after fabrication.

E. Metal Panels: Fabricate and finish metal panels at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.

1. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of metal panel.

2.11 SOURCE QUALITY CONTROL

A. Special Inspection: Owner will engage a qualified special inspector to perform source quality control inspections and to submit reports.

1. Accredited Manufacturers: Special inspections will not be required if fabrication is performed by an IAS AC472-accredited manufacturer approved by authorities having jurisdiction to perform such Work without special inspection.

a. After fabrication, submit copy of certificate of compliance to authorities having jurisdiction, certifying that Work was performed according to Contract requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with erector present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Before erection proceeds, survey elevations and locations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments to receive structural framing, with erector present, for compliance with requirements and metal building system manufacturer's tolerances.

1. Engage land surveyor to perform surveying.

C. Proceed with erection only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition.

B. Provide temporary shores, guys, braces, and other supports during erection to keep structural framing secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural framing, connections, and bracing are in place unless otherwise indicated.

3.3 ERECTION OF STRUCTURAL FRAMING

A. Erect metal building system according to manufacturer's written instructions and drawings.

B. Do not field cut, drill, or alter structural members without written approval from metal building system manufacturer's professional engineer.

C. Set structural framing accurately in locations and to elevations indicated, according to AISC specifications referenced in this Section. Maintain structural stability of frame during erection.

D. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
3. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

E. Align and adjust structural framing before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with framing. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.
2. Make allowances for difference between temperature at time of erection and mean temperature when structure will be completed and in service.

F. Primary Framing and End Walls: Erect framing level, plumb, rigid, secure, and true to line. Level baseplates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use grout to obtain uniform bearing and to maintain a level base-line elevation. Moist-cure grout for not less than seven days after placement.

1. Make field connections using high-strength bolts installed according to RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt type and joint type specified.

a. Joint Type: Snug tightened or pretensioned as required by manufacturer.

G. Secondary Framing: Erect framing level, plumb, rigid, secure, and true to line. Field bolt secondary framing to clips attached to primary framing.

1. Provide rake or gable purlins with tight-fitting closure channels and fasciae.
2. Locate and space wall girts to suit openings such as doors and windows.
3. Provide supplemental framing at entire perimeter of openings, including doors, windows, louvers, ventilators, and other penetrations of roof and walls.

H. Steel Joists and Joist Girders: Install joists, girders, and accessories plumb, square, and true to line; securely fasten to supporting construction according to SJI's "Standard Specifications and Load Tables for Steel Joists and Joist Girders," joist manufacturer's written instructions, and requirements in this Section.

1. Before installation, splice joists delivered to Project site in more than one piece.
2. Space, adjust, and align joists accurately in location before permanently fastening.
3. Install temporary bracing and erection bridging, connections, and anchors to ensure that joists are stabilized during construction.
4. Joist Installation: Bolt joists to supporting steel framework using carbon-steel bolts unless otherwise indicated.
5. Joist Installation: Bolt joists to supporting steel framework using high-strength structural bolts unless otherwise indicated. Comply with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for high-strength structural bolt installation and tightening requirements.
6. Joist Installation: Weld joist seats to supporting steel framework.
7. Install and connect bridging concurrently with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords if terminating at walls or beams.

I. Bracing: Install bracing in roof and sidewalls where indicated on erection drawings.

1. Tighten rod and cable bracing to avoid sag.
2. Locate interior end-bay bracing only where indicated.

J. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to structural framing.

K. Erection Tolerances: Maintain erection tolerances of structural framing within AISC 303.

3.4 METAL PANEL INSTALLATION, GENERAL

A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.

C. Examination: Examine primary and secondary framing to verify that structural-panel support members and anchorages have been installed within alignment tolerances required by manufacturer.

1. Examine roughing-in for components and systems penetrating metal panels, to verify actual locations of penetrations relative to seams before metal panel installation.

D. General: Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Field cut metal panels as required for doors, windows, and other openings. Cut openings as small as possible, neatly to size required, and without damage to adjacent metal panel finishes.

a. Field cutting of metal panels by torch is not permitted unless approved in writing by manufacturer.

2. Install metal panels perpendicular to structural supports unless otherwise indicated.
3. Flash and seal metal panels with weather closures at perimeter of openings and similar elements. Fasten with self-tapping screws.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Locate metal panel splices over structural supports with end laps in alignment.
6. Lap metal flashing over metal panels to allow moisture to run over and off the material.

E. Lap-Seam Metal Panels: Install screw fasteners using power tools with controlled torque adjusted to compress EPDM washers tightly without damage to washers, screw threads, or metal panels. Install screws in predrilled holes.

1. Arrange and nest side-lap joints so prevailing winds blow over, not into, lapped joints. Lap ribbed or fluted sheets one full rib corrugation. Apply metal panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.

F. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.

G. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal panel assemblies. Provide types of gaskets, fillers, and sealants indicated; or, if not indicated, provide types recommended by metal panel manufacturer.

1. Seal metal panel end laps with double beads of tape or sealant the full width of panel. Seal side joints where recommended by metal panel manufacturer.
2. Prepare joints and apply sealants to comply with requirements in Section 07 92 00 "Joint Sealants."

3.5 METAL ROOF PANEL INSTALLATION

A. General: Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.

1. Install ridge caps as metal roof panel work proceeds.

2. Flash and seal metal roof panels with weather closures at eaves and rakes. Fasten with self-tapping screws.

B. Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint, at location and spacing and with fasteners recommended by manufacturer.

1. Install clips to supports with self-drilling or self-tapping fasteners.
2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
3. Seamed Joint: Crimp standing seams with manufacturer-approved motorized seamer tool so that clip, metal roof panel, and factory-applied sealant are completely engaged.
4. Rigidly fasten eave end of metal roof panels and allow ridge end free movement for thermal expansion and contraction. Predrill panels for fasteners.
5. Provide metal closures at rake edges, and each side of ridge caps.

C. Metal Fascia Panels: Align bottom of metal panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws. Flash and seal metal panels with weather closures where fasciae meet soffits, along lower panel edges, and at perimeter of all openings.

D. Metal Roof Panel Installation Tolerances: Shim and align metal roof panels within installed tolerance of 1/4 inch in 20 feet on slope and location lines and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.6 METAL WALL PANEL INSTALLATION

A. General: Install metal wall panels in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to girts, extending full height of building, unless otherwise indicated. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Unless otherwise indicated, begin metal panel installation at corners with center of rib lined up with line of framing.
2. Shim or otherwise plumb substrates receiving metal wall panels.
3. When two rows of metal panels are required, lap panels 4 inches minimum.
4. When building height requires two rows of metal panels at gable ends, align lap of gable panels over metal wall panels at eave height.
5. Rigidly fasten base end of metal wall panels and allow eave end free movement for thermal expansion and contraction. Predrill panels.
6. Flash and seal metal wall panels with weather closures at eaves and rakes, and at perimeter of all openings. Fasten with self-tapping screws.
7. Install screw fasteners in predrilled holes.
8. Install flashing and trim as metal wall panel work proceeds.
9. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated on Drawings; if not indicated, as necessary for waterproofing.
10. Align bottom of metal wall panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws.
11. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.

B. Metal Wall Panels: Install metal wall panels on exterior side of girts. Attach metal wall panels to supports with fasteners as recommended by manufacturer.

C. Installation Tolerances: Shim and align metal wall panels within installed tolerance of 1/4 inch in 20 feet, noncumulative; level, plumb, and on location lines; and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.7 METAL SOFFIT PANEL INSTALLATION

A. Provide metal soffit panels the full width of soffits. Install panels perpendicular to support framing.

B. Flash and seal metal soffit panels with weather closures where panels meet walls and at perimeter of all openings.

3.8 THERMAL INSULATION INSTALLATION

A. General: Install insulation concurrently with metal panel installation, in thickness indicated to cover entire surface, according to manufacturer's written instructions.

1. Set vapor-retarder-faced units with vapor retarder toward warm side of construction unless otherwise indicated. Do not obstruct ventilation spaces except for firestopping.
2. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to the surrounding construction to ensure airtight installation.
3. Install factory-laminated, vapor-retarder-faced blankets straight and true in one-piece lengths, with both sets of facing tabs sealed, to provide a complete vapor retarder.
4. Install blankets straight and true in one-piece lengths. Install vapor retarder over insulation, with both sets of facing tabs sealed, to provide a complete vapor retarder.

B. Blanket Roof Insulation: Comply with the following installation method:

1. Over-Purlin-with-Spacer-Block Installation: Extend insulation and vapor retarder over and perpendicular to top flange of secondary framing. Install layer of filler insulation over first layer to fill space formed by metal roof panel standoffs. Hold in place by panels fastened to standoffs.

    a. Thermal Spacer Blocks: Where metal roof panels attach directly to purlins, install thermal spacer blocks.

2. Retainer Strips: Install retainer strips at each longitudinal insulation joint, straight and taut, nesting with secondary framing to hold insulation in place.

C. Blanket Wall Insulation: Extend insulation and vapor retarder over and perpendicular to top flange of secondary framing. Hold in place by metal wall panels fastened to secondary framing.

1. Retainer Strips: Install retainer strips at each longitudinal insulation joint, straight and taut, nesting with secondary framing to hold insulation in place.

3.9 ACCESSORY INSTALLATION

A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal roof panel assembly, including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
2. Install components for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
3. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by manufacturer.

B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without excessive oil-canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

C. Gutters: Join sections with riveted-and-soldered or lapped-and-sealed joints. Attach gutters to eave with gutter hangers spaced as required for gutter size, but not more than 36 inches o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.

D. Downspouts: Join sections with 1-1/2-inch telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c. in between.

1. Provide elbows at base of downspouts to direct water away from building.
2. Tie downspouts to underground drainage system indicated.

E. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to panel as recommended by manufacturer.

3.10 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform field quality control special inspections and to submit reports.

B. Product will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.11 CLEANING AND PROTECTION

A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A 780/A 780M and manufacturer's written instructions.

B. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

C. Touchup Painting: After erection, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted structural framing, bearing plates, and accessories.

1. Clean and prepare surfaces by SSPC-SP 2, "Hand Tool Cleaning," or by SSPC-SP 3, "Power Tool Cleaning."
2. Apply a compatible primer of same type as shop primer used on adjacent surfaces.

D. Metal Panels: Remove temporary protective coverings and strippable films, if any, as metal panels are installed. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

1. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

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PROJECT MANUAL

City of Port Orange Public Utilities Field Operations Facility

Permit/ Bid Documents

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Divisions 21 through 33

PREPARED FOR:	City of Port Orange
ISSUED:	September 30, 2024
COMMISSION NO.:	2021815

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COMMON MOTOR REQUIREMENTS FOR FIRE SUPPRESSION EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general requirements for single-phase and polyphase, general-purpose, horizontal, small and medium, squirrel-cage induction motors for use on ac power systems up to 600 V and installed at equipment manufacturer's factory or shipped separately by equipment manufacturer for field installation.

1.3 COORDINATION

A. Coordinate features of motors, installed units, and accessory devices to be compatible with the following:

1. Motor controllers.
2. Torque, speed, and horsepower requirements of the load.
3. Ratings and characteristics of supply circuit and required control sequence.
4. Ambient and environmental conditions of installation location.

PART 2 - PRODUCTS

2.1 GENERAL MOTOR REQUIREMENTS

A. Comply with NEMA MG 1 unless otherwise indicated.

B. Comply with IEEE 841 for severe-duty motors.

2.2 MOTOR CHARACTERISTICS

A. Duty: Continuous duty at ambient temperature of 40 deg C and at altitude of 3300 feet above sea level.

B. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

2.3 POLYPHASE MOTORS

A. Description: NEMA MG 1, Design B, medium induction motor.

B. Efficiency: Energy efficient, as defined in NEMA MG 1.

C. Service Factor: 1.15.

D. Multispeed Motors: Variable torque.

1. For motors with 2:1 speed ratio, consequent pole, single winding.
2. For motors with other than 2:1 speed ratio, separate winding for each speed.

E. Multispeed Motors: Separate winding for each speed.

F. Rotor: Random-wound, squirrel cage.

G. Bearings: Regreasable, shielded, antifriction ball bearings suitable for radial and thrust loading.

H. Temperature Rise: Match insulation rating.

I. Insulation: Class F.

J. Code Letter Designation:

1. Motors 15 HP and Larger: NEMA starting Code F or Code G.
2. Motors Smaller than 15 HP: Manufacturer's standard starting characteristic.

K. Enclosure Material: Cast iron for motor frame sizes 324T and larger; rolled steel for motor frame sizes smaller than 324T.

2.4 POLYPHASE MOTORS WITH ADDITIONAL REQUIREMENTS

A. Motors Used with Reduced-Voltage and Multispeed Controllers: Match wiring connection requirements for controller with required motor leads. Provide terminals in motor terminal box, suited to control method.

B. Motors Used with Variable Frequency Controllers: Ratings, characteristics, and features coordinated with and approved by controller manufacturer.

1. Windings: Copper magnet wire with moisture-resistant insulation varnish, designed and tested to resist transient spikes, high frequencies, and short time rise pulses produced by pulse-width modulated inverters.
2. Energy- and Premium-Efficient Motors: Class B temperature rise; Class F insulation.
3. Inverter-Duty Motors: Class F temperature rise; Class H insulation.
4. Thermal Protection: Comply with NEMA MG 1 requirements for thermally protected motors.

C. Severe-Duty Motors: Comply with IEEE 841, with 1.15 minimum service factor.

2.5 SINGLE-PHASE MOTORS

A. Motors larger than 1/20 hp shall be one of the following, to suit starting torque and requirements of specific motor application:

1. Permanent-split capacitor.
2. Split phase.
3. Capacitor start, inductor run.
4. Capacitor start, capacitor run.

B. Multispeed Motors: Variable-torque, permanent-split-capacitor type.

C. Bearings: Prelubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.

D. Motors 1/20 HP and Smaller: Shaded-pole type.

E. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 21 05 13

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SECTION 21 05 17
SLEEVES AND SLEEVE SEALS FOR FIRE-SUPPRESSION PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Sleeves.
2. Stack-sleeve fittings.
3. Sleeve-seal systems.
4. Sleeve-seal fittings.
5. Grout.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 SLEEVES

A. Cast-Iron Wall Pipes: Cast or fabricated of cast or ductile iron and equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop unless otherwise indicated.

B. Galvanized-Steel-Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc coated, with plain ends.

C. PVC-Pipe Sleeves: ASTM D 1785, Schedule 40.

D. Molded-PE Sleeves: Removable, tapered-cup shaped, and smooth outer surface with nailing flange for attaching to wooden forms.

2.2 STACK-SLEEVE FITTINGS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Smith, Jay R. Mfg. Co.
2. Zurn Specification Drainage Operation; Zurn Plumbing Products Group.

B. Description: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring, bolts, and nuts for membrane flashing.

1. Underdeck Clamp: Clamping ring with setscrews.

2.3 SLEEVE-SEAL SYSTEMS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Advance Products & Systems, Inc.
2. CALPICO, Inc.
3. Metraflex Company (The).
4. Pipeline Seal and Insulator, Inc.
5. Proco Products, Inc.

B. Description: Modular sealing-element unit, designed for field assembly, for filling annular space between piping and sleeve.

1. Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
2. Pressure Plates: Carbon steel.
3. Connecting Bolts and Nuts: Carbon steel, with corrosion-resistant coating of length required to secure pressure plates to sealing elements.

2.4 SLEEVE-SEAL FITTINGS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Presealed Systems.

B. Description: Manufactured plastic, sleeve-type, waterstop assembly made for imbedding in concrete slab or wall. Unit has plastic or rubber waterstop collar with center opening to match piping OD.

2.5 GROUT

A. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.

B. Characteristics: Nonshrink; recommended for interior and exterior applications.

C. Design Mix: 5000-psi, 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 SLEEVE INSTALLATION

A. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.

B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 1-inchannular clear space between piping and concrete slabs and walls.

1. Sleeves are not required for core-drilled holes.

C. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.

1. Permanent sleeves are not required for holes in slabs formed by molded-PE or -PP sleeves.
2. Cut sleeves to length for mounting flush with both surfaces.

a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level.

3. Using grout, seal the space outside of sleeves in slabs and walls without sleeve-seal system.

D. Install sleeves for pipes passing through interior partitions.

1. Cut sleeves to length for mounting flush with both surfaces.
2. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
3. Seal annular space between sleeve and piping or piping insulation; use joint sealants appropriate for size, depth, and location of joint. Comply with requirements for sealants specified in Section 07 92 00 "Joint Sealants."

E. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements for firestopping specified in Section 07 84 13 "Penetration Firestopping."

3.2 STACK-SLEEVE-FITTING INSTALLATION

A. Install stack-sleeve fittings in new slabs as slabs are constructed.

1. Install fittings that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
2. Secure flashing between clamping flanges for pipes penetrating floors with membrane waterproofing. Comply with requirements for flashing specified in Section 07 62 00 "Sheet Metal Flashing and Trim."
3. Install section of cast-iron soil pipe to extend sleeve to 2 inches above finished floor level.
4. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.
5. Using grout, seal the space around outside of stack-sleeve fittings.

B. Fire-Barrier Penetrations: Maintain indicated fire rating of floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements for firestopping specified in Section 07 84 13 "Penetration Firestopping."

3.3 SLEEVE-SEAL-SYSTEM INSTALLATION

A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at service piping entries into building.

B. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size. Position piping in center of sleeve. Center piping in penetration, assemble sleeve-seal system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

3.4 SLEEVE-SEAL-FITTING INSTALLATION

A. Install sleeve-seal fittings in new walls and slabs as they are constructed.

B. Assemble fitting components of length to be flush with both surfaces of concrete slabs and walls. Position waterstop flange to be centered in concrete slab or wall.

C. Secure nailing flanges to concrete forms.

D. Using grout, seal the space around outside of sleeve-seal fittings.

3.5 SLEEVE AND SLEEVE-SEAL SCHEDULE

A. Use sleeves and sleeve seals for the following piping-penetration applications:

1. Exterior Concrete Walls above Grade:

   a. Piping Smaller than NPS 6: Cast-iron wall sleeves, Galvanized-steel-pipe sleeves Sleeve-seal fittings.
   b. Piping NPS 6 and Larger: Cast-iron wall sleeves or Galvanized-steel-pipe sleeves.

2. Exterior Concrete Walls below Grade:

   a. Piping Smaller Than NPS 6: Cast-iron wall sleeves with sleeve-seal system or Galvanized-steel-pipe sleeves with sleeve-seal system.

      1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

   b. Piping NPS 6 and Larger: Galvanized-steel-pipe sleeves with sleeve-seal system

      1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

3. Concrete Slabs-on-Grade:

a. Piping Smaller Than NPS 6: Cast-iron wall sleeves with sleeve-seal system or Galvanized-steel-pipe sleeves with sleeve-seal system.

1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

b. Piping NPS 6 and Larger: Galvanized-steel-pipe sleeves with sleeve-seal system or Galvanized-steel-pipe sleeves.

1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

4. Concrete Slabs above Grade:

a. Piping Smaller Than NPS 6: Galvanized-steel-pipe sleeves, PVC-pipe sleeves, Stack-sleeve fittings, Sleeve-seal fittings, Molded-PE or Molded-PVC sleeves
b. Piping NPS 6 and Larger: Galvanized-steel-pipe sleeves or PVC-pipe sleeves

5. Interior Partitions:

a. Piping Smaller than NPS 6: Galvanized-steel-pipe sleeves.
b. Piping NPS 6 and Larger: Galvanized-steel-sheet sleeves

END OF SECTION 21 05 17

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SECTION 21 05 18
ESCUTCHEONS FOR FIRE-SUPPRESSION PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Escutcheons.
2. Floor plates.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 ESCUTCHEONS

A. One-Piece, Cast-Brass Type: With polished, chrome-plated finish and setscrew fastener.

B. Split-Casting Brass Type: With polished, chrome-plated finish and with concealed hinge and setscrew.

C. Split-Plate, Stamped-Steel Type: With chrome-plated finish, concealed hinge, and spring-clip fasteners.

2.2 FLOOR PLATES

A. One-Piece Floor Plates: Cast-iron flange with holes for fasteners.

B. Split-Casting Floor Plates: Cast brass with concealed hinge.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.

B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.

C. Install floor plates for piping penetrations of equipment-room floors.

D. Install floor plates with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.

1. New Piping: One-piece, floor-plate type.
2. Existing Piping: Split-casting, floor-plate type.

3.2 FIELD QUALITY CONTROL

A. Replace broken and damaged escutcheons and floor plates using new materials.

END OF SECTION 21 05 18

SECTION 21 05 23
GENERAL-DUTY VALVES FOR FIRE PROTECTION PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Two-piece ball valves with indicators.
2. Bronze butterfly valves with indicators.
3. Iron butterfly valves with indicators.
4. Check valves.
5. Bronze OS&Y gate valves.
6. Iron OS&Y gate valves.
7. NRS gate valves.
8. Indicator posts.
9. Trim and drain valves.

1.3 DEFINITIONS

A. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.

B. NRS: Nonrising stem.

C. OS&Y: Outside screw and yoke.

D. SBR: Styrene-butadiene rubber.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of valve.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Prepare valves for shipping as follows:

1. Protect internal parts against rust and corrosion.
2. Protect threads, flange faces, and weld ends.
3. Set valves open to minimize exposure of functional surfaces.

B. Use the following precautions during storage:

1. Maintain valve end protection.
2. Store valves indoors and maintain at higher than ambient dew point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use operating handles or stems as lifting or rigging points.

D. Protect flanges and specialties from moisture and dirt.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

A. UL Listed: Valves shall be listed in UL's "Online Certifications Directory" under the headings listed below and shall bear UL mark:

1. Main Level: HAMV - Fire Main Equipment.

    a. Level 1: HCBZ - Indicator Posts, Gate Valve.
    b. Level 1: HLOT - Valves.

        1) Level 3: HLUG - Ball Valves, System Control.
        2) Level 3: HLXS - Butterfly Valves.
        3) Level 3: HMER - Check Valves.
        4) Level 3: HMRZ - Gate Valves.

2. Main Level: VDGT - Sprinkler System & Water Spray System Devices.

    a. Level 1: VQGU - Valves, Trim and Drain.

B. FM Global Approved: Valves shall be listed in its "Approval Guide," under the headings listed below:

1. Automated Sprinkler Systems:

    a. Indicator posts.
    b. Valves.

        1) Gate valves.
        2) Check valves.

            a) Single check valves.

        3) Miscellaneous valves.

C. Source Limitations for Valves: Obtain valves for each valve type from single manufacturer.

D. ASME Compliance:

1. ASME B16.1 for flanges on iron valves.
2. ASME B1.20.1 for threads for threaded-end valves.
3. ASME B31.9 for building services piping valves.

E. AWWA Compliance: Comply with AWWA C606 for grooved-end connections.

F. NFPA Compliance: Comply with NFPA 24 for valves.

G. Valve Pressure Ratings: Not less than the minimum pressure rating indicated or higher as required by system pressures.

H. Valve Sizes: Same as upstream piping unless otherwise indicated.

I. Valve Actuator Types:

1. Worm-gear actuator with handwheel for quarter-turn valves, except for trim and drain valves.
2. Handwheel: For other than quarter-turn trim and drain valves.
3. Handlever: For quarter-turn trim and drain valves NPS 2 and smaller.

2.2 TWO-PIECE BALL VALVES WITH INDICATORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Ames Fire & Waterworks; A WATTS Brand.
2. NIBCO INC.
3. Victaulic Company.

B. Description:

1. UL 1091, except with ball instead of disc and FM Global standard for indicating valves (butterfly or ball type), Class Number 1112.
2. Minimum Pressure Rating: 175 psig.
3. Body Design: Two piece.
4. Body Material: Forged brass or bronze.
5. Port Size: Full or standard.
6. Seats: PTFE.
7. Stem: Bronze or stainless steel.
8. Ball: Chrome-plated brass.
9. Actuator: Worm gear or traveling nut.
10. Supervisory Switch: Internal or external.
11. End Connections for Valves NPS 1 through NPS 2: Threaded ends.
12. End Connections for Valves NPS 2-1/2: Grooved ends.

2.3 BRONZE BUTTERFLY VALVES WITH INDICATORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Fivalco Inc.
2. Globe Fire Sprinkler Corporation.
3. Milwaukee Valve Company.

B. Description:

1. Standard: UL 1091 and FM Global standard for indicating valves, (butterfly or ball type), Class Number 1112.
2. Minimum: Pressure rating: 175 psig.
3. Body Material: Bronze.
4. Seat Material: EPDM.
5. Stem Material: Bronze or stainless steel.
6. Disc: Bronze with EPDM coating.
7. Actuator: Worm gear or traveling nut.
8. Supervisory Switch: Internal or external.
9. Ends Connections for Valves NPS 1 through NPS 2: Threaded ends.
10. Ends Connections for Valves NPS 2-1/2: Grooved ends.

2.4 IRON BUTTERFLY VALVES WITH INDICATORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Anvil International.
2. Fivalco Inc.
3. Globe Fire Sprinkler Corporation.
4. Kennedy Valve Company; a division of McWane, Inc.
5. NIBCO INC.
6. Tyco Fire Products LP.
7. Victaulic Company.
8. Zurn Industries, LLC.

B. Description:

1. Standard: UL 1091 and FM Global standard for indicating valves, (butterfly or ball type), Class Number 112.
2. Minimum Pressure Rating: 175 psig.
3. Body Material: Cast or ductile iron with EPDM coating.
4. Seat Material: EPDM.
5. Stem: Stainless steel.
6. Disc: Ductile iron, nickel plated and EPDM coated.
7. Actuator: Worm gear or traveling nut.
8. Supervisory Switch: Internal or external.
9. Body Design: Grooved-end connections.

2.5 CHECK VALVES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Ames Fire & Waterworks; A WATTS Brand.
2. Anvil International.
3. FEBCO; A WATTS Brand.
4. Fire Protection Products, Inc.
5. Fivalco Inc.
6. Globe Fire Sprinkler Corporation.
7. Kennedy Valve Company; a division of McWane, Inc.
8. Matco-Norca.
9. Mueller Co.

10. NIBCO INC.
11. Reliable Automatic Sprinkler Co., Inc. (The).
12. Shurjoint Piping Products USA Inc.
13. Tyco Fire Products LP.
14. United Brass Works, Inc.
15. Venus Fire Protection Ltd.
16. Victaulic Company.
17. Viking Corporation.
18. WATTS.
19. Wilson & Cousins Inc.
20. Zurn Industries, LLC.

B. Description:

1. Standard: UL 312 and FM Global standard for swing check valves, Class Number 1210.
2. Minimum Pressure Rating: 175 psig.
3. Type: Single swing check.
4. Body Material: Cast iron, ductile iron, or bronze.
5. Clapper: Bronze, ductile iron, or stainless steel with elastomeric seal.
6. Clapper Seat: Brass, bronze, or stainless steel.
7. Hinge Shaft: Bronze or stainless steel.
8. Hinge Spring: Stainless steel.
9. End Connections: Flanged, grooved, or threaded.

2.6 BRONZE OS&Y GATE VALVES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Milwaukee Valve Company.
2. NIBCO INC.
3. United Brass Works, Inc.
4. Zurn Industries, LLC.

B. Description:

1. Standard: UL 262 and FM Global standard for fire-service water control valves (OS&Y- and NRS-type gate valves).
2. Minimum Pressure Rating: 175 psig.
3. Body and Bonnet Material: Bronze or brass.
4. Wedge: One-piece bronze or brass.
5. Wedge Seat: Bronze.
6. Stem: Bronze or brass.
7. Packing: Non-asbestos PTFE.
8. Supervisory Switch: External.
9. End Connections: Threaded.

2.7 IRON OS&Y GATE VALVES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. American Cast Iron Pipe Company.

2. Clow Valve Company; a subsidiary of McWane, Inc.
3. Hammond Valve.
4. Kennedy Valve Company; a division of McWane, Inc.
5. Mueller Co.
6. NIBCO INC.
7. Victaulic Company.
8. WATTS.
9. Zurn Industries, LLC.

B. Description:

1. Standard: UL 262 and FM Global standard for fire-service water control valves (OS&Y- and NRS-type gate valves).
2. Minimum Pressure Rating: 175 psig.
3. Body and Bonnet Material: Cast or ductile iron.
4. Wedge: Cast or ductile iron, or bronze with elastomeric coating.
5. Wedge Seat: Cast or ductile iron, or bronze with elastomeric coating.
6. Stem: Brass or bronze.
7. Packing: Non-asbestos PTFE.
8. Supervisory Switch: External.
9. End Connections: Grooved.

2.8 NRS GATE VALVES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. American Cast Iron Pipe Company.
2. Clow Valve Company; a subsidiary of McWane, Inc.
3. Kennedy Valve Company; a division of McWane, Inc.
4. Mueller Co.
5. NIBCO INC.
6. Victaulic Company.
7. Zurn Industries, LLC.

B. Description:

1. Standard: UL 262 and FM Global standard for fire-service water control valves (OS&Y- and NRS-type gate valves).
2. Minimum Pressure Rating: 175 psig.
3. Body and Bonnet Material: Cast or ductile iron.
4. Wedge: Cast or ductile iron with elastomeric coating.
5. Wedge Seat: Cast or ductile iron, or bronze with elastomeric coating.
6. Stem: Brass or bronze.
7. Packing: Non-asbestos PTFE.
8. Supervisory Switch: External.
9. End Connections: Grooved.

2.9 INDICATOR POSTS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. American Cast Iron Pipe Company.
2. Clow Valve Company; a subsidiary of McWane, Inc.
3. Kennedy Valve Company; a division of McWane, Inc.
4. Mueller Co.
5. NIBCO INC.

B. Description:

1. Standard: UL 789 and FM Global standard for indicator posts.
2. Type: Underground.
3. Base Barrel Material: Cast or ductile iron.
4. Extension Barrel: Cast or ductile iron.
5. Cap: Cast or ductile iron.
6. Operation: Wrench.

2.10 TRIM AND DRAIN VALVES

A. Ball Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Apollo Flow Controls; Conbraco Industries, Inc.
b. Fire Protection Products, Inc.
c. Fire-End & Croker Corporation.
d. Flowserve Corporation.
e. FNW; Ferguson Enterprises, Inc.
f. Jomar Valve.
g. KITZ Corporation.
h. Legend Valve & Fitting, Inc.
i. Metso Automation USA Inc.
j. Milwaukee Valve Company.
k. NIBCO INC.
l. Potter Roemer LLC.
m. Red-White Valve Corp.
n. Tyco Fire Products LP.
o. Victaulic Company.
p. WATTS.
q. Zurn Industries, LLC.

2. Description:

a. Pressure Rating: 250 psig.
b. Body Design: Two piece.
c. Body Material: Forged brass or bronze.
d. Port size: Full or standard.
e. Seats: PTFE.
f. Stem: Bronze or stainless steel.

g. Ball: Chrome-plated brass.
h. Actuator: Handlever.
i. End Connections for Valves NPS 1 through NPS 2-1/2: Threaded ends.
j. End Connections for Valves NPS 1-1/4 and NPS 2-1/2: Grooved ends.

B. Angle Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Fire Protection Products, Inc.
b. NIBCO INC.
c. United Brass Works, Inc.

2. Description:

a. Pressure Rating: 250 psig.
b. Body Material: Brass or bronze.
c. Ends: Threaded.
d. Stem: Bronze.
e. Disc: Bronze.
f. Packing: Asbestos free.
g. Handwheel: Malleable iron, bronze, or aluminum.

C. Globe Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. NIBCO INC.
b. United Brass Works, Inc.

2. Description:

a. Pressure Rating: 250 psig.
b. Body Material: Bronze with integral seat and screw-in bonnet.
c. Ends: Threaded.
d. Stem: Bronze.
e. Disc Holder and Nut: Bronze.
f. Disc Seat: Nitrile.
g. Packing: Asbestos free.
h. Handwheel: Malleable iron, bronze, or aluminum.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.

B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.

C. Examine threads on valve and mating pipe for form and cleanliness.

D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.

E. Do not attempt to repair defective valves; replace with new valves.

3.2 GENERAL REQUIREMENTS FOR VALVE INSTALLATION

A. Comply with requirements in the following Sections for specific valve installation requirements and applications:

1. Section 21 11 00 "Facility Fire-Suppression Water-Service Piping" for application of valves in fire-suppression water-service piping outside the building.
2. Section 21 13 13 "Wet-Pipe Sprinkler Systems" for application of valves in wet-pipe, fire-suppression sprinkler systems.

B. Install listed fire-protection shutoff valves supervised-open, located to control sources of water supply except from fire-department connections. Install permanent identification signs indicating portion of system controlled by each valve.

C. Install check valve in each water-supply connection. Install backflow preventers instead of check valves in potable-water-supply sources.

D. Install valves having threaded connections with unions at each piece of equipment arranged to allow easy access, service, maintenance, and equipment removal without system shutdown. Provide separate support where necessary.

E. Install valves in horizontal piping with stem at or above the pipe center.

F. Install valves in position to allow full stem movement.

G. Install valve tags. Comply with requirements in Section 21 05 53 "Identification for Fire-Suppression Piping and Equipment" for valve tags and schedules and signs on surfaces concealing valves; and the NFPA standard applying to the piping system in which valves are installed. Install permanent identification signs indicating the portion of system controlled by each valve.

H. Install listed fire-protection shutoff valves supervised-open, located to control sources of water supply except from fire-department connections.

I. Install check valve in each water-supply connection. Install backflow preventers instead of check valves in potable-water-supply sources.

END OF SECTION 21 05 23

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SECTION 21 05 29
HANGERS AND SUPPORTS FOR FIRE SUPPRESSION PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Metal pipe hangers and supports.
2. Trapeze pipe hangers.
3. Metal framing systems.
4. Thermal hanger-shield inserts.
5. Fastener systems.
6. Equipment supports.

B. Related Requirements:

1. Section 05 50 00 "Metal Fabrications" for structural-steel shapes and plates for trapeze hangers for pipe and equipment supports.
2. Section 21 05 16 "Expansion Fittings and Loops for Fire-Suppression Piping" for pipe guides and anchors.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Signed and sealed by a qualified professional engineer. Show fabrication and installation details and include calculations for the following:

1. Trapeze pipe hangers.
2. Metal framing systems.
3. Equipment supports.

C. Delegated-Design Submittal: For trapeze hangers indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1. Detail fabrication and assembly of trapeze hangers.
2. Include design calculations for designing trapeze hangers.

1.4 INFORMATIONAL SUBMITTALS

A. Welding certificates.

1.5 QUALITY ASSURANCE

A. Structural-Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M.

B. Pipe Welding Qualifications: Qualify procedures and operators according to 2015 ASME Boiler and Pressure Vessel Code, Section IX.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design trapeze pipe hangers and equipment supports.

B. Structural Performance: Hangers and supports for fire-suppression piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.

1. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.
2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
3. Design seismic-restraint hangers and supports for piping and equipment and obtain approval from authorities having jurisdiction.

C. NFPA Compliance: Comply with NFPA 13.

D. UL Compliance: Comply with UL 203.

2.2 METAL PIPE HANGERS AND SUPPORTS

A. Carbon-Steel Pipe Hangers and Supports:

1. Description: Factory-fabricated components, NFPA approved, UL listed, or FM approved for fire-suppression piping support.
2. Galvanized Metallic Coatings: Pregalvanized or hot-dip galvanized.
3. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.

B. Copper Pipe and Tube Hangers:

1. Description: Copper-coated-steel, factory-fabricated components, NFPA approved, UL listed, or FM approved for fire-suppression piping support.
2. Hanger Rods: Continuous-thread rod, nuts, and washer made of copper-coated steel.

2.3 TRAPEZE PIPE HANGERS

A. Description: MSS SP-58, Type 59, shop- or field-fabricated pipe-support assembly, made from structural-carbon-steel shapes, with NFPA-approved, UL-listed, or FM-approved carbon-steel hanger rods, nuts, saddles, and U-bolts.

2.4 METAL FRAMING SYSTEMS

A. MFMA Manufacturer Metal Framing Systems:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. B-line, an Eaton business.
    b. Flex-Strut Inc.
    c. G-Strut.
    d. Haydon Corporation.
    e. Thomas & Betts Corporation; A Member of the ABB Group.
    f. Unistrut; Part of Atkore International.
    g. Wesanco, Inc.

2. Description: Shop- or field-fabricated pipe-support assembly, made of steel channels, accessories, fittings, and other components for supporting multiple parallel pipes.

3. Standard: Comply with MFMA-4, factory-fabricated components for field assembly.
4. Channels: Continuous slotted carbon-steel channel with inturned lips.
5. Channel Width: Selected for applicable load criteria.
6. Channel Nuts: Formed or stamped nuts or other devices designed to fit into channel slot and, when tightened, prevent slipping along channel.
7. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.
8. Metallic Coating: Electroplated zinc.
9. Paint Coating: Green epoxy.

B. Non-MFMA Manufacturer Metal Framing Systems:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Anvil International.
    b. Carpenter & Paterson, Inc.
    c. Empire Industries, Inc.
    d. ERICO International Corporation.
    e. PHD Manufacturing, Inc.

2. Description: Shop- or field-fabricated pipe-support assembly, made of steel channels, accessories, fittings, and other components for supporting multiple parallel pipes.

3. Standard: Comply with MFMA-4, factory-fabricated components for field assembly.
4. Channels: Continuous slotted carbon-steel channel with inturned lips.
5. Channel Width: Select for applicable load criteria.
6. Channel Nuts: Formed or stamped nuts or other devices designed to fit into channel slot and, when tightened, prevent slipping along channel.
7. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.

8. Metallic Coating: Hot-dip galvanized.
9. Paint Coating: Green epoxy.

2.5 THERMAL HANGER-SHIELD INSERTS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Carpenter & Paterson, Inc.
2. Clement Support Services.
3. ERICO International Corporation.
4. National Pipe Hanger Corporation.
5. Pipe Shields Inc.
6. Piping Technology & Products, Inc.
7. Rilco Manufacturing Co., Inc.
8. Value Engineered Products, Inc.

B. Insulation-Insert Material: Water-repellent-treated, ASTM C 533, Type I calcium silicate with 100-psi minimum compressive strength.

C. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.

D. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.

E. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

2.6 FASTENER SYSTEMS

A. Powder-Actuated Fasteners: NFPA-approved, UL-listed, or FM-approved threaded-steel stud, for use in hardened portland cement concrete, with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Hilti, Inc.
b. ITW Ramset/Red Head; Illinois Tool Works, Inc.
c. MKT Fastening, LLC.
d. Simpson Strong-Tie Co., Inc.

B. Mechanical-Expansion Anchors: NFPA-approved, UL-listed, or FM-approved, insert-wedge-type anchors, for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. B-line, an Eaton business.
b. Empire Tool and Manufacturing Co., Inc.
c. Hilti, Inc.
d. ITW Ramset/Red Head; Illinois Tool Works, Inc.
e. MKT Fastening, LLC.

2. Indoor Applications: Zinc-coated steel.

3. Outdoor Applications: Stainless steel.

2.7 EQUIPMENT SUPPORTS

A. Description: NFPA-approved, UL-listed, or FM-approved, welded, shop- or field-fabricated equipment support, made from structural-carbon-steel shapes.

2.8 MATERIALS

A. Aluminum: ASTM B 221.

B. Carbon Steel: ASTM A 1011/A 1011M.

C. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.

D. Stainless Steel: ASTM A 240/A 240M.

E. Grout: ASTM C 1107/C 1107M, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout, suitable for interior and exterior applications.

1. Properties: Nonstaining, noncorrosive, and nongaseous.
2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with requirements in Section 07 84 13 "Penetration Firestopping" for firestopping materials and installation, for penetrations through fire-rated walls, ceilings, and assemblies.

B. Strength of Support Assemblies: Where not indicated, select sizes of components, so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.

3.2 HANGER AND SUPPORT INSTALLATION

A. Metal Pipe-Hanger Installation: Comply with installation requirements of approvals and listings. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.

B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-58. Arrange for grouping of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.

1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size, or install intermediate supports for smaller-diameter pipes as specified for individual pipe hangers.
2. Field fabricate from ASTM A 36/A 36M carbon-steel shapes selected for loads being supported. Weld steel according to AWS D1.1/D1.1M.

C. Metal Framing System Installation: Arrange for grouping of parallel runs of piping, and support together on field-assembled metal strut systems.

D. Thermal Hanger-Shield Installation: Install in pipe hanger or shield for insulated piping.

E. Fastener System Installation:

1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete, after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual. Install in accordance with approvals and listings.
2. Install mechanical-expansion anchors in concrete, after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions. Install in accordance with approvals and listings.

F. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.

G. Equipment Support Installation: Fabricate from welded-structural-steel shapes.

H. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

I. Install lateral bracing with pipe hangers and supports to prevent swaying.

J. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms, and install reinforcing bars through openings at top of inserts.

K. Load Distribution: Install hangers and supports, so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

L. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.

M. Insulated Piping:

1. Attach clamps and spacers to piping.

a. Piping Operating Above Ambient Air Temperature: Clamp may project through insulation.
b. Piping Operating Below Ambient Air Temperature: Use thermal hanger-shield insert with clamp sized to match OD of insert.
c. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.

2. Install MSS SP-58, Type 39 protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.

    a. Option: Thermal hanger-shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.

3. Install MSS SP-58, Type 40 protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.

    a. Option: Thermal hanger-shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.

4. Shield Dimensions for Pipe: Not less than the following:

    a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.
    b. NPS 4: 12 inches long and 0.06 inch thick.

5. Pipes NPS 8 and Larger: Include wood or reinforced calcium-silicate-insulation inserts of length at least as long as protective shield.
6. Thermal Hanger Shields: Install with insulation of same thickness as piping insulation.

3.3 EQUIPMENT SUPPORTS

A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.

B. Grouting: Place grout under supports for equipment, and make bearing surface smooth.

C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.4 METAL FABRICATIONS

A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.

B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Finish welds at exposed connections, so no roughness shows after finishing and so contours of welded surfaces match adjacent contours.

3.5 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

3.6 PAINTING

A. Touchup: Clean field welds and abraded, shop-painted areas. Paint exposed areas immediately after erecting hangers and supports. Use same materials as those used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.

B. Touchup: Cleaning and touchup painting of field welds, bolted connections, and abraded, shop-painted areas on miscellaneous metal are specified in Section 09 91 13 "Exterior Painting" and Section 09 91 23 "Interior Painting."

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas, and apply galvanizing-repair paint to comply with ASTM A 780/A 780M.

3.7 HANGER AND SUPPORT SCHEDULE

A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.

B. Comply with NFPA requirements for pipe-hanger selections and applications that are not specified in piping system Sections.

C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finishes.

D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

E. Use carbon-steel pipe hangers and supports and metal framing systems and attachments for general service applications.

F. Use stainless-steel pipe hangers and stainless-steel attachments for hostile environment applications.

G. Use copper-plated pipe hangers and copper attachments for copper piping and tubing.

H. Use thermal hanger-shield inserts for insulated piping and tubing.

I. Horizontal-Piping Hangers and Supports: Comply with NFPA requirements. Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of non-insulated or insulated, stationary pipes NPS 1/2 to NPS 30.

2. Steel Pipe Clamps (MSS Type 4): For suspension of NPS 1/2 to NPS 24 if little or no insulation is required.
3. Adjustable, Swivel-Ring Band Hangers (MSS Type 10): For suspension of non-insulated, stationary pipes NPS 1/2 to NPS 8.
4. Split Pipe Ring with or without Turnbuckle Hangers (MSS Type 11): For suspension of non-insulated, stationary pipes NPS 3/8 to NPS 8.
5. Extension Hinged or Two-Bolt Split Pipe Clamps (MSS Type 12): For suspension of non-insulated, stationary pipes NPS 3/8 to NPS 3.
6. U-Bolts (MSS Type 24): For support of heavy pipes NPS 1/2 to NPS 30.
7. Pipe Saddle Supports (MSS Type 36): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate.
8. Pipe Stanchion Saddles (MSS Type 37): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate, and with U-bolt to retain pipe.
9. Adjustable Pipe Saddle Supports (MSS Type 38): For stanchion-type support for pipes NPS 2-1/2 to NPS 36 if vertical adjustment is required, with steel-pipe base stanchion support and cast-iron floor flange.

J. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24.
2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers NPS 3/4 to NPS 24 if longer ends are required for riser clamps.

K. Hanger-Rod Attachments: Comply with NFPA requirements.

L. Building Attachments: Comply with NFPA requirements. Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel or Malleable-Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
2. C-Clamps (MSS Type 23): For structural shapes.
3. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.

M. Saddles and Shields: Comply with NFPA requirements. Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel-Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
3. Thermal Hanger-Shield Inserts: For supporting insulated pipe.

N. Comply with NFPA requirements for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.

O. Comply with MFMA-103 for metal framing system selections and applications that are not specified in piping system Sections.

P. Use mechanical-expansion anchors instead of building attachments where required in concrete construction.

END OF SECTION 21 05 29

SECTION 21 05 53
IDENTIFICATION FOR FIRE-SUPPRESSION PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Equipment labels.
2. Warning signs and labels.
3. Pipe labels.
4. Stencils.
5. Valve tags.
6. Warning tags.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For color, letter style, and graphic representation required for each identification material and device.

C. Equipment-Label Schedule: Include a listing of all equipment to be labeled and the proposed content for each label.

D. Valve Schedules: Valve numbering scheme.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each piping system to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Metal Labels for Equipment:

1. Material and Thickness: Brass, 0.032 inch thick, with predrilled holes for attachment hardware.
2. Letter Color: White.

3. Background Color: Red.
4. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
5. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
6. Fasteners: Stainless-steel rivets.
7. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

B. Plastic Labels for Equipment:

1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, with predrilled holes for attachment hardware.
2. Letter Color: White.
3. Background Color: Red.
4. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
6. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
7. Fasteners: Stainless-steel rivets.
8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

C. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), and the Specification Section number and title where equipment is specified.

D. Equipment-Label Schedule: For each item of equipment to be labeled, on 8-1/2-by-11-inch bond paper. Tabulate equipment identification number and identify Drawing numbers where equipment is indicated (plans, details, and schedules) and the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

2.2 WARNING SIGNS AND LABELS

A. A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, with predrilled holes for attachment hardware.

B. Letter Color: White.

C. Background Color: Red.

D. Maximum Temperature: Able to withstand temperatures up to 160 deg F.

E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.

F. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater

viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.

G. Fasteners: Stainless-steel rivets.

H. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

I. Label Content: Include caution and warning information, plus emergency notification instructions.

2.3 PIPE LABELS

A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service and showing flow direction.

B. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.

C. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.

D. Pipe-Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings; pipe size; and an arrow indicating flow direction.

1. Flow-Direction Arrows: Integral with piping-system service lettering to accommodate both directions, or as separate unit on each pipe label to indicate flow direction.
2. Lettering Size: At least 1-1/2 inches high.

E. Pipe-Label Colors:

1. Background Color: Red.
2. Letter Color: White.

2.4 STENCILS

A. Stencils: Prepared with letter sizes according to ASME A13.1 for piping; and minimum letter height of 3/4 inch for access panel and door labels, equipment labels, and similar operational instructions.

1. Stencil Material: Aluminum.
2. Stencil Paint: Exterior, gloss, alkyd enamel black unless otherwise indicated. Paint may be in pressurized spray-can form.
3. Identification Paint: Exterior, alkyd enamel in colors according to ASME A13.1 unless otherwise indicated.

2.5 VALVE TAGS

A. Valve Tags: Stamped or engraved with 1/4-inch letters for piping-system abbreviation and 1/2-inch numbers.

1. Tag Material: Brass, 0.032 inch thick, with predrilled holes for attachment hardware.
2. Fasteners: Brass wire-link chain.

3. Valve-Tag Color: Red.
4. Letter Color: White.

B. Valve Schedules: For each piping system, on 8-1/2-by-11-inch bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.

1. Valve-tag schedule shall be included in operation and maintenance data.

2.6 WARNING TAGS

A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags, of plasticized card stock with matte finish suitable for writing.

1. Size: 3 by 5-1/4 inches minimum.
2. Fasteners: Brass grommet and wire.
3. Nomenclature: Large-size primary caption such as "DANGER," "CAUTION," or "DO NOT OPERATE."
4. Color: Yellow background with black lettering.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 LABEL INSTALLATION

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

B. Coordinate installation of identifying devices with locations of access panels and doors.

C. Install or permanently fasten labels on each major item of mechanical equipment.

D. Locate equipment labels where accessible and visible.

E. Piping Color-Coding: Painting of piping is specified in Division 09 Section "Interior Painting."

F. Stenciled Pipe-Label Option: Stenciled labels may be provided instead of manufactured pipe labels, at Installer's option. Install stenciled pipe labels, complying with ASME A13.1, on each piping system.

1. Identification Paint: Use for contrasting background.
2. Stencil Paint: Use for pipe marking.

G. Pipe-Label Locations: Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:

1. Near each valve and control device.
2. Near each branch connection excluding short takeoffs. Where flow pattern is not obvious, mark each pipe at branch.
3. Near penetrations through walls, floors, ceilings, and inaccessible enclosures.
4. At access doors, manholes, and similar access points that permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.

3.3 VALVE-TAG INSTALLATION

A. Install tags on valves and control devices in piping systems. List tagged valves in a valve-tag schedule.

B. Valve-Tag Application Schedule: Tag valves according to size, shape, and with captions similar to those indicated in "Valve-Tag Size and Shape" Subparagraph below:

1. Valve-Tag Size and Shape:

a. Wet-Pipe Sprinkler System: 2 inches, round.
b. Clean-Agent Fire-Extinguishing System: 2 inches, round.

3.4 WARNING-TAG INSTALLATION

A. Write required message on, and attach warning tags to, equipment and other items where required.

END OF SECTION 21 05 53

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SECTION 21 11 00
FACILITY FIRE-SUPPRESSION WATER-SERVICE PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes fire-suppression water-service piping and related components outside the building and service entrance piping through floor into the building.

B. Utility-furnished products include water meters that will be furnished to the site, ready for installation.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings:

1. Detail precast concrete vault assemblies and indicate dimensions, method of field assembly, and components.
2. Wiring Diagrams: For power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: For piping and specialties including relation to other services in same area, drawn to scale. Show piping and specialty sizes and valves, meter and specialty locations, and elevations.

B. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with requirements of utility company supplying water. Include tapping of water mains and backflow prevention.
2. Comply with standards of authorities having jurisdiction for fire-suppression water-service piping, including materials, hose threads, installation, and testing.

B. Piping materials shall bear label, stamp, or other markings of specified testing agency.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. Comply with the "Approval Guide," published by FM Global, or UL's "Fire Protection Equipment Directory" for fire-service-main products.

E. NFPA Compliance: Comply with NFPA 24 for materials, installations, tests, flushing, and valve and hydrant supervision for fire-suppression water-service piping.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Preparation for Transport: Prepare valves, including fire hydrants, according to the following:

1. Ensure that valves are dry and internally protected against rust and corrosion.
2. Protect valves against damage to threaded ends and flange faces.
3. Set valves in best position for handling. Set valves closed to prevent rattling.

B. During Storage: Use precautions for valves, including fire hydrants, according to the following:

1. Do not remove end protectors unless necessary for inspection; then reinstall for storage.
2. Protect from weather. Store indoors and maintain temperature higher than ambient dew point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.

C. Handling: Use sling to handle valves and fire hydrants if size requires handling by crane or lift. Rig valves to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

D. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.

E. Protect stored piping from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.

F. Protect flanges, fittings, and specialties from moisture and dirt.

G. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

1.7 PROJECT CONDITIONS

A. Interruption of Existing Fire-Suppression Water-Service Piping: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water-distribution service according to requirements indicated:

1. Notify Architect no fewer than two days in advance of proposed interruption of service.
2. Do not proceed with interruption of service without Architect's written permission.

1.8 COORDINATION

A. Coordinate connection to water main with utility company.

PART 2 - PRODUCTS

2.1 STEEL PIPE AND FITTINGS

A. Standard Weight, Black-Steel Pipe: ASTM A 53/A 53M or ASTM A 135.

B. Piping Schedule shall be: All piping with threaded fittings shall be schedule 40 and all piping with grooved fittings shall be schedule 10.

C. Galvanized- and Black-Steel Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M, standard-weight, seamless steel pipe with threaded ends.

D. Galvanized and Uncoated, Steel Couplings: ASTM A 865, threaded.

E. Galvanized and Uncoated, Gray-Iron Threaded Fittings: ASME B16.4, Class 125, standard pattern.

F. Grooved-Joint, Steel-Pipe Appurtenances:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. Tyco Fire & Building Products LP.
   b. Victaulic Company.
   c. Anvil Star Piping Inc.

2. Pressure Rating: 175 psig unless otherwise noted.
3. Galvanized and Uncoated, Grooved-End Fittings for Steel Piping: ASTM A 47/A 47M, malleable-iron casting or ASTM A 536, ductile-iron casting; with dimensions matching steel pipe.
4. Grooved-End-Pipe Couplings for Steel Piping: AWWA C606 and UL 213, rigid pattern, unless otherwise indicated, for steel-pipe dimensions. Include ferrous housing sections, EPDM-rubber gasket, and bolts and nuts.

2.2 PIPING JOINING MATERIALS

A. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face, 1/8 inch thick or ASME B16.21, nonmetallic and asbestos free.

1. Class 125, Cast-Iron Flanges and Class 150, Bronze Flat-Face Flanges: Full-face gaskets.
2. Class 250, Cast-Iron Flanges and Class 300, Steel Raised-Face Flanges: Ring-type gaskets.

B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

C. Brazing Filler Metals: AWS A5.8/A5.8M, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.

D. Welding Filler Metals: Comply with AWS D10.12M/D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

2.3 LISTED FIRE-PROTECTION VALVES

A. General Requirements:

1. Valves shall be UL listed or FM approved.
2. Minimum Pressure Rating for Standard-Pressure Piping: 175 psig.
3. Minimum Pressure Rating for High-Pressure Piping: 300 psig.

B. Ball Valves:

1. Standard: UL 1091 except with ball instead of disc.
2. Valves NPS 1-1/2 and Smaller: Bronze body with threaded ends.
3. Valves NPS 2 and NPS 2-1/2: Bronze body with threaded ends or ductile-iron body with grooved ends.
4. Valves NPS 3: Ductile-iron body with grooved ends.

C. Check Valves:

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1. Standard: UL 312.
2. Pressure Rating: 300 psig.
3. Type: Swing check.
4. Body Material: Cast iron.
5. End Connections: Flanged or grooved.

D. Iron Butterfly Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Anvil International, Inc.
    b. Kennedy Valve; a division of McWane, Inc.
    c. Milwaukee Valve Company.
    d. NIBCO INC.
    e. Tyco Fire & Building Products LP.
    f. Victaulic Company.

2. Standard: UL 1091.
3. Pressure Rating: 175 psig.
4. Body Material: Cast or ductile iron.
5. Style: Lug or wafer.
6. End Connections: Grooved.

2.4 FIRE-DEPARTMENT CONNECTIONS

A. Fire-Department Connection:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Fire-End & Croker Corporation.
b. Tyco Fire & Building Products LP
c. Potter Roemer
d. Elkhart Brass

2. Standard: UL 405.
3. Type: As indicated on drawings.
4. Pressure Rating: 175 psig minimum.
5. Body Material: Corrosion-resistant metal.
6. Inlets: Threads according to NFPA 1963 and matching local fire-department sizes and threads. Include extension pipe nipples, lugged swivel connections, and check devices or clappers.
7. Caps: Lugged type, with gasket and chain.

2.5 SPRINKLERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:

1. Reliable Automatic Sprinkler Co., Inc.
2. Tyco Fire & Building Products LP.
3. Victaulic Company.
4. Viking Corporation.

B. General Requirements:

1. Standard: UL's "Fire Protection Equipment Directory" listing or "Approval Guide," published by FM Global, listing.
2. Pressure Rating for Residential Sprinklers: 175 psig maximum.
3. Pressure Rating for Automatic Sprinklers: 175 psig minimum.
4. Pressure Rating for High-Pressure Automatic Sprinklers: 300 psig.
5. Refer to drawings for sprinkler types and applicable locations.

2.6 GROUT

A. Standard: ASTM C 1107, Grade B, posthardening and volume adjusting, dry, hydraulic-cement grout.

B. Characteristics: Nonshrink, and recommended for interior and exterior applications.

C. Design Mix: 5000-psi, 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Comply with excavating, trenching, and backfilling requirements in Division 31 Section "Earth Moving."

3.2 PIPING INSTALLATION

A. Water-Main Connection: Arrange with water utility company for tap of size and in location indicated in water main.

B. Water-Main Connection: Tap water main according to requirements of water utility company and of size and in location indicated.

C. Make connections larger than NPS 2 with tapping machine according to the following:

1. Install tapping sleeve and tapping valve according to MSS SP-60.
2. Install tapping sleeve on pipe to be tapped. Position flanged outlet for gate valve.
3. Use tapping machine compatible with valve and tapping sleeve; cut hole in main. Remove tapping machine and connect water-service piping.
4. Install gate valve onto tapping sleeve. Comply with MSS SP-60. Install valve with stem pointing up and with valve box.

D. Make connections NPS 2 and smaller with drilling machine according to the following:

1. Install service-saddle assemblies and corporation valves in size, quantity, and arrangement required by utility company's standards.
2. Install service-saddle assemblies on water-service pipe to be tapped. Position outlets for corporation valves.
3. Use drilling machine compatible with service-saddle assemblies and corporation valves. Drill hole in main. Remove drilling machine and connect water-service piping.
4. Install corporation valves into service-saddle assemblies.
5. Install manifold for multiple taps in water main.
6. Install curb valve in water-service piping with head pointing up and with service box.

E. Comply with NFPA 24 for fire-service-main piping materials and installation.

F. Install copper tube and fittings according to CDA's "Copper Tube Handbook."

1. Install encasement for tubing according to ASTM A 674 or AWWA C105.

G. Install ductile-iron, water-service piping according to AWWA C600 and AWWA M41.

1. Install encasement for piping according to ASTM A 674 or AWWA C105.

H. Install PE pipe according to ASTM D 2774 and ASTM F 645.

I. Install PVC, AWWA pipe according to ASTM F 645 and AWWA M23.

J. Install fiberglass AWWA pipe according to AWWA M45.

K. Bury piping with depth of cover over top at least 30 inches, with top at least 12 inches below level of maximum frost penetration, and according to the following:

1. Under Driveways: With at least 36 inches of cover over top.
2. In Loose Gravelly Soil and Rock: With at least 12 inches of additional cover.

L. Install piping by tunneling or jacking, or combination of both, under streets and other obstructions that cannot be disturbed.

M. Extend fire-suppression water-service piping and connect to water-supply source and building fire-suppression water-service piping systems at locations and pipe sizes indicated.

1. Terminate fire-suppression water-service piping at building until building-water-piping systems are installed. Terminate piping with caps, plugs, or flanges as required for piping material. Make connections to building's fire-suppression water-service piping systems when those systems are installed.

N. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, and other supports.

O. Comply with requirements in Division 21 Sections for fire-suppression-water piping inside the building.

P. Comply with requirements in Division 22 Section "Domestic Water Piping" for potable-water piping inside the building.

Q. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Division 21 Section "Sleeves and Sleeve Seals for Fire-Suppression Piping."

R. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Division 21 Section "Sleeves and Sleeve Seals for Fire-Suppression Piping."

3.3 JOINT CONSTRUCTION

A. Install couplings, flanges, flanged fittings, unions, nipples, and transition and special fittings that have finish and pressure rating same as or higher than systems pressure rating for aboveground applications unless otherwise indicated.

B. Install unions adjacent to each valve in tubing NPS 2 and smaller.

C. Install flanges, flange adaptors, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 and larger end connections.

D. Ream ends of tubes and remove burrs.

E. Remove scale, slag, dirt, and debris from outside and inside of pipes, tubes, and fittings before assembly.

F. Copper-Tubing, Brazed Joints: Join copper tube and fittings according to CDA's "Copper Tube Handbook," "Brazed Joints" Chapter.

G. Copper-Tubing, Pressure-Sealed Joints: Use proprietary crimping tool and procedure recommended by copper, pressure-seal-fitting manufacturer.

H. Ductile-Iron Piping, Gasketed Joints for Fire-Service-Main Piping: UL 194.

I. Ductile-Iron Piping, Grooved Joints: Cut-groove pipe. Assemble joints with grooved-end, ductile-iron-piping couplings, gaskets, lubricant, and bolts.

J. Flanged Joints: Select appropriate gasket material in size, type, and thickness suitable for water service. Join flanges with bolts according to ASME B31.9.

K. PE Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657.

L. PVC Piping Gasketed Joints: Use joining materials according to AWWA C900. Construct joints with elastomeric seals and lubricant according to ASTM D 2774 or ASTM D 3139.

M. Fiberglass Piping Bonded Joints: Use adhesive and procedure recommended by piping manufacturer.

N. Dissimilar Materials Piping Joints: Use adapters compatible with both piping materials, with OD, and with system working pressure.

O. Do not use flanges or unions for underground piping.

3.4 ANCHORAGE INSTALLATION

A. Anchorage, General: Install water-distribution piping with restrained joints. Anchorages and restrained-joint types that may be used include the following:

1. Concrete thrust blocks.
2. Locking mechanical joints.
3. Set-screw mechanical retainer glands.
4. Bolted flanged joints.
5. Heat-fused joints.
6. Pipe clamps and tie rods.

B. Install anchorages for tees, plugs and caps, bends, crosses, valves, and hydrant branches in fire-suppression water-service piping according to NFPA 24 and the following:

1. Gasketed-Joint, Ductile-Iron, Water-Service Piping: According to AWWA C600.
2. Gasketed-Joint, PVC Water-Service Piping: According to AWWA M23.
3. Bonded-Joint Fiberglass, Water-Service Piping: According to AWWA M45.

C. Apply full coat of asphalt or other acceptable corrosion-resistant material to surfaces of installed ferrous anchorage devices.

3.5 VALVE INSTALLATION

A. AWWA Gate Valves: Comply with AWWA C600 and AWWA M44. Install each underground valve with stem pointing up and with valve box.

B. AWWA Valves Other Than Gate Valves: Comply with AWWA C600 and AWWA M44.

C. UL-Listed or FM-Approved Gate Valves: Comply with NFPA 24. Install each underground valve and valves in vaults with stem pointing up and with vertical cast-iron indicator post.

D. UL-Listed or FM-Approved Valves Other Than Gate Valves: Comply with NFPA 24.

E. MSS Valves: Install as component of connected piping system.

F. Corporation Valves and Curb Valves: Install each underground curb valve with head pointed up and with service box.

G. Pressure-Reducing Valves: Install in vault or aboveground between shutoff valves.

H. Support valves and piping, not direct buried, on concrete piers.

3.6 DETECTOR CHECK VALVE INSTALLATION

A. Install in vault or aboveground.

B. Install for proper direction of flow. Install bypass with water meter, gate valves on each side of meter, and check valve downstream from meter.

C. Support detector check valves and piping on concrete piers.

3.7 BACKFLOW PREVENTER INSTALLATION

A. Install backflow preventers of type, size, and capacity indicated. Include valves and test cocks. Install according to requirements of plumbing and health department and authorities having jurisdiction.

B. Do not install backflow preventers that have relief drain in vault or in other spaces subject to flooding.

C. Do not install bypass piping around backflow preventers.

D. Support NPS 2-1/2 and larger backflow preventers and piping on concrete piers.

3.8 FIRE-DEPARTMENT CONNECTION INSTALLATION

A. Install ball drip valves at each check valve for fire-department connection to mains.

B. Install protective pipe bollards on two sides of each fire-department connection. Pipe bollards are specified in Division 05 Section "Metal Fabrications."

3.9 ALARM DEVICE INSTALLATION

A. General: Comply with NFPA 24 for devices and methods of valve supervision. Underground valves with valve box do not require supervision.

B. Supervisory Switches: Supervise valves in open position.

1. Valves: Grind away portion of exposed valve stem. Bolt switch, with plunger in stem depression, to OS&Y gate-valve yoke.
2. Indicator Posts: Drill and thread hole in upper-barrel section at target plate. Install switch, with toggle against target plate, on barrel of indicator post.

C. Locking and Sealing: Secure unsupervised valves as follows:

1. Valves: Install chain and padlock on open OS&Y gate valve.
2. Post Indicators: Install padlock on wrench on indicator post.

D. Pressure Switches: Drill and thread hole in exposed barrel of fire hydrant. Install switch.

E. Water-Flow Indicators: Install in water-service piping in vault. Select indicator with saddle and vane matching pipe size. Drill hole in pipe, insert vane, and bolt saddle to pipe.

F. Connect alarm devices to building's fire-alarm system. Wiring and fire-alarm devices are specified in Division 28 Sections.

3.10 CONNECTIONS

A. Connect fire-suppression water-service piping to utility water main. Use tapping sleeve and tapping valve.

B. Connect fire-suppression water-service piping to interior fire-suppression piping.

3.11 FIELD QUALITY CONTROL

A. Use test procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described below.

B. Piping Tests: Conduct piping tests before joints are covered and after concrete thrust blocks have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.

C. Hydrostatic Tests: Test at not less than one-and-one-half times the working pressure for two hours.

1. Increase pressure in 50-psig increments and inspect each joint between increments. Hold at test pressure for one hour; decrease to 0 psig. Slowly increase again to test pressure and hold for one more hour. Maximum allowable leakage is 2 quarts per hour per 100 joints. Remake leaking joints with new materials and repeat test until leakage is within allowed limits.

D. Prepare test and inspection reports.

3.12 IDENTIFICATION

A. Install continuous underground detectable warning tape during backfilling of trench for underground fire-suppression water-service piping. Locate below finished grade, directly over piping. Underground warning tapes are specified in Division 31 Section "Earth Moving."

B. Permanently attach equipment nameplate or marker indicating plastic fire-suppression water-service piping or fire-suppression water-service piping with electrically insulated fittings, on main electrical meter panel. Comply with requirements for identifying devices in Division 22 Section "Identification for Plumbing Piping and Equipment."

3.13 CLEANING

A. Clean fire-suppression water-service piping as follows:

1. Purge new piping systems and parts of existing systems that have been altered, extended, or repaired before use.
2. Use purging procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in NFPA 24 for flushing of piping. Flush piping system with clean, potable water until dirty water does not appear at points of outlet.
3. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in AWWA C651 or do as follows:

    a. Fill system or part of system with water/chlorine solution containing at least 50 ppm of chlorine; isolate and allow to stand for 24 hours.
    b. Drain system or part of system of previous solution and refill with water/chlorine solution containing at least 200 ppm of chlorine; isolate and allow to stand for three hours.
    c. After standing time, flush system with clean, potable water until no chlorine remains in water coming from system.
    d. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedure if biological examination shows evidence of contamination.

B. Prepare reports of purging activities.

END OF SECTION 21 11 00

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SECTION 21 11 19
FIRE DEPARTMENT CONNECTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Yard-type fire-department connections.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each fire-department connection.

PART 2 - PRODUCTS

2.1 YARD-TYPE FIRE-DEPARTMENT CONNECTION

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   1. Elkhart Brass Mfg. Co., Inc.
   2. Fire Protection Products, Inc.
   3. Fire-End & Croker Corporation.
   4. GMR International Equipment Corporation.
   5. Guardian Fire Equipment, Inc.

B. Standard: UL 405.

C. Type: Exposed, freestanding.

D. Pressure Rating: 175 psig minimum.

E. Body Material: Corrosion-resistant metal.

F. Inlets: Brass with threads according to NFPA 1963 and matching local fire-department sizes and threads. Include extension pipe nipples, brass lugged swivel connections, and check devices or clappers.

G. Caps: Brass, lugged type, with gasket and chain.

H. Escutcheon Plate: Round, brass, floor type.

I. Outlet: Bottom, with pipe threads.

J. Number of Inlets: Two.

K. Sleeve: Brass.

L. Sleeve Height: 18 inches.

M. Escutcheon Plate Marking: Similar to "AUTO SPKR & STANDPIPE."

N. Finish, Including Sleeve: Polished chrome plated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of fire-department connections.

B. Examine roughing-in for fire-suppression standpipe system to verify actual locations of piping connections before fire-department connection installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install wall-type fire-department connections.

B. Install yard-type fire-department connections in concrete slab support. Comply with requirements for concrete in Section 03 30 00 "Cast-in-Place Concrete."

C. Install two protective pipe bollards around each fire-department connection. Comply with requirements for bollards in Section 05 50 00 "Metal Fabrications."

D. Install automatic (ball-drip) drain valve at each check valve for fire-department connection.

END OF SECTION 21 11 19

SECTION 21 13 13
WET-PIPE SPRINKLER SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Pipes, fittings, and specialties.
2. Fire-protection valves.
3. Fire-department connections.
4. Sprinklers.

B. Related Sections:

1. Division 21 Section "Fire-Suppression Standpipes" for standpipe piping.
2. Division 21 Section "Dry-Pipe Sprinkler Systems" for dry-pipe sprinkler piping.
3. Division 21 Section for fire pumps, pressure-maintenance pumps, and fire-pump controllers.

1.3 DEFINITIONS

A. Standard-Pressure Sprinkler Piping: Wet-pipe sprinkler system piping designed to operate at working pressure of 175 psig maximum.

1.4 SYSTEM DESCRIPTIONS

A. Wet-Pipe Sprinkler System: Automatic sprinklers are attached to piping containing water and that is connected to water supply through alarm valve. Water discharges immediately from sprinklers when they are opened. Sprinklers open when heat melts fusible link or destroys frangible device. Hose connections are included if indicated.

1.5 PERFORMANCE REQUIREMENTS

A. Standard-Pressure Piping System Component: Listed for 175-psig minimum working pressure.

B. Sprinkler system shall be approved by authorities having jurisdiction.

1. Margin of Safety for Available Water Flow and Pressure: 10 P.S.I.
2. Sprinkler Occupancy Hazard Classifications refer to drawings.

1.6 SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings: For wet-pipe sprinkler systems. Include plans, elevations, sections, details, and attachments to other work.

C. Hydraulic Calculations.

1.7 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer's responsibilities include fabricating, and installing sprinkler systems and providing working plans per NFPA 13. Base calculations on results of fire-hydrant flow test.

B. Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. NFPA Standards: Sprinkler system equipment, specialties, accessories, installation, and testing shall comply with the following:

1. NFPA 13, "Installation of Sprinkler Systems."
2. NFPA 13R, "Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height."
3. NFPA 24, "Installation of Private Fire Service Mains and Their Appurtenances."

1.8 PROJECT CONDITIONS

A. Interruption of Existing Sprinkler Service: Do not interrupt sprinkler service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary sprinkler service according to requirements indicated:

1. Notify Architect and Construction Manager no fewer than two days in advance of proposed interruption of sprinkler service.
2. Do not proceed with interruption of sprinkler service without Architect's and Construction Manager's written permission.

1.9 COORDINATION

A. Coordinate layout and installation of sprinklers with other construction that penetrates ceilings, including light fixtures, HVAC equipment, and partition assemblies.

PART 2 - PRODUCTS

2.1 STEEL PIPE AND FITTINGS

A. Standard Weight, Black-Steel Pipe: ASTM A 53/A 53M or ASTM A 135.

B. Piping Schedule shall be: All piping with threaded fittings shall be schedule 40 and all piping with grooved fittings shall be schedule 10.

C. Galvanized- and Black-Steel Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M, standard-weight, seamless steel pipe with threaded ends.

D. Galvanized and Uncoated, Steel Couplings: ASTM A 865, threaded.

E. Galvanized and Uncoated, Gray-Iron Threaded Fittings: ASME B16.4, Class 125, standard pattern.

F. Grooved-Joint, Steel-Pipe Appurtenances:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. Tyco Fire & Building Products LP.
   b. Victaulic Company.
   c. Anvil Star Piping Inc.

2. Pressure Rating: 175 psig unless otherwise noted.
3. Galvanized and Uncoated, Grooved-End Fittings for Steel Piping: ASTM A 47/A 47M, malleable-iron casting or ASTM A 536, ductile-iron casting; with dimensions matching steel pipe.
4. Grooved-End-Pipe Couplings for Steel Piping: AWWA C606 and UL 213, rigid pattern, unless otherwise indicated, for steel-pipe dimensions. Include ferrous housing sections, EPDM-rubber gasket, and bolts and nuts.

2.2 CPVC PIPE AND FITTINGS (FOR RESIDENTIAL APPLICATIONS ONLY)

A. CPVC Fittings: UL listed and/or FM approved, for 175-psig rated pressure at 150 deg F, socket type. Include "LISTED" and "CPVC SPRINKLER FITTING" markings.

1. NPS 3/4 to NPS 1-1/2: ASTM F 438 and UL 1821, Schedule 40, socket type.
2. NPS 2 to NPS 3: ASTM F 439 and UL 1821, Schedule 80, socket type.
3. CPVC-to-Metal Transition Fittings: CPVC, one piece, with dimensions equivalent to pipe; one end with threaded brass insert, and one socket end.
4. CPVC-to-Metal Transition Unions: CPVC, with dimensions equivalent to pipe; one end with threaded brass insert, and one socket end.
5. Flanges: CPVC, one or two pieces.

2.3 PIPING JOINING MATERIALS

A. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face, 1/8 inch thick or ASME B16.21, nonmetallic and asbestos free.

1. Class 125, Cast-Iron Flanges and Class 150, Bronze Flat-Face Flanges: Full-face gaskets.
2. Class 250, Cast-Iron Flanges and Class 300, Steel Raised-Face Flanges: Ring-type gaskets.

B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

C. Brazing Filler Metals: AWS A5.8/A5.8M, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.

D. Welding Filler Metals: Comply with AWS D10.12M/D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

E. Solvent Cements for Joining CPVC Piping and Tubing: ASTM F 493, solvent cement recommended by pipe and fitting manufacturer, and made for joining CPVC sprinkler pipe and fittings. Include cleaner or primer recommended by pipe and fitting manufacturer.

1. Use solvent cement that has a VOC content of 490 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Use adhesive primer that has a VOC content of 650 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

F. Plastic, Pipe-Flange Gasket, and Bolts and Nuts: Type and material recommended by piping system manufacturer unless otherwise indicated.

2.4 LISTED FIRE-PROTECTION VALVES

A. General Requirements:

1. Valves shall be UL listed or FM approved.
2. Minimum Pressure Rating for Standard-Pressure Piping: 175 psig.
3. Minimum Pressure Rating for High-Pressure Piping: 300 psig.

B. Ball Valves:

1. Standard: UL 1091 except with ball instead of disc.
2. Valves NPS 1-1/2 and Smaller: Bronze body with threaded ends.
3. Valves NPS 2 and NPS 2-1/2: Bronze body with threaded ends or ductile-iron body with grooved ends.
4. Valves NPS 3: Ductile-iron body with grooved ends.

C. Check Valves:

1. Standard: UL 312.
2. Pressure Rating: 300 psig.
3. Type: Swing check.
4. Body Material: Cast iron.
5. End Connections: Flanged or grooved.

D. Iron Butterfly Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Anvil International, Inc.
b. Kennedy Valve; a division of McWane, Inc.
c. Milwaukee Valve Company.
d. NIBCO INC.
e. Tyco Fire & Building Products LP.
f. Victaulic Company.

2. Standard: UL 1091.
3. Pressure Rating: 175 psig.
4. Body Material: Cast or ductile iron.
5. Style: Lug or wafer.
6. End Connections: Grooved.

2.5 FIRE-DEPARTMENT CONNECTIONS

A. Fire-Department Connection:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Fire-End & Croker Corporation.
b. Tyco Fire & Building Products LP
c. Potter Roemer
d. Elkhart Brass

2. Standard: UL 405.
3. Type: As indicated on drawings.
4. Pressure Rating: 175 psig minimum.
5. Body Material: Corrosion-resistant metal.
6. Inlets: Threads according to NFPA 1963 and matching local fire-department sizes and threads. Include extension pipe nipples, lugged swivel connections, and check devices or clappers.
7. Caps: Lugged type, with gasket and chain.

2.6 SPRINKLERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:

1. Reliable Automatic Sprinkler Co., Inc.
2. Tyco Fire & Building Products LP.
3. Victaulic Company.
4. Viking Corporation.

B. General Requirements:

1. Standard: UL's "Fire Protection Equipment Directory" listing or "Approval Guide," published by FM Global, listing.
2. Pressure Rating for Residential Sprinklers: 175 psig maximum.
3. Pressure Rating for Automatic Sprinklers: 175 psig minimum.
4. Pressure Rating for High-Pressure Automatic Sprinklers: 300 psig.
5. Refer to drawings for sprinkler types and applicable locations.

2.7 GROUT

A. Standard: ASTM C 1107, Grade B, posthardening and volume adjusting, dry, hydraulic-cement grout.

B. Characteristics: Nonshrink, and recommended for interior and exterior applications.

C. Design Mix: 5000-psi, 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 PREPARATION

A. Perform fire-hydrant flow test according to NFPA 13 and NFPA 291. Use results for system design calculations required in "Quality Assurance" Article.

B. Report test results promptly and in writing.

3.2 SERVICE-ENTRANCE PIPING

A. Connect sprinkler piping to water-service piping for service entrance to building.

B. Install shutoff valve, backflow preventer, pressure gage, drain, and other accessories indicated at connection to water-service piping.

3.3 PIPING INSTALLATION

A. Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated, as far as practical.

1. Deviations from approved working plans for piping require written approval from authorities having jurisdiction. File written approval with Architect before deviating from approved working plans.

B. Piping Standard: Comply with requirements for installation of sprinkler piping in NFPA 13.

C. Use listed fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes.

D. Install unions adjacent to each valve in pipes NPS 2 and smaller.

E. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 and larger end connections.

F. Install "Inspector's Test Connections" in sprinkler system piping, complete with shutoff valve, and sized and located according to NFPA 13.

G. Install sprinkler piping with drains for complete system drainage.

H. Install sprinkler control valves, test assemblies, and drain risers adjacent to standpipes when sprinkler piping is connected to standpipes.

I. Install automatic (ball drip) drain valve at each check valve for fire-department connection, to drain piping between fire-department connection and check valve. Install drain piping to and spill over floor drain or to outside building.

J. Install alarm devices in piping systems.

K. Install hangers and supports for sprinkler system piping according to NFPA 13. Comply with requirements for hanger materials in NFPA 13. Powder driven inserts are not allowed.

L. Install pressure gages on riser or feed main, at each sprinkler test connection, and at top of each standpipe. Include pressure gages with connection not less than NPS 1/4 and with soft metal seated globe valve, arranged for draining pipe between gage and valve. Install gages to permit removal, and install where they will not be subject to freezing.

M. Pressurize and check preaction sprinkler system piping and air-pressure maintenance devices.

N. Fill sprinkler system piping with water.

3.4 JOINT CONSTRUCTION

A. Install couplings, flanges, flanged fittings, unions, nipples, and transition and special fittings that have finish and pressure ratings same as or higher than system's pressure rating for aboveground applications unless otherwise indicated.

B. Install unions adjacent to each valve in pipes NPS 2 and smaller.

C. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 and larger end connections.

D. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

E. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

F. Flanged Joints: Select appropriate gasket material in size, type, and thickness suitable for water service. Join flanges with gasket and bolts according to ASME B31.9.

G. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.

H. Welded Joints: Construct joints according to AWS D10.12M/D10.12, using qualified processes and welding operators according to "Quality Assurance" Article.

1. Shop weld pipe joints where welded piping is indicated. Do not use welded joints for galvanized-steel pipe.

I. Steel-Piping, Roll-Grooved Joints: Roll rounded-edge groove in end of pipe according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe grooved joints.

J. Dissimilar-Material Piping Joints: Make joints using adapters compatible with materials of both piping systems.

K. Plastic-Piping, Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:

1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements. Apply primer.
2. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.

3.5 VALVE AND SPECIALTIES INSTALLATION

A. Install listed fire-protection valves, trim and drain valves, specialty valves and trim, controls, and specialties according to NFPA 13 and authorities having jurisdiction.

B. Install listed fire-protection shutoff valves supervised open, located to control sources of water supply except from fire-department connections. Install permanent identification signs indicating portion of system controlled by each valve.

C. Install check valve in each water-supply connection. Install backflow preventers instead of check valves in potable-water-supply sources.

D. Specialty Valves:

1. General Requirements: Install in vertical position for proper direction of flow, in main supply to system.
2. Alarm Valves: Include bypass check valve and retarding chamber drain-line connection.

3.6 SPRINKLER INSTALLATION

A. Install sprinklers in suspended ceilings in center of acoustical ceiling panels. Sprinklers may be centered in tile either by hard pipe or with flexible connectors. Connectors shall be **UL** 2443 listed, Flex Heads Industries or equal.

B. Sprinkler Head Location: Sprinkler heads shall be installed no closer than 4 inches to any Ceiling grid or wall.

C. Install dry-type sprinklers with water supply from heated space. Do not install pendent or sidewall, wet-type sprinklers in areas subject to freezing.

3.7 ESCUTCHEON INSTALLATION

A. Install escutcheons for penetrations of walls, ceilings, and floors.

B. Escutcheons for Piping:

1. Piping with Fitting or Sleeve Protruding from Wall: deep pattern.
2. Bare Piping at Wall and Floor Penetrations in Finished Spaces: cast brass with polished chrome-plated finish.

3. Bare Piping at Ceiling Penetrations in Finished Spaces cast brass with polished chrome-plated finish.

3.8 SLEEVE INSTALLATION

A. General Requirements: Install sleeves for pipes and tubes passing through penetrations in floors, partitions, roofs, and walls.

B. Sleeves are not required for core-drilled holes.

C. Permanent sleeves are not required for holes formed by removable PE sleeves.

D. Cut sleeves to length for mounting flush with both surfaces unless otherwise indicated.

E. Install sleeves in new partitions, slabs, and walls as they are built.

F. For interior wall penetrations, seal annular space between sleeve and pipe or pipe insulation using joint sealants appropriate for size, depth, and location of joint. Comply with requirements for joint sealants in Division 07 Section "Joint Sealants."

G. For exterior wall penetrations above grade, seal annular space between sleeve and pipe using joint sealants appropriate for size, depth, and location of joint. Comply with requirements for joint sealants in Division 07 Section "Joint Sealants."

H. For exterior wall penetrations below grade, seal annular space between sleeve and pipe using sleeve seals.

I. Seal space outside of sleeves in concrete slabs and walls with grout.

J. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation unless otherwise indicated.

K. Install sleeve materials according to the following applications:

1. Sleeves for Piping Passing through Concrete Floor Slabs: Molded PVC.
2. Sleeves for Piping Passing through Concrete Floor Slabs of Mechanical Equipment Areas or Other Wet Areas: Stack sleeve fittings.

    a. Extend sleeves 2 inches above finished floor level.
    b. For pipes penetrating floors with membrane waterproofing, extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified. Secure flashing between clamping flanges. Install section of cast-iron soil pipe to extend sleeve to 2 inches above finished floor level. Comply with requirements for flashing in Division 07 Section "Sheet Metal Flashing and Trim."

3. Sleeves for Piping Passing through Gypsum-Board Partitions:

    a. PVC-pipe sleeves for pipes smaller than NPS 6.
    b. Galvanized-steel-sheet sleeves for pipes NPS 6 and larger.
    c. Exception: Sleeves are not required for water-supply tubes and waste pipes for individual plumbing fixtures if escutcheons will cover openings.

4. Sleeves for Piping Passing through Concrete Roof Slabs: Molded PVC.
5. Sleeves for Piping Passing through Exterior Concrete Walls:

a. Galvanized-steel-pipe sleeves for pipes smaller than NPS 6.
b. Cast-iron wall pipe sleeves for pipes NPS 6 and larger.
c. Install sleeves that are large enough to provide 1-inch annular clear space between sleeve and pipe or pipe insulation when sleeve seals are used.
d. All exterior sleeves shall be sealed water tight.

6. Sleeves for Piping Passing through Interior Concrete Walls:

a. PVC-pipe sleeves for pipes smaller than NPS 6.
b. Galvanized-steel-sheet sleeves for pipes NPS 6 and larger.

L. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements for firestop materials and installations in Division 07 Section "Penetration Firestopping."

3.9 IDENTIFICATION

A. Install labeling and pipe markers on equipment and piping according to requirements in NFPA 13.

B. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

3.10 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:

1. Leak Test: After installation, charge systems and test for leaks. Repair leaks and retest until no leaks exist.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
3. Flush, test, and inspect sprinkler systems according to NFPA 13, "Systems Acceptance" Chapter.
4. Energize circuits to electrical equipment and devices.
5. Start and run excess-pressure pumps.
6. Coordinate with fire-alarm tests. Operate as required.
7. Coordinate with fire-pump tests. Operate as required.
8. Verify that equipment hose threads are same as local fire-department equipment.

C. Sprinkler piping system will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

END OF SECTION 21 13 13

Division 22

Plumbing

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SECTION 22 05 00
COMMON WORK RESULTS FOR PLUMBING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Piping materials and installation instructions common to most piping systems.
2. Transition fittings.
3. Dielectric fittings.
4. Sleeves.
5. Escutcheons.
6. Grout.
7. Plumbing demolition.
8. Equipment installation requirements common to equipment sections.
9. Painting and finishing.
10. Concrete bases.
11. Supports and anchorages.

1.3 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in chases.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

F. The following are industry abbreviations for plastic materials:

1. CPVC: Chlorinated polyvinyl chloride plastic.
2. PE: Polyethylene plastic.

3. PVC: Polyvinyl chloride plastic.

1.4 SUBMITTALS

A. Product Data: For the following:

1. Transition fittings.
2. Dielectric fittings.
3. Escutcheons.

1.5 QUALITY ASSURANCE

A. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel."

B. Steel Pipe Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."

1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

C. Electrical Characteristics for Plumbing Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.

B. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

1.7 COORDINATION

A. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction, to allow for plumbing installations.

B. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.

C. Coordinate requirements for access panels and doors for plumbing items requiring access that are concealed behind finished surfaces. Access panels and doors are specified in Division 08 Section "Access Doors and Frames."

PART 2 - PRODUCTS

2.1 PIPE, TUBE, AND FITTINGS

A. Refer to individual Division 22 piping Sections for pipe, tube, and fitting materials and joining methods.

B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

2.2 JOINING MATERIALS

A. Refer to individual Division 22 piping Sections for special joining materials not listed below.

B. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.

1. ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch maximum thickness unless thickness or specific material is indicated.

    a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
    b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.

2. AWWA C110, rubber, flat face, 1/8 inch thick, unless otherwise indicated; and full-face or ring type, unless otherwise indicated.

C. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.

D. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

E. Brazing Filler Metals: AWS A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing, unless otherwise indicated; and AWS A5.8, BAg1, silver alloy for refrigerant piping, unless otherwise indicated.

F. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

G. Solvent Cements for Joining Plastic Piping:

1. CPVC Piping: ASTM F 493.
2. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.

2.3 TRANSITION FITTINGS

A. AWWA Transition Couplings: Same size as, and with pressure rating at least equal to and with ends compatible with, piping to be joined.

1. Underground Piping NPS 2 and Larger: AWWA C219, metal sleeve-type coupling.

B. Flexible Transition Couplings for Underground Nonpressure Drainage Piping: ASTM C 1173 with elastomeric sleeve, ends same size as piping to be joined, and corrosion-resistant metal band on each end.

2.4 DIELECTRIC FITTINGS

A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder-joint, plain, or weld-neck end connections that match piping system materials.

B. Insulating Material: Suitable for system fluid, pressure, and temperature.

C. Dielectric Unions: Factory-fabricated, union assembly, for 250-psig minimum working pressure at 180 deg F.

D. Dielectric-Flange Kits: Companion-flange assembly for field assembly. Include flanges, full-face- or ring-type neoprene or phenolic gasket, phenolic or polyethylene bolt sleeves, phenolic washers, and steel backing washers.

1. Separate companion flanges and steel bolts and nuts shall have 150- or 300-psig minimum working pressure where required to suit system pressures.

E. Dielectric Couplings: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining; threaded ends; and 300-psig minimum working pressure at 225 deg F.

2.5 SLEEVES

A. Galvanized-Steel Sheet: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.

B. Steel Pipe: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.

C. Molded PVC: Permanent, with nailing flange for attaching to wooden forms.

D. PVC Pipe: ASTM D 1785, Schedule 40.

E. Molded PE: Reusable, PE, tapered-cup shaped, and smooth-outer surface with nailing flange for attaching to wooden forms.

2.6 ESCUTCHEONS

A. Description: Manufactured wall and ceiling escutcheons and floor plates, with an ID to closely fit around pipe, tube, and insulation of insulated piping and an OD that completely covers opening.

B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with polished chrome-plated finish.

C. One-Piece, Cast-Brass Type: With set screw.

1. Finish: Polished chrome-plated and rough brass.

D. Split-Casting, Cast-Brass Type: With concealed hinge and set screw.

1. Finish: Polished chrome-plated and rough brass.

E. One-Piece, Stamped-Steel Type: With set screw or spring clips and chrome-plated finish.

F. Split-Plate, Stamped-Steel Type: With hinge, set screw or spring clips, and chrome-plated finish.

2.7 GROUT

A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.

1. Characteristics: Post-hardening, volume-adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
2. Design Mix: 5000-psi, 28-day compressive strength.
3. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 PLUMBING DEMOLITION

A. Refer to Division 01 Section "Cutting and Patching" and Division 02 Section "Selective Structure Demolition" for general demolition requirements and procedures.

B. Disconnect, demolish, and remove plumbing systems, equipment, and components indicated to be removed.

1. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
2. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
3. Equipment to Be Removed: Disconnect and cap services and remove equipment.
4. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
5. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

C. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

3.2 PIPING SYSTEMS - COMMON REQUIREMENTS

A. Install piping according to the following requirements and Division 22 Sections specifying piping systems.

B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.

D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

F. Install piping to permit valve servicing. Valves located above ceilings shall be positioned no further than arms length away from accessible ceiling opening.

G. Install piping at indicated slopes.

H. Install piping free of sags and bends.

I. Install fittings for changes in direction and branch connections.

J. Install piping to allow application of insulation.

K. Select system components with pressure rating equal to or greater than system operating pressure.

L. Install escutcheons for penetrations of walls, ceilings, and floors according to the following:

1. New Piping:

    a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.
    b. Chrome-Plated Piping: One-piece, cast-brass type with polished chrome-plated finish.
    c. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, cast-brass type with polished chrome-plated finish.
    d. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece, cast-brass type with polished chrome-plated finish.

2. Existing Piping: Use the following:

    a. Chrome-Plated Piping: Split-casting, cast-brass type with chrome-plated finish.
    b. Bare Piping at Wall and Floor Penetrations in Finished Spaces: Split-casting, cast-brass type with chrome-plated finish.
    c. Bare Piping at Wall and Floor Penetrations in Finished Spaces: Split-plate, stamped-steel type with concealed hinge and spring clips.
    d. Bare Piping at Ceiling Penetrations in Finished Spaces: Split-casting, cast-brass type with chrome-plated finish.
    e. Bare Piping at Ceiling Penetrations in Finished Spaces: Split-plate, stamped-steel type with concealed hinge and set screw.

M. Install sleeves for pipes passing through concrete and masonry walls and concrete floor and roof slabs.

N. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.

1. Cut sleeves to length for mounting flush with both surfaces.

a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.

2. Install sleeves in new walls and slabs as new walls and slabs are constructed.
3. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation. Use the following sleeve materials:

a. Steel Pipe Sleeves: For pipes smaller than NPS 6.
b. Steel Sheet Sleeves: For pipes NPS 6 and larger, penetrating gypsum-board partitions.

4. Except for underground wall penetrations, seal annular space between sleeve and pipe or pipe insulation, using joint sealants appropriate for size, depth, and location of joint. Refer to Division 07 Section "Joint Sealants" for materials and installation.

O. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Refer to Division 07 Section "Penetration Firestopping" for materials.

P. Verify final equipment locations for roughing-in.

Q. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

3.3 PIPING JOINT CONSTRUCTION

A. Join pipe and fittings according to the following requirements and Division 22 Sections specifying piping systems.

B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.

E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.

F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

G. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.

H. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

I. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:

1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
2. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
3. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
4. PVC Nonpressure Piping: Join according to ASTM D 2855.

3.4 PIPING CONNECTIONS

A. Make connections according to the following, unless otherwise indicated:

1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
2. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

3.5 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.

B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.

C. Install plumbing equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.

D. Install equipment to allow right of way for piping installed at required slope.

3.6 PAINTING

A. Painting of plumbing systems, equipment, and components is specified in Division 09 Sections "Interior Painting" and "Exterior Painting."

B. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

3.7 CONCRETE BASES

A. Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.

1. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit.
2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of the base.
3. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
5. Install anchor bolts to elevations required for proper attachment to supported equipment.
6. Install anchor bolts according to anchor-bolt manufacturer's written instructions.
7. As specified in Division 03 Section.

3.8 ERECTION OF METAL SUPPORTS AND ANCHORAGES

A. Refer to Division 05 Section "Metal Fabrications" for structural steel.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor plumbing materials and equipment.

C. Field Welding: Comply with AWS D1.1.

3.9 ERECTION OF WOOD SUPPORTS AND ANCHORAGES

A. Cut, fit, and place wood grounds, nailers, blocking, and anchorages to support, and anchor plumbing materials and equipment.

B. Select fastener sizes that will not penetrate members if opposite side will be exposed to view or will receive finish materials. Tighten connections between members. Install fasteners without splitting wood members.

C. Attach to substrates as required to support applied loads.

3.10 GROUTING

A. Mix and install grout for plumbing equipment base bearing surfaces, pump and other equipment base plates, and anchors.

B. Clean surfaces that will come into contact with grout.

C. Provide forms as required for placement of grout.

D. Avoid air entrapment during placement of grout.

E. Place grout, completely filling equipment bases.

F. Place grout on concrete bases and provide smooth bearing surface for equipment.

G. Place grout around anchors.

H. Cure placed grout.

END OF SECTION 22 05 00

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SECTION 22 05 13
COMMON MOTOR REQUIREMENTS FOR PLUMBING EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general requirements for single-phase and poly-phase, general-purpose, horizontal, small and medium, squirrel-cage induction motors for use on alternating-current power systems up to 600 V and installed at equipment manufacturer's factory or shipped separately by equipment manufacturer for field installation.

1.3 COORDINATION

A. Coordinate features of motors, installed units, and accessory devices to be compatible with the following:

1. Motor controllers.
2. Torque, speed, and horsepower requirements of the load.
3. Ratings and characteristics of supply circuit and required control sequence.
4. Ambient and environmental conditions of installation location.

PART 2 - PRODUCTS

2.1 GENERAL MOTOR REQUIREMENTS

A. Comply with NEMA MG 1 unless otherwise indicated.

2.2 MOTOR CHARACTERISTICS

A. Duty: Continuous duty at ambient temperature of 40 Deg. C and at altitude of 3300 feet above sea level.

B. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

2.3 POLYPHASE MOTORS

A. Description: NEMA MG 1, Design B, medium induction motor.

B. Efficiency: Premium efficient, as defined in NEMA MG 1.

C. Multispeed Motors: Variable torque.

1. For motors with 2:1 speed ratio, consequent pole, single winding.
2. For motors with other than 2:1 speed ratio, separate winding for each speed.

D. Multispeed Motors: Separate winding for each speed.

E. Rotor: Random-wound, squirrel cage.

F. Bearings: Regreasable, shielded, antifriction ball bearings suitable for radial and thrust loading.

G. Temperature Rise: Match insulation rating.

H. Insulation: Class F.

1. Motors 15 HP and Larger: NEMA starting Code F or Code G.
2. Motors Smaller Than 15 HP: Manufacturer's standard starting characteristic.

I. Enclosure Material: Cast iron for motor frame sizes 324T and larger; rolled steel for motor frame sizes smaller than 324T.

2.4 ADDITIONAL REQUIREMENTS FOR POLYPHASE MOTORS

A. Motors Used with Reduced-Voltage and Multispeed Controllers: Match wiring connection requirements for controller with required motor leads. Provide terminals in motor terminal box, suited to control method.

B. Motors Used with Variable-Frequency Controllers: Ratings, characteristics, and features coordinated with and approved by controller manufacturer.

1. Windings: Copper magnet wire with moisture-resistant insulation varnish, designed and tested to resist transient spikes, high frequencies, and short time rise pulses produced by pulse-width-modulated inverters.
2. Inverter-Duty Motors: Class F temperature rise; Class H insulation.
3. Thermal Protection: Comply with NEMA MG 1 requirements for thermally protected motors.

2.5 SINGLE-PHASE MOTORS

A. Motors larger than 1/20 HP shall be one of the following, to suit starting torque and requirements of specific motor application:

1. Permanent-split capacitor.
2. Split phase.
3. Capacitor start, inductor run.
4. Capacitor start, capacitor run.

B. Multispeed Motors: Variable-torque, permanent-split-capacitor type.

C. Bearings: Pre-lubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.

D. Motors 1/20 HP and Smaller: Shaded-pole type.

E. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 22 05 13

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SECTION 22 05 16
EXPANSION FITTINGS AND LOOPS FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Pack-less expansion joints.
2. Grooved-joint expansion joints.
3. Alignment guides and anchors.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Delegated-Design Submittal: For each anchor and alignment guide, including analysis data, signed and sealed by the qualified professional engineer responsible for their preparation.

1. Design Calculations: Calculate requirements for thermal expansion of piping systems and for selecting and designing expansion joints, loops, and swing connections.
2. Anchor Details: Detail fabrication of each anchor indicated. Show dimensions and methods of assembly and attachment to building structure.
3. Alignment Guide Details: Detail field assembly and attachment to building structure.
4. Schedule: Indicate type, manufacturer's number, size, material, pressure rating, end connections, and location for each expansion joint.

1.4 INFORMATIONAL SUBMITTALS

A. Welding certificates.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For expansion joints to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Pipe and Pressure-Vessel Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Compatibility: Products shall be suitable for piping service fluids, materials, working pressures, and temperatures.

B. Capability: Products to absorb 200 percent of maximum axial movement between anchors.

2.2 PACKLESS EXPANSION JOINTS

A. Rubber Union Connector Expansion Joints RUEJ-01:

1. Material: Twin reinforced-rubber spheres with external restraining cables.
2. Minimum Pressure Rating: 150 psig at 170 Deg. F, unless otherwise indicated.
3. End Connections for NPS 2 and Smaller: Threaded.

B. Flexible-Hose Pack-less Expansion Joints:

1. Description: Manufactured assembly with inlet and outlet elbow fittings and two flexible-metal-hose legs joined by long-radius, 180-degree return bend or center section of flexible hose.
2. Flexible Hose: Corrugated-metal inner hoses and braided outer sheaths.
3. Expansion Joints for Copper Tubing NPS 32 and Smaller: Copper-alloy fittings with threaded-joint end connections.

    a. Bronze hoses and single-braid bronze sheaths with 450 psig at 70 Deg. F and 340 psig at 450 Deg. F ratings.

4. Expansion Joints for Copper Tubing NPS 2-1/2 to NPS 4: Copper-alloy fittings with threaded end connections.

    a. Stainless-steel hoses and single-braid, stainless-steel sheaths with 300 psig at 70 Deg. F and 225 psig at 450 Deg. F ratings.

5. Expansion Joints for Steel Piping NPS 2 and Smaller: Carbon-steel fittings with threaded end connections.

    a. Stainless-steel hoses and single-braid, stainless-steel sheaths with 450 psig at 70 Deg. F and 325 psig at 600 Deg. F ratings.

PART 3 - EXECUTION

3.1 INSTALLATION OF EXPANSION JOINTS

A. Install expansion joints of sizes matching sizes of piping in which they are installed.

B. Install rubber pack-less expansion joints according to FSA-PSJ-703.

3.2 INSTALLATION OF PIPE LOOP AND SWING CONNECTIONS

A. Install pipe loops cold-sprung in tension or compression as required to partly absorb tension or compression produced during anticipated change in temperature.

B. Connect risers and branch connections to mains with at least five pipe fittings, including tee in main.

C. Connect risers and branch connections to terminal units with at least four pipe fittings, including tee in riser.

D. Connect mains and branch connections to terminal units with at least four.

3.3 INSTALLATION OF ALIGNMENT-GUIDES AND ANCHORS

A. Install alignment guides to guide expansion and to avoid end-loading and torsional stress.

B. Install one guide(s) on each side of pipe expansion fittings and loops. Install guides nearest to expansion joint not more than four pipe diameters from expansion joint.

C. Attach guides to pipe, and secure guides to building structure.

D. Install anchors at locations to prevent stresses from exceeding those permitted by ASME B31.9 and to prevent transfer of loading and stresses to connected equipment.

E. Anchor Attachments:

1. Anchor Attachment to Copper Tubing: Attach with pipe hangers. Use MSS SP-69, Type 24; U bolts bolted to anchor.

F. Fabricate and install steel anchors by welding steel shapes, plates, and bars. Comply with ASME B31.9 and AWS D1.1/D1.1M.

1. Anchor Attachment to Steel Structural Members: Attach by welding.
2. Anchor Attachment to Concrete Structural Members: Attach by fasteners. Follow fastener manufacturer's written instructions.

G. Use grout to form flat bearing surfaces for guides and anchors attached to concrete.

END OF SECTION 22 05 16

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SECTION 22 05 17
SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Sleeves.
2. Sleeve-seal systems.
3. Sleeve-seal fittings.
4. Grout.
5. Silicone sealants.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

PART 2 - PRODUCTS

2.1 SLEEVES

A. Cast-Iron Pipe Sleeves: Cast or fabricated of cast or ductile iron and equivalent to ductile-iron pressure pipe, with plain ends and integral Water-stop collar.

B. Steel Pipe Sleeves: ASTM A53/A53M, Type E, Grade B, Schedule 40, anticorrosion coated, with plain ends and integral welded Water-stop collar.

C. Molded-PE or -PP Sleeves: Removable, tapered-cup shaped, and smooth outer surface with nailing flange for attaching to wooden forms.

2.2 STACK-SLEEVE FITTINGS

A. Description: Manufactured, Dura-coated cast-iron sleeve with integral clamping flange for use in waterproof floors and roofs. Include clamping ring, bolts, and nuts for membrane flashing.

1. Underdeck Clamp: Clamping ring with setscrews.

2.3 SLEEVE-SEAL SYSTEMS

A. Description:

1. Modular sealing-element unit, designed for field assembly, for filling annular space between piping and sleeve.
2. Designed to form a hydrostatic seal of 20 psig minimum.
3. Sealing Elements: Nitrile (Buna N) interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
4. Pressure Plates: Carbon steel.
5. Connecting Bolts and Nuts: Carbon steel, with corrosion-resistant coating, ASTM B633 of length required to secure pressure plates to sealing elements.

2.4 SLEEVE-SEAL FITTINGS

A. Description: Manufactured plastic, sleeve-type, Water-stop assembly made for imbedding in concrete slab or wall.

B. Plastic or rubber Water-stop collar with center opening to match piping OD.

2.5 GROUT

A. Description: Non-shrink, for interior and exterior sealing openings in non-fire-rated walls or floors.

B. Standard: ASTM C1107/C1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.

C. Design Mix: 5000-psi, 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

2.6 SILICONE SEALANTS

A. Silicone, S, NS, 25, NT: Single-component, non-sag, plus 25 percent and minus 25 percent movement capability, non-traffic-use, neutral-curing silicone joint sealant, ASTM C920, Type S, Grade NS, Class 25, Use NT.

B. Silicone, S, P, 25, T, NT: Single-component, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and non-traffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade P, Class 25, Uses T and NT. Grade P Pourable (self-leveling) formulation is for opening in floors and other horizontal surfaces that are not fire rated.

C. Silicone Foam: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, non-shrinking foam.

PART 3 - EXECUTION

3.1 SLEEVE INSTALLATION

A. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.

B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 1-inch annular clear space between piping and concrete slabs and walls.

1. Sleeves are not required for core-drilled holes.

C. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.

1. Permanent sleeves are not required for holes in slabs formed by molded-PE or -PP sleeves.
2. Cut sleeves to length for mounting flush with both surfaces.

a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level.

3. Using grout or silicone sealant, seal the space outside of sleeves in slabs and walls without sleeve-seal system.

D. Install sleeves for pipes passing through interior partitions.

1. Cut sleeves to length for mounting flush with both surfaces.
2. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
3. Seal annular space between sleeve and piping or piping insulation; use joint sealants appropriate for size, depth, and location of joint.

E. Fire-Resistance-Rated Penetrations, Horizontal Assembly Penetrations, and Smoke Barrier Penetrations: Maintain indicated fire or smoke rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with fire- and smoke-stop materials. Comply with requirements for firestopping and fill materials specified in Section 07 84 13 "Penetration Firestopping."

3.2 STACK-SLEEVE-FITTING INSTALLATION

A. Install stack-sleeve fittings in new slabs as slabs are constructed.

1. Install fittings that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
2. Secure flashing between clamping flanges for pipes penetrating floors with membrane waterproofing. Comply with requirements for flashing specified in Section 07 62 00 "Sheet Metal Flashing and Trim."
3. Install section of cast-iron soil pipe to extend sleeve to 2 inches above finished floor level.
4. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.
5. Use silicone sealant to seal the space around outside of stack-sleeve fittings.

B. Fire-Resistance-Rated Penetrations, Horizontal Assembly Penetrations, and Smoke Barrier Penetrations: Maintain indicated fire or smoke rating of floors at pipe penetrations. Seal pipe penetrations with fire- and smoke-stop materials. Comply with requirements for firestopping specified in Section 07 84 13 "Penetration Firestopping."

3.3 SLEEVE-SEAL-SYSTEM INSTALLATION

A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at service piping entries into building.

B. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size. Position piping in center of sleeve. Center piping in penetration, assemble sleeve-seal system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

3.4 SLEEVE-SEAL-FITTING INSTALLATION

A. Install sleeve-seal fittings in new walls and slabs as they are constructed.

B. Assemble fitting components of length to be flush with both surfaces of concrete slabs and walls. Position Water-stop flange to be centered in concrete slab or wall.

C. Secure nailing flanges to concrete forms.

D. Use grout or silicone sealant to seal the space around outside of sleeve-seal fittings.

3.5 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Leak Test: After allowing for a full cure, test sleeves and sleeve seals for leaks. Repair leaks and retest until no leaks exist.

B. Sleeves and sleeve seals will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

3.6 SLEEVE AND SLEEVE-SEAL SCHEDULE

A. Use sleeves and sleeve seals for the following piping-penetration applications:

1. Exterior Concrete Walls above Grade:

a. Piping Smaller Than NPS 6: Cast-iron pipe sleeves.

2. Exterior Concrete Walls below Grade:

a. Piping Smaller Than NPS 6: Cast-iron pipe sleeves with sleeve-seal system

1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

b. Piping NPS 6 and Larger: Cast-iron pipe sleeves with sleeve-seal system Steel pipe sleeves with sleeve-seal system Sleeve-seal fittings.

1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

3. Concrete Slabs-on-Grade:

a. Piping Smaller than NPS 6: Cast-iron pipe sleeves with sleeve-seal system Steel pipe sleeves with sleeve-seal system Sleeve-seal fittings.

1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

b. Piping NPS 6 and Larger: Cast-iron pipe sleeves with sleeve-seal system Steel pipe sleeves with sleeve-seal system Sleeve-seal fittings.

1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

4. Concrete Slabs above Grade:

a. Piping Smaller than NPS 6: Steel pipe sleeves.

5. Interior Partitions:

a. Piping Smaller than NPS 6: Steel pipe sleeves.

END OF SECTION 22 05 17

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SECTION 22 05 18
ESCUTCHEONS FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Escutcheons.
2. Floor plates.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 ESCUTCHEONS

A. One-Piece, Cast-Brass Type: With polished, chrome-plated finish and setscrew fastener.

B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with polished, chrome-plated finish and spring-clip fasteners.

2.2 FLOOR PLATES

A. Split Floor Plates: Cast brass with concealed hinge.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.

B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of insulated piping and with OD that completely covers opening.

1. Escutcheons for New Piping:

a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep pattern.
b. Chrome-Plated Piping: One-piece cast brass or split-casting brass with polished, chrome-plated finish.
c. Insulated Piping: One-piece cast brass with polished, chrome-plated finish.
d. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece cast brass with polished, chrome-plated finish.
e. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece stainless steel with polished stainless-steel finish.
f. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece cast brass with polished, chrome-plated finish.
g. Bare Piping in Unfinished Service Spaces: One-piece cast brass with finish.
h. Bare Piping in Equipment Rooms: One-piece cast brass with polished, chrome-plated finish.

C. Install floor plates for piping penetrations of equipment-room floors.

D. Install floor plates with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.

1. New Piping: One-piece, floor plate.

3.2 FIELD QUALITY CONTROL

A. Using new materials, replace broken and damaged escutcheons and floor plates.

END OF SECTION 22 05 18

SECTION 22 05 19
METERS AND GAGES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Bimetallic-actuated thermometers.
2. Filled-system thermometers.
3. Liquid-in-glass thermometers.
4. Thermo-wells.
5. Dial-type pressure gages.
6. Gage attachments.
7. Test plugs.
8. Test-plug kits.
9. Sight flow indicators.

B. Related Requirements:

1. Section 22 11 13 "Facility Water Distribution Piping" for domestic water meters and combined domestic and fire-protection water-service meters outside the building.
2. Section 22 11 19 "Domestic Water Piping Specialties" for water meters.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of meter and gage.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For meters and gages to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 BIMETALLIC-ACTUATED THERMOMETERS

A. Standard: ASME B40.200.

B. Case: Liquid-filled and sealed type; stainless steel with 3-inch nominal diameter.

C. Dial: Non-reflective aluminum with permanently etched scale markings and scales in Deg. F and Deg. C.

D. Connector Type(s): Union joint, adjustable angle rigid, back and rigid, bottom, with unified-inch screw threads.

E. Connector Size: 1/2 inch, with ASME B1.1 screw threads.

F. Stem: 0.25 or 0.375 inch in diameter; stainless steel.

G. Window: Plain glass or plastic.

H. Ring: Stainless steel.

I. Element: Bimetal coil.

J. Pointer: Dark-colored metal.

K. Accuracy: Plus or minus 1 percent of scale range.

2.2 FILLED-SYSTEM THERMOMETERS

A. Direct-Mounted, Metal-Case, Vapor-Actuated Thermometers:

1. Standard: ASME B40.200.
2. Case: Sealed type, cast aluminum or drawn steel; 4-1/2-inch nominal diameter.
3. Element: Bourdon tube or other type of pressure element.
4. Movement: Mechanical, with link to pressure element and connection to pointer.
5. Dial: Non-reflective aluminum with permanently etched scale markings graduated in Deg. F and Deg. C.
6. Pointer: Dark-colored metal.
7. Window: Glass or plastic.
8. Thermal System: Liquid-filled bulb in copper-plated steel, aluminum, or brass stem and of length to suit installation.

    a. Design for Thermo-well Installation: Bare stem.

9. Accuracy: Plus or minus 1 percent of scale range.

B. Direct-Mounted, Plastic-Case, Vapor-Actuated Thermometers:

1. Standard: ASME B40.200.
2. Case: Sealed type, plastic; 4-1/2-inch nominal diameter.
3. Element: Bourdon tube or other type of pressure element.

4. Movement: Mechanical, with link to pressure element and connection to pointer.
5. Dial: Non-reflective aluminum with permanently etched scale markings graduated in Deg. C.
6. Pointer: Dark-colored metal.
7. Window: Glass.
8. Ring: Metal.
9. Connector Type(s): Union joint, rigid, back and rigid, bottom; with ASME B1.1 screw threads.
10. Thermal System: Liquid-filled bulb in copper-plated steel, aluminum, or brass stem and of length to suit installation.

    a. Design for Thermo-well Installation: Bare stem.

11. Accuracy: Plus or minus 1 percent of scale range.

C. Remote-Mounted, Metal-Case, Vapor-Actuated Thermometers:

1. Standard: ASME B40.200.
2. Case: Sealed type, cast aluminum or drawn steel.
3. Element: Bourdon tube or other type of pressure element.
4. Movement: Mechanical, with link to pressure element and connection to pointer.
5. Dial: Non-reflective aluminum with permanently etched scale markings graduated in Deg. F and Deg. C.
6. Pointer: Dark-colored metal.
7. Window: Glass or plastic
8. Ring: Metal Stainless steel.
9. Connector Type(s): Union joint, bottom; with ASME B1.1 screw threads.
10. Thermal System: Liquid-filled bulb in copper-plated steel, aluminum, or brass stem and of length to suit installation.

    a. Design for Thermo-well Installation: Bare stem.

11. Accuracy: Plus or minus 1 percent of scale range.

D. Remote-Mounted, Plastic-Case, Vapor-Actuated Thermometers:

1. Standard: ASME B40.200.
2. Case: Sealed type, plastic; 6-inch nominal diameter with back flange and holes for panel mounting.
3. Element: Bourdon tube or other type of pressure element.
4. Movement: Mechanical, with link to pressure element and connection to pointer.
5. Dial: Nonreflective aluminum with permanently etched scale markings graduated in Deg. F and Deg. C.
6. Pointer: Dark-colored metal.
7. Window: Glass.
8. Ring: Metal.
9. Connector Type(s): Union joint, threaded, bottom; with ASME B1.1 screw threads.
10. Thermal System: Liquid-filled bulb in copper-plated steel, aluminum, or brass stem and of length to suit installation.

    a. Design for Thermo-well Installation: Bare stem.

11. Accuracy: Plus or minus 1 percent of scale range or one scale division, to a maximum of 1.5 percent of scale range.

2.3 LIQUID-IN-GLASS THERMOMETERS

A. Metal-Case, Compact-Style, Liquid-in-Glass Thermometers:

1. Standard: ASME B40.200.
2. Case: Cast aluminum; 6-inch nominal size.
3. Case Form: Back angle unless otherwise indicated.
4. Tube: Glass with magnifying lens and blue organic liquid.
5. Tube Background: Non-reflective aluminum with permanently etched scale markings graduated in Deg. F and Deg. C.
6. Window: Glass or plastic.
7. Stem: Aluminum or brass and of length to suit installation.

    a. Design for Thermo-well Installation: Bare stem.

8. Connector: 3/4 inch, with ASME B1.1 screw threads.
9. Accuracy: Plus or minus 1 percent of scale range or one scale division, to a maximum of 1.5 percent of scale range.

B. Plastic-Case, Compact-Style, Liquid-in-Glass Thermometers:

1. Standard: ASME B40.200.
2. Case: Plastic; 6-inch nominal size.
3. Case Form: Back angle unless otherwise indicated.
4. Tube: Glass with magnifying lens and blue organic liquid.
5. Tube Background: Non-reflective with permanently etched scale markings graduated in Deg. F and Deg. C.
6. Window: Glass or plastic.
7. Stem: Aluminum or brass and of length to suit installation.

    a. Design for Thermo-well Installation: Bare stem.

8. Connector: 3/4 inch, with ASME B1.1 screw threads.
9. Accuracy: Plus or minus 1 percent of scale range or one scale division, to a maximum of 1.5 percent of scale range.

C. Metal-Case, Industrial-Style, Liquid-in-Glass Thermometers:

1. Standard: ASME B40.200.
2. Case: Cast aluminum; 7-inch nominal size unless otherwise indicated.
3. Case Form: Adjustable angle unless otherwise indicated.
4. Tube: Glass with magnifying lens and blue organic liquid.
5. Tube Background: Non-reflective aluminum with permanently etched scale markings graduated in Deg. F and Deg. C.
6. Window: Glass.
7. Stem: Aluminum and of length to suit installation.

    a. Design for Thermo-well Installation: Bare stem.

8. Connector: 1-1/4 inches, with ASME B1.1 screw threads.
9. Accuracy: Plus or minus 1 percent of scale range or one scale division, to a maximum of 1.5 percent of scale range.

D. Plastic-Case, Industrial-Style, Liquid-in-Glass Thermometers:

1. Standard: ASME B40.200.

2. Case: Plastic; 7-inch nominal size unless otherwise indicated.
3. Case Form: Adjustable angle unless otherwise indicated.
4. Tube: Glass with magnifying lens and blue organic liquid.
5. Tube Background: Non-reflective aluminum with permanently etched scale markings graduated in Deg. F and Deg. C.
6. Window: Glass or plastic.
7. Stem: Aluminum, brass, or stainless steel and of length to suit installation.

    a. Design for Thermo-well Installation: Bare stem.

8. Connector: 1-1/4 inches, with ASME B1.1 screw threads.
9. Accuracy: Plus or minus 1 percent of scale range or one scale division, to a maximum of 1.5 percent of scale range.

2.4 THERMOWELLS

A. Thermo-wells:

1. Standard: ASME B40.200.
2. Description: Pressure-tight, socket-type fitting made for insertion into piping tee fitting.
3. Material for Use with Copper Tubing: CNR or CUNI.
4. Type: Stepped shank unless straight or tapered shank is indicated.
5. External Threads: NPS 1/2, NPS 3/4, or NPS 1, ASME B1.20.1 pipe threads.
6. Internal Threads: 1/2, 3/4, and 1 inch, with ASME B1.1 screw threads.
7. Bore: Diameter required to match thermometer bulb or stem.
8. Insertion Length: Length required to match thermometer bulb or stem.
9. Lagging Extension: Include on thermos-wells for insulated piping and tubing.
10. Bushings: For converting size of thermo-well's internal screw thread to size of thermometer connection.

B. Heat-Transfer Medium: Mixture of graphite and glycerin.

2.5 PRESSURE GAGES

A. Direct-Mounted, Metal-Case, Dial-Type Pressure Gages:

1. Standard: ASME B40.100.
2. Case: Liquid-filled Sealed type(s); cast aluminum or drawn steel; 4-1/2-inch nominal diameter.
3. Pressure-Element Assembly: Bourdon tube unless otherwise indicated.
4. Pressure Connection: Brass, with NPS 1/4, ASME B1.20.1 pipe threads and bottom-outlet type unless back-outlet type is indicated.
5. Movement: Mechanical, with link to pressure element and connection to pointer.
6. Dial: Non-reflective aluminum with permanently etched scale markings graduated in psi and kPa.
7. Pointer: Dark-colored metal.
8. Window: Glass or plastic.
9. Ring: Metal Brass or Stainless steel.
10. Accuracy: Grade A, plus or minus 1 percent of middle half of scale range.

B. Direct-Mounted, Plastic-Case, Dial-Type Pressure Gages:

1. Standard: ASME B40.100.
2. Case: Sealed type; plastic; 4-1/2-inch nominal diameter.
3. Pressure-Element Assembly: Bourdon tube unless otherwise indicated.
4. Pressure Connection: Brass, with NPS 1/4 or NPS 1/2 NPS 1/2, ASME B1.20.1 pipe threads and bottom-outlet type unless back-outlet type is indicated.
5. Movement: Mechanical, with link to pressure element and connection to pointer.
6. Dial: Non-reflective aluminum with permanently etched scale markings graduated in psi and kPa.
7. Pointer: Dark-colored metal.
8. Window: Glass or plastic.
9. Accuracy: Grade A, plus or minus 1 percent of middle half of scale range.

C. Remote-Mounted, Metal-Case, Dial-Type Pressure Gages:

1. Standard: ASME B40.100.
2. Case: Sealed type type; cast aluminum or drawn steel 6-inch nominal diameter with back flange and holes for panel mounting.
3. Pressure-Element Assembly: Bourdon tube unless otherwise indicated.
4. Pressure Connection: Brass, with NPS 1/2, ASME B1.20.1 pipe threads and bottom-outlet type unless back-outlet type is indicated.
5. Movement: Mechanical, with link to pressure element and connection to pointer.
6. Dial: Non-reflective aluminum with permanently etched scale markings graduated in **psi**.
7. Pointer: Dark-colored metal.
8. Window: Glass or plastic.
9. Ring: Stainless steel.
10. Accuracy: Grade A, plus or minus 1 percent of middle half of scale range.

D. Remote-Mounted, Plastic-Case, Dial-Type Pressure Gages:

1. Standard: ASME B40.100.
2. Case: Sealed type; Stainless steel 6-inch nominal diameter with back flange and holes for panel mounting.
3. Pressure-Element Assembly: Bourdon tube unless otherwise indicated.
4. Pressure Connection: Brass, with NPS 1/2, ASME B1.20.1 pipe threads and bottom-outlet type unless back-outlet type is indicated.
5. Movement: Mechanical, with link to pressure element and connection to pointer.
6. Dial: Non-reflective aluminum with permanently etched scale markings graduated in psi.
7. Pointer: Dark-colored metal.
8. Window: Glass.
9. Accuracy: Grade A, plus or minus 1 percent of middle half of scale range.

2.6 GAGE ATTACHMENTS

A. Snubbers: ASME B40.100, brass; with NPS 1/4 or NPS 1/2, ASME B1.20.1 pipe threads and piston-type surge-dampening device. Include extension for use on insulated piping.

B. Valves: Brass or stainless-steel needle, with NPS 1/4 or NPS 1/2, ASME B1.20.1 pipe threads.

2.7 TEST PLUGS

A. Description: Test-station fitting made for insertion into piping tee fitting.

B. Body: Brass or stainless steel with core inserts and gasketed and threaded cap. Include extended stem on units to be installed in insulated piping.

C. Thread Size: NPS 1/4 or NPS 1/2, ASME B1.20.1 pipe thread.

D. Minimum Pressure and Temperature Rating: 500 psig at 200 Deg. F.

E. Core Inserts: Chlorosulfonated polyethylene synthetic and EPDM self-sealing rubber.

2.8 TEST-PLUG KITS

A. Furnish one test-plug kit(s) containing two thermometer(s), one pressure gage and adapter, and carrying case. Thermometer sensing elements, pressure gage, and adapter probes shall be of diameter to fit test plugs and of length to project into piping.

B. Low-Range Thermometer: Small, bimetallic insertion type with 1- to 2-inch-diameter dial and tapered-end sensing element. Dial range shall be at least 25 to 125 Deg. F.

C. High-Range Thermometer: Small, bimetallic insertion type with 1- to 2-inch-diameter dial and tapered-end sensing element. Dial range shall be at least 0 to 220 Deg. F.

D. Pressure Gage: Small, Bourdon-tube insertion type with 2- to 3-inch-diameter dial and probe. Dial range shall be at least 0 to 200 psig.

E. Carrying Case: Metal or plastic, with formed instrument padding.

2.9 SIGHT FLOW INDICATORS

A. Description: Piping inline-installation device for visual verification of flow.

B. Construction: Bronze or stainless-steel body, with sight glass and ball, flapper, or paddle wheel indicator, and threaded or flanged ends.

C. Minimum Pressure Rating: 150 psig.

D. Minimum Temperature Rating: 200 Deg. F.

E. End Connections for NPS 2 and Smaller: Threaded.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install thermos-wells with socket extending a minimum of one-third of pipe diameter and in vertical position in piping tees.

B. Install thermos-wells of sizes required to match thermometer connectors. Include bushings if required to match sizes.

C. Install thermos-wells with extension on insulated piping.

D. Fill thermos-wells with heat-transfer medium.

E. Install direct-mounted thermometers in thermos-wells and adjust vertical and tilted positions.

F. Install remote-mounted thermometer bulbs in thermos-wells and install cases on panels; connect cases with tubing and support tubing to prevent kinks. Use minimum tubing length.

G. Install direct-mounted pressure gages in piping tees with pressure gage located on pipe at the most readable position.

H. Install remote-mounted pressure gages on panel.

I. Install valve and snubber in piping for each pressure gage for fluids.

J. Install test plugs in piping tees.

K. Install thermometers in the following locations:

1. Inlet and outlet of each water heater.

L. Install pressure gages in the following locations:

1. Building water service entrance into building.
2. Inlet and outlet of each pressure-reducing valve.
3. Suction and discharge of each domestic water pump.

3.2 CONNECTIONS

A. Install meters and gages adjacent to machines and equipment to allow service and maintenance of meters, gages, machines, and equipment.

3.3 ADJUSTING

A. Adjust faces of meters and gages to proper angle for best visibility.

3.4 THERMOMETER SCHEDULE

A. Thermometers at inlet and outlet of each domestic water heater shall be one of the following:

1. Sealed, bimetallic-actuated type.
2. Test plug with EPDM self-sealing rubber inserts.

B. Thermometers at inlet and outlet of each domestic hot-water storage tank shall be one of the following:

1. Sealed, bimetallic-actuated type.

C. Thermometer stems shall be of length to match thermo-well insertion length.

3.5 THERMOMETER SCALE-RANGE SCHEDULE

A. Scale Range for Domestic Cold-Water Piping: 0 to 100 deg F.

B. Scale Range for Domestic Hot-Water Piping: 0 to 250 deg F.

3.6 PRESSURE-GAGE SCHEDULE

A. Pressure gages at discharge of each water service into building shall be the following:

1. Liquid-filled or Sealed Solid-front, pressure-relief.

B. Pressure gages at inlet and outlet of each water pressure-reducing valve shall be the following:

1. Liquid-filled or Sealed Solid-front, pressure-relief.

3.7 PRESSURE-GAGE SCALE-RANGE SCHEDULE

A. Scale Range for Water Service Piping: 0 to 100 psi.

END OF SECTION 22 05 19

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SECTION 22 05 23.12
BALL VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Brass ball valves.
2. Bronze ball valves.

1.3 DEFINITIONS

A. CWP: Cold working pressure.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of valve.

1. Certification that products comply with NSF 61 and NSF 372.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Prepare valves for shipping as follows:

1. Protect internal parts against rust and corrosion.
2. Protect threads, flange faces, and soldered ends.
3. Set ball valves open to minimize exposure of functional surfaces.

B. Use the following precautions during storage:

1. Maintain valve end protection.
2. Store valves indoors and maintain at higher-than-ambient-dew-point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use operating handles or stems as lifting or rigging points.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.

B. ASME Compliance:

1. ASME B1.20.1 for threads for threaded end valves.
2. ASME B16.18 for solder-joint connections.
3. ASME B31.9 for building services piping valves.

C. NSF Compliance: NSF 61 and NSF 372 for valve materials for potable-water service.

D. Bronze valves shall be made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are not permitted.

E. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

F. Valve Sizes: Same as upstream piping unless otherwise indicated.

G. Valve Actuator Types:

1. Hand-Lever: For quarter-turn valves smaller than NPS 4.

H. Valves in Insulated Piping:

1. Include 2-inch stem extensions.
2. Extended operating handles of non-thermal-conductive material and protective sleeves that allow operation of valves without breaking vapor seals or disturbing insulation.
3. Memory stops that are fully adjustable after insulation is applied.

2.2 BRASS BALL VALVES

A. Brass Ball Valves, Two-Piece with Full Port and Brass Trim, Threaded or Soldered Ends:

1. Description:

a. Standard: MSS SP-110 or MSS SP-145.
b. CWP Rating: 600 psig.
c. Body Design: Two piece.
d. Body Material: Forged brass.
e. Ends: Threaded and soldered.
f. Seats: PTFE.
g. Stem: Brass.
h. Ball: Chrome-plated brass.
i. Port: Full.

B. Brass Ball Valves, Two-Piece with Full Port and Brass Trim, Press Ends:

1. Description:

   a. Standard: MSS SP-110 or MSS SP-145.
   b. CWP Rating: Minimum 200 psig.
   c. Body Design: Two piece.
   d. Body Material: Forged brass.
   e. Ends: Press.
   f. Press Ends Connections Rating: Minimum 200 psig.
   g. Seats: PTFE or RPTFE.
   h. Stem: Brass.
   i. Ball: Chrome-plated brass.
   j. Port: Full.
   k. O-Ring Seal: Buna-N or EPDM.

C. Brass Ball Valves, Two-Piece with Full Port and Stainless-Steel Trim, Threaded or Soldered Ends:

1. Description:

   a. Standard: MSS SP-110 or MSS SP-145.
   b. CWP Rating: 600 psig.
   c. Body Design: Two piece.
   d. Body Material: Forged brass.
   e. Ends: Threaded and soldered.
   f. Seats: PTFE.
   g. Stem: Stainless steel.
   h. Ball: Stainless steel, vented.
   i. Port: Full.

D. Brass Ball Valves, Two-Piece with Full Port and Stainless-Steel Trim, Press Ends:

1. Description:

   a. Standard: MSS SP-110 or MSS SP-145.
   b. CWP Rating: Minimum 200 psig.
   c. Body Design: Two piece.
   d. Body Material: Forged brass.
   e. Ends: Press.
   f. Press Ends Connections Rating: Minimum 200 psig.
   g. Seats: PTFE or RPTFE.
   h. Stem: Stainless steel.
   i. Ball: Stainless steel, vented.
   j. Port: Full.
   k. O-Ring Seal: Buna-N or EPDM.

2.3 BRONZE BALL VALVES

A. Bronze Ball Valves, Two-Piece with Full Port, and Bronze or Brass Trim, Threaded or Soldered Ends:

1. Description:

   a. Standard: MSS SP-110 or MSS-145.

b. CWP Rating: 600 psig.
c. Body Design: Two piece.
d. Body Material: Bronze.
e. Ends: Threaded and soldered.
f. Seats: PTFE.
g. Stem: Bronze or brass.
h. Ball: Chrome-plated brass.
i. Port: Full.

B. Bronze Ball Valves, Two-Piece with Full Port, and Bronze or Brass Trim, Press Ends:

1. Description:

a. Standard: MSS SP-110 or MSS-145.
b. CWP Rating: Minimum 200 psig.
c. Body Design: Two piece.
d. Body Material: Bronze.
e. Ends: Press.
f. Press Ends Connections Rating: Minimum 200 psig.
g. Seats: PTFE or RTPFE.
h. Stem: Bronze or brass.
i. Ball: Chrome-plated brass.
j. Port: Full.
k. O-Ring Seal: EPDM or Buna-N.

C. Bronze Ball Valves, Two-Piece with Full Port and Stainless-Steel Trim:

1. Description:

a. Standard: MSS SP-110 or MSS-145.
b. CWP Rating: 600 psig.
c. Body Design: Two piece.
d. Body Material: Bronze.
e. Ends: Threaded or soldered.
f. Seats: PTFE.
g. Stem: Stainless steel.
h. Ball: Stainless steel, vented.
i. Port: Full.

D. Bronze Ball Valves, Two-Piece, Safety-Exhaust:

1. Description:

a. Standard: MSS SP-110.
b. CWP Rating: 600 psig.
c. Body Design: Two piece.
d. Body Material: Bronze, ASTM B584, Alloy C844.
e. Ends: Threaded.
f. Seats: PTFE.
g. Stem: Stainless steel.
h. Ball: Chrome-plated brass, with exhaust vent opening for pneumatic applications.
i. Port: Full.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.

B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.

C. Examine threads on valve and mating pipe for form and cleanliness.

D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.

E. Do not attempt to repair defective valves; replace with new valves.

3.2 VALVE INSTALLATION

A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

B. Locate valves for easy access and provide separate support where necessary.

C. Install valves in horizontal piping with stem at or above center of pipe.

D. Install valves in position to allow full stem movement.

E. Install valve tags. Comply with requirements in Section 22 05 53 "Identification for Plumbing Piping and Equipment" for valve tags and schedules.

3.3 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. If valves with specified CWP ratings are unavailable, the same types of valves with higher CWP ratings may be substituted.

B. Select valves with the following end connections:

1. For Copper Tubing, 21/2 NPS 21/2 and smaller: Threaded ends except where solder-joint valve-end option or press-end option is indicated in valve schedules below.
2. For Copper Tubing, NPS 2-1/2 to 4 NPS: Flanged ends except where threaded valve-end option is indicated in valve schedules below.

3.4 DOMESTIC HOT- AND COLD-WATER VALVE SCHEDULE

A. Pipe NPS 21/2 and Smaller:

1. Brass ball valve, two piece, full port. Provide with threaded or solder-joint ends.

2. Bronze ball valve, two piece, full port with stainless steel trim. Provide with threaded or solder-joint ends.
3. Brass ball valves, two-piece with full port and stainless steel trim. Provide with threaded solder or press connection-joint ends.
4. Bronze ball valves, two-piece with full port and bronze, or brass or trim. Provide with threaded, solder or press connection-joint ends.

B. Pipe 2-1/2 NPS and Larger: Provide with flanged ends.

END OF SECTION 22 05 23.12

SECTION 22 05 23.14
CHECK VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Bronze lift check valves.
2. Bronze swing check valves.
3. Bronze swing check valves, press ends.

1.3 DEFINITIONS

A. CWP: Cold working pressure.

B. EPDM: Ethylene propylene-dieneterpolymer rubber.

C. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of valve.

1. Certification that products comply with NSF 61 and NSF 372.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Prepare valves for shipping as follows:

1. Protect internal parts against rust and corrosion.
2. Protect threads, flange faces, grooves, and weld ends.
3. Set check valves in either closed or open position.

B. Use the following precautions during storage:

1. Maintain valve end protection.
2. Store valves indoors and maintain at higher-than-ambient-dew-point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

C. Use sling to handle large valves; rig sling to avoid damage to exposed parts.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.

B. ASME Compliance:

1. ASME B1.20.1 for threads for threaded end valves.
2. ASME B16.18 for solder joint.
3. ASME B31.9 for building services piping valves.

C. AWWA Compliance: Comply with AWWA C606 for grooved-end connections.

D. Drinking Water System Components - Health Effects and Drinking Water System Components - Lead Content Compliance: NSF 61 and NSF 372.

E. Bronze valves shall be made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are not permitted.

F. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

G. Valve Sizes: Same as upstream piping unless otherwise indicated.

H. Valve Bypass and Drain Connections: MSS SP-45.

2.2 BRONZE LIFT CHECK VALVES

A. Bronze Lift Check Valves with Bronze Disc, Class 125:

1. Description:

a. Standard: MSS SP-80, Type 1.
b. CWP Rating: 200 psig.
c. Body Design: Vertical flow.
d. Body Material: ASTM B61 or ASTM B62, bronze.
e. Ends: Threaded or soldered. See valve schedule articles.
f. Disc: Bronze.

B. Bronze Lift Check Valves with Nonmetallic Disc, Class 125:

1. Description:

a. Standard: MSS SP-80, Type 2.
b. CWP Rating: 200 psig.
c. Body Design: Vertical flow.
d. Body Material: ASTM B61 or ASTM B62, bronze.
e. Ends: Threaded or soldered. See valve schedule articles.
f. Disc: NBR, PTFE.

2.3 BRONZE SWING CHECK VALVES

A. Bronze Swing Check Valves with Bronze Disc, Class 125:

1. Description:

a. Standard: MSS SP-80, Type 3.
b. CWP Rating: 200 psig.
c. Body Design: Horizontal flow.
d. Body Material: ASTM B62, bronze.
e. Ends: Threaded or soldered. See valve schedule articles.
f. Disc: Bronze.

B. Bronze Swing Check Valves with Nonmetallic Disc, Class 125:

1. Description:

a. Standard: MSS SP-80, Type 4.
b. CWP Rating: 200 psig.
c. Body Design: Horizontal flow.
d. Body Material: ASTM B62, bronze.
e. Ends: Threaded or soldered. See valve schedule articles.
f. Disc: PTFE.

C. Bronze Swing Check Valves with Bronze Disc, Class 150:

1. Description:

a. Standard: MSS SP-80, Type 3.
b. CWP Rating: 300 psig.
c. Body Design: Horizontal flow.
d. Body Material: ASTM B62, bronze.
e. Ends: Threaded or soldered. See valve schedule articles.
f. Disc: Bronze.

D. Bronze Swing Check Valves with Nonmetallic Disc, Class 150:

1. Description:

a. Standard: MSS SP-80, Type 4.
b. CWP Rating: 300 psig.
c. Body Design: Horizontal flow.
d. Body Material: ASTM B62, bronze.
e. Ends: Threaded or soldered. See valve schedule articles.
f. Disc: PTFE.

E. Bronze Swing Check Valves, Press Ends:

1. Description:

a. Standard: MSS SP-80 and MSS SP-139.
b. CWP Rating: Minimum 200 psig.
c. Body Design: Horizontal flow.
d. Body Material: ASTM B584, bronze.

e. Ends: Press.
f. Press Ends Connection Rating: Minimum 200 psig
g. Disc: Brass or bronze.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.

B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.

C. Examine threads on valve and mating pipe for form and cleanliness.

D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.

E. Do not attempt to repair defective valves; replace with new valves.

3.2 VALVE INSTALLATION

A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

B. Locate valves for easy access and provide separate support where necessary.

C. Install valves in horizontal piping with stem at or above center of pipe.

D. Install valves in position to allow full stem movement.

E. Check Valves: Install check valves for proper direction of flow.

1. Swing Check Valves: In horizontal position with hinge pin level.
2. Center-Guided and Plate-Type Check Valves: In horizontal or vertical position, between flanges.
3. Lift Check Valves: With stem upright and plumb.

F. Install valve tags. Comply with requirements in Section 22 05 53 "Identification for Plumbing Piping and Equipment" for valve tags and schedules.

3.3 ADJUSTING

A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs, ratings may be substituted.

3.4 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. End Connections:

1. For Copper Tubing, NPS 2 and Smaller: Threaded or soldered or press-ends.
2. For Copper Tubing, NPS 2-1/2 to NPS 4: Flanged or threaded.
3. For Steel Piping, NPS 2-1/2 to NPS 4: Flanged or threaded.
4. For Grooved-End Copper Tubing: Grooved.

3.5 DOMESTIC HOT- AND COLD-WATER VALVE SCHEDULE

A. Pipe NPS 2 and Smaller:

1. Bronze swing check valves with bronze disc, Class 150, with soldered or threaded end connections.
2. Bronze swing check valves with press-end connections.

END OF SECTION 22 05 23.14

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SECTION 22 05 23.15
GATE VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Bronze gate valves.
2. Iron gate valves.
3. CPVC gate valves.
4. PVC gate valves.
5. Chain-wheels.

1.3 DEFINITIONS

A. CWP: Cold working pressure.

B. NRS: Non-rising stem.

C. OS&Y: Outside screw and yoke.

D. RS: Rising stem.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of valve.

1. Certification that products comply with NSF 61 and NSF 372.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Prepare valves for shipping as follows:

1. Protect internal parts against rust and corrosion.
2. Protect threads, flange faces, grooves, and weld ends.
3. Set gate valves closed to prevent rattling.

B. Use the following precautions during storage:

1. Maintain valve end protection.
2. Store valves indoors and maintain at higher-than-ambient-dew-point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use hand-wheels or stems as lifting or rigging points.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.

B. ASME Compliance:

1. ASME B1.20.1 for threads for threaded end valves.
2. ASME B16.1 for flanges on iron valves.
3. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
4. ASME B16.18 for solder joint.
5. ASME B31.9 for building services piping valves.

C. NSF Compliance: NSF 61 and NSP 372 for valve materials for potable-water service.

D. Bronze valves shall be made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are not permitted.

E. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

F. Valve Sizes: Same as upstream piping unless otherwise indicated.

G. RS Valves in Insulated Piping: With 2-inch stem extensions.

H. Valve Bypass and Drain Connections: MSS SP-45.

2.2 BRONZE GATE VALVES

A. Bronze Gate Valves, NRS, Class 125:

1. Description:

a. Standard: MSS SP-80, Type 1.
b. CWP Rating: 200 psig.
c. Body Material: Bronze with integral seat and screw-in bonnet.
d. Ends: Threaded or solder joint.
e. Stem: Bronze.
f. Disc: Solid wedge; bronze.
g. Packing: Asbestos free.
h. Hand-wheel: Malleable iron, bronze, or aluminum.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.

B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.

C. Examine threads on valve and mating pipe for form and cleanliness.

D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.

E. Do not attempt to repair defective valves; replace with new valves.

3.2 VALVE INSTALLATION

A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

B. Locate valves for easy access and provide separate support where necessary.

C. Install valves in horizontal piping with stem at or above center of pipe.

D. Install valves in position to allow full stem movement.

E. Install valve tags. Comply with requirements in Section 22 05 53 "Identification for Plumbing Piping and Equipment" for valve tags and schedules.

3.3 ADJUSTING

A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

3.4 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. Use gate valves for shutoff service only.

B. If valves with specified CWP ratings are unavailable, the same types of valves with higher CWP ratings may be substituted.

C. For Grooved-End Copper Tubing: Valve ends may be grooved.

3.5 DOMESTIC HOT- AND COLD-WATER VALVE SCHEDULE

A. Pipe NPS 3 and Smaller:

1. Bronze gate valves, NRS, Class 150 with threaded ends.
2. Bronze gate valves, press ends.

END OF SECTION 22 05 23.15

SECTION 22 05 29
HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Metal pipe hangers and supports.
2. Trapeze pipe hangers.
3. Fastener systems.
4. Pipe stands.
5. Pipe-positioning systems.
6. Equipment supports.

B. Related Requirements:

1. Section 05 50 00 "Metal Fabrications" for structural-steel shapes and plates for trapeze hangers for pipe and equipment supports.
2. Section 22 05 16 "Expansion Fittings and Loops for Plumbing Piping" for pipe guides and anchors.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Signed and sealed by a qualified professional engineer. Show fabrication and installation details and include calculations for the following:

1. Trapeze pipe hangers.
2. Metal framing systems.
3. Pipe stands.
4. Equipment supports.

C. Delegated-Design Submittal: For trapeze hangers indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1. Detail fabrication and assembly of trapeze hangers.
2. Include design calculations for designing trapeze hangers.

1.4 INFORMATIONAL SUBMITTALS

A. Welding certificates.

1.5 QUALITY ASSURANCE

A. Structural-Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M.

B. Pipe Welding Qualifications: Qualify procedures and operators according to 2015 ASME Boiler and Pressure Vessel Code, Section IX.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design trapeze pipe hangers and equipment supports.

B. Structural Performance: Hangers and supports for plumbing piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated.

1. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.
2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

2.2 METAL PIPE HANGERS AND SUPPORTS

A. Carbon-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Galvanized Metallic Coatings: Pre-Galvanized, hot-dip galvanized, or electro-galvanized.
3. Nonmetallic Coatings: Plastic coated or epoxy powder coated.
4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
5. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel or stainless steel.

B. Stainless-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
3. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

C. Copper Pipe and Tube Hangers:

1. Description: MSS SP-58, Types 1 through 58, copper-coated-steel, factory-fabricated components.

2. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

2.3 TRAPEZE PIPE HANGERS

A. Description: MSS SP-58, Type 59, shop- or field-fabricated pipe-support assembly, made from structural-carbon-steel shapes, with MSS SP-58 carbon-steel hanger rods, nuts, saddles, and U-bolts.

2.4 METAL FRAMING SYSTEMS

A. MFMA Manufacturer Metal Framing Systems:

1. Description: Shop- or field-fabricated pipe-support assembly, made of steel channels, accessories, fittings, and other components for supporting multiple parallel pipes.
2. Standard: Comply with MFMA-4, factory-fabricated components for field assembly.
3. Channels: Continuous slotted carbon-steel channel with in-turned lips.
4. Channel Width: Selected for applicable load criteria.
5. Channel Nuts: Formed or stamped nuts or other devices designed to fit into channel slot and, when tightened, prevent slipping along channel.
6. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel or stainless steel.

2.5 THERMAL HANGER-SHIELD INSERTS

A. Insulation-Insert Material for Cold Piping: ASTM C552, Type II cellular glass with 100-psig or ASTM C591, Type VI, Grade 1 polyisocyanurate with 125-psig minimum compressive strength and vapor barrier.

B. Insulation-Insert Material for Hot Piping: Water-repellent-treated, ASTM C533, Type I calcium silicate with 100-psig ASTM C552, Type II cellular glass with 100-psig or ASTM C591, Type VI, Grade 1 polyisocyanurate with 125-psig minimum compressive strength.

C. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.

D. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.

E. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

2.6 FASTENER SYSTEMS

A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened Portland cement concrete, with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

B. Mechanical-Expansion Anchors: Insert-wedge-type anchors, for use in hardened Portland cement concrete, with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

1. Indoor Applications: Zinc-coated or stainless steel.

2. Outdoor Applications: Stainless steel.

2.7 EQUIPMENT SUPPORTS

A. Description: Welded, shop- or field-fabricated equipment support made from structural-carbon-steel shapes.

2.8 MATERIALS

A. Aluminum: ASTM B221.

B. Carbon Steel: ASTM A1011/A1011M.

C. Structural Steel: ASTM A36/A36M carbon-steel plates, shapes, and bars; black and galvanized.

D. Stainless Steel: ASTM A240/A240M.

E. Grout: ASTM C1107/C1107M, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.

1. Properties: Non-staining, noncorrosive, and nongaseous.
2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with requirements in Section 07 84 13 "Penetration Firestopping" for firestopping materials and installation, for penetrations through fire-rated walls, ceilings, and assemblies.

B. Strength of Support Assemblies: Where not indicated, select sizes of components, so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.

3.2 HANGER AND SUPPORT INSTALLATION

A. Metal Pipe-Hanger Installation: Comply with MSS SP-58. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.

B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-58. Arrange for grouping of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.

1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size, or install intermediate supports for smaller-diameter pipes as specified for individual pipe hangers.
2. Field fabricate from ASTM A36/A36M carbon-steel shapes selected for loads being supported. Weld steel according to AWS D1.1/D1.1M.

C. Metal Framing System Installation: Arrange for grouping of parallel runs of piping, and support together on field-assembled metal framing systems.

D. Thermal Hanger-Shield Installation: Install in pipe hanger or shield for insulated piping.

E. Fastener System Installation:

1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete, after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
2. Install mechanical-expansion anchors in concrete, after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

F. Pipe-Positioning-System Installation: Install support devices to make rigid supply and waste piping connections to each plumbing fixture.

G. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.

H. Equipment Support Installation: Fabricate from welded-structural-steel shapes.

I. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

J. Install lateral bracing with pipe hangers and supports to prevent swaying.

K. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms, and install reinforcing bars through openings at top of inserts.

L. Load Distribution: Install hangers and supports, so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

M. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.

N. Insulated Piping:

1. Attach clamps and spacers to piping.

   a. Piping Operating, Above Ambient Air Temperature: Clamp may project through insulation.
   b. Piping Operating, Below Ambient Air Temperature: Use thermal hanger-shield insert with clamp sized to match OD of insert.
   c. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.

2. Install MSS SP-58, Type 39 protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.

a. Option: Thermal hanger-shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.

3. Install MSS SP-58, Type 40 protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.

a. Option: Thermal hanger-shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.

4. Shield Dimensions for Pipe: Not less than the following:

a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.
b. NPS 4: 12 inches long and 0.06 inch thick.

3.3 EQUIPMENT SUPPORTS

A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.

B. Grouting: Place grout under supports for equipment, and make bearing surface smooth.

C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.4 METAL FABRICATIONS

A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.

B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Finish welds at exposed connections, so no roughness shows after finishing and so contours of welded surfaces match adjacent contours.

3.5 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

3.6 PAINTING

A. Touchup: Clean field welds and abraded, shop-painted areas. Paint exposed areas immediately after erecting hangers and supports. Use same materials as those used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.

B. Touchup: Cleaning and touchup painting of field welds, bolted connections, and abraded, shop-painted areas on miscellaneous metal are specified in Section 09 91 23 "Interior Painting."

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas, and apply galvanizing-repair paint to comply with ASTM A780/A780M.

3.7 HANGER AND SUPPORT SCHEDULE

A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.

B. Comply with MSS SP-58 for pipe-hanger selections and applications that are not specified in piping system Sections.

C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finishes.

D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

E. Use carbon-steel pipe hangers and supports metal trapeze pipe hangers and metal framing systems and attachments for general service applications.

F. Use stainless-steel pipe hangers and stainless-steel or corrosion-resistant attachments for hostile environment applications.

G. Use copper-plated pipe hangers and copper or stainless-steel attachments for copper piping and tubing.

H. Use padded hangers for piping that is subject to scratching.

I. Use thermal hanger-shield inserts for insulated piping and tubing.

J. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated, stationary pipes NPS 1/2 to NPS 430.
2. Yoke-Type Pipe Clamps (MSS Type 2): For suspension of up to 1050 deg F NPS 4 to NPS 24, 4 inches.
3. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes NPS 3/4 to NPS 436, requiring clamp flexibility and up to 24 inches of insulation.
4. Steel Pipe Clamps (MSS Type 4): For suspension of cold and hot pipes NPS 1/2 to NPS 24 if little or no insulation is required.

K. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers NPS 3/4 to NPS 24 if longer ends are required for riser clamps.

L. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

M. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel or Malleable-Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction, to attach to top flange of structural shape.
3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
6. C-Clamps (MSS Type 23): For structural shapes.
7. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
8. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
9. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.
10. Linked-Steel Clamps with Eye Nuts (MSS Type 29): For attaching to bottom of steel I-beams for heavy loads, with link extensions.
11. Malleable-Beam Clamps with Extension Pieces (MSS Type 30): For attaching to structural steel.
12. Welded-Steel Brackets: For support of pipes from below or for suspending from above by using clip and rod. Use one of the following for indicated loads:

    a. Light (MSS Type 31): 750 lb.

N. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel-Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
3. Thermal Hanger-Shield Inserts: For supporting insulated pipe.

O. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Restraint-Control Devices (MSS Type 47): Where indicated to control piping movement.
2. Spring Cushions (MSS Type 48): For light loads if vertical movement does not exceed 1-1/4 inches.
3. Spring-Cushion Roll Hangers (MSS Type 49): For equipping Type 41 roll hanger with springs.
4. Spring Sway Braces (MSS Type 50): To retard sway, shock, vibration, or thermal expansion in piping systems.

5. Variable-Spring Hangers (MSS Type 51): Preset to indicated load, and limit variability factor to 25 percent to allow expansion and contraction of piping system from hanger.
6. Variable-Spring Base Supports (MSS Type 52): Preset to indicated load, and limit variability factor to 25 percent to allow expansion and contraction of piping system from base support.
7. Variable-Spring Trapeze Hangers (MSS Type 53): Preset to indicated load, and limit variability factor to 25 percent to allow expansion and contraction of piping system from trapeze support.
8. Constant Supports: For critical piping stress and if necessary to avoid transfer of stress from one support to another support, critical terminal, or connected equipment. Include auxiliary stops for erection, hydrostatic test, and load-adjustment capability. These supports include the following types:

    a. Horizontal (MSS Type 54): Mounted horizontally.
    b. Vertical (MSS Type 55): Mounted vertically.
    c. Trapeze (MSS Type 56): Two vertical-type supports and one trapeze member.

P. Comply with MSS SP-58 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.

Q. Comply with MFMA-103 for metal framing system selections and applications that are not specified in piping system Sections.

R. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.

S. Use pipe-positioning systems in pipe spaces behind plumbing fixtures to support supply and waste piping for plumbing fixtures.

END OF SECTION 22 05 29

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SECTION 22 05 53
IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Equipment labels.
2. Warning signs and labels.
3. Pipe labels.
4. Stencils.
5. Valve tags.
6. Warning tags.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For color, letter style, and graphic representation required for each identification material and device.

C. Equipment Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.

D. Valve numbering scheme.

E. Valve Schedules: For each piping system to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Metal Labels for Equipment:

1. Material and Thickness: Brass, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
2. Letter Color: Black.
3. Background Color: White.
4. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.

5. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-quarters the size of principal lettering.
6. Fasteners: Stainless-steel, rivets.
7. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

B. Plastic Labels for Equipment:

1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.
2. Letter Color: Black.
3. Background Color: White.
4. Maximum Temperature: Able to withstand temperatures up to 160 Deg. F.
5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
6. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-quarters the size of principal lettering.
7. Fasteners: Stainless-steel rivets.
8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

C. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), and the Specification Section number and title where equipment is specified.

D. Equipment Label Schedule: For each item of equipment to be labeled, on 8-1/2-by-11-inch bond paper. Tabulate equipment identification number, and identify Drawing numbers where equipment is indicated (plans, details, and schedules) and the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

2.2 WARNING SIGNS AND LABELS

A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.

B. Letter Color: Red.

C. Background Color: White.

D. Maximum Temperature: Able to withstand temperatures up to 160 Deg. F.

E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.

F. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-quarters the size of principal lettering.

G. Fasteners: Stainless-steel rivets.

H. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

I. Label Content: Include caution and warning information plus emergency notification instructions.

2.3 PIPE LABELS

A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.

B. Pre-tensioned Pipe Labels: Pre-coiled, semi-rigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.

C. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.

D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings; also include pipe size and an arrow indicating flow direction.

1. Flow-Direction Arrows: Integral with piping-system service lettering to accommodate both directions or as separate unit on each pipe label to indicate flow direction.
2. Lettering Size: Size letters according to ASME A13.1 for piping At least 1/2 inch for viewing distances up to 72 inches and proportionately larger lettering for greater viewing distances.

2.4 VALVE TAGS

A. Valve Tags: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch numbers.

1. Tag Material: Brass, 0.032-inch aluminum, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
2. Fasteners: Brass wire-link chain or beaded chain or S-hook.

B. Valve Schedules: For each piping system, on 8-1/2-by-11-inch bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.

1. Valve-tag schedule shall be included in operation and maintenance data.

2.5 WARNING TAGS

A. Description: Preprinted or partially preprinted accident-prevention tags of plasticized card stock with matte finish suitable for writing.

1. Size: 3 by 5-1/4 inches minimum Approximately 4 by 7 inches.
2. Fasteners: Brass grommet and wire.
3. Nomenclature: Large-size primary caption such as "DANGER," "CAUTION," or "DO NOT OPERATE."
4. Color: Safety yellow background with black lettering.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 GENERAL INSTALLATION REQUIREMENTS

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

B. Coordinate installation of identifying devices with locations of access panels and doors.

C. Install identifying devices before installing acoustical ceilings and similar concealment.

3.3 EQUIPMENT LABEL INSTALLATION

A. Install or permanently fasten labels on each major item of mechanical equipment.

B. Locate equipment labels where accessible and visible.

3.4 PIPE LABEL INSTALLATION

A. Piping Color Coding: Painting of piping is specified in Section 09 91 23 "Interior Painting." Section 09 96 00 "High-Performance Coatings."

B. Pipe Label Locations: Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:

1. Near each valve and control device.
2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
3. Near penetrations through walls, floors, ceilings, and inaccessible enclosures.
4. At access doors, manholes, and similar access points that permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced at maximum intervals of 50 feet, along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.

C. Directional Flow Arrows: Arrows shall be used to indicate direction of flow in pipes, including pipes where flow is allowed in both directions.

D. Pipe Label Color Schedule:

1. Domestic Water Piping

a. Background: Safety green.
b. Letter Colors: White.

2. Sanitary Waste and Storm Drainage Piping:

a. Background Color: Safety black.
b. Letter Color: White.

3.5 VALVE-TAG INSTALLATION

A. Install tags on valves and control devices in piping systems, except check valves, valves within factory-fabricated equipment units, shutoff valves, faucets, convenience and lawn-watering hose connections, and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.

B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in the following subparagraphs:

1. Valve-Tag Size and Shape:

a. Cold Water: 1-1/2 inches, round.
b. Hot Water: 1-1/2 inches, round.

2. Valve-Tag Colors:

a. Cold Water: Natural.
b. Hot Water: Natural.

3. Letter Colors:

a. Cold Water: White.
b. Hot Water: White.

3.6 WARNING-TAG INSTALLATION

A. Write required message on, and attach warning tags to, equipment and other items where required.

END OF SECTION 22 05 53

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SECTION 22 07 19
PLUMBING PIPING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes insulating the following plumbing piping services:

1. Domestic cold-water piping.
2. Domestic hot-water piping.
3. Domestic recirculating hot-water piping.
4. Sanitary waste piping exposed to freezing conditions.
5. Supplies and drains for handicap-accessible lavatories and sinks.

B. Related Sections:

1. Section 22 07 16 "Plumbing Equipment Insulation" for equipment insulation.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory and field applied if any).

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
2. Detail attachment and covering of heat tracing inside insulation.
3. Detail insulation application at pipe expansion joints for each type of insulation.
4. Detail insulation application at elbows, fittings, flanges, valves, and specialties for each type of insulation.
5. Detail removable insulation at piping specialties, equipment connections, and access panels.
6. Detail application of field-applied jackets.
7. Detail application at linkages of control devices.

C. Samples: For each type of insulation and jacket indicated. Identify each Sample, describing product and intended use. Sample sizes are as follows:

1. Preformed Pipe Insulation Materials: 12 inches long by NPS 2.
2. Jacket Materials for Pipe: 12 inches long by NPS 2.
3. Sheet Jacket Materials: 12 inches square.
4. Manufacturer's Color Charts: For products where color is specified, show the full range of colors available for each type of finish material.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.

C. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products in accordance with ASTM E84 by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less and smoke-developed index of 50 or less.
2. Insulation Installed Outdoors: Flame-spread index of 75 or less and smoke-developed index of 150 or less.

C. Mockups: Before installing insulation, build mockups for each type of insulation and finish listed below to demonstrate quality of insulation application and finishes. Build mockups in the location indicated or, if not indicated, as directed by Architect. Use materials indicated for the completed Work.

1. Piping Mockups:

a. One 10-foot section of NPS 2 straight pipe.
b. One each of a 90 degree threaded, welded, and flanged elbow.
c. One each of a threaded, welded, and flanged tee fitting.
d. One NPS 2 or smaller valve and one NPS 2-1/2 or larger valve.
e. Four support hangers, including hanger shield and insert.
f. One threaded strainer and one flanged strainer with removable portion of insulation.
g. One threaded reducer and one welded reducer.
h. One pressure temperature tap.
i. One mechanical coupling.
j. One union.

2. For each mockup, fabricate cutaway sections to allow observation of application details for insulation materials, adhesives, mastics, attachments, and jackets.
3. Notify Architect seven days in advance of dates and times when mockups will be constructed.
4. Obtain Architect's approval of mockups before starting insulation application.
5. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
7. Demolish and remove mockups when directed.

D. Comply with the following applicable standards and other requirements specified for miscellaneous components:

1. Supply and Drain Protective Shielding Guards: ICC A117.1.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.7 COORDINATION

A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 22 05 29 "Hangers and Supports for Plumbing Piping and Equipment."

B. Coordinate clearance requirements with piping Installer for piping insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

C. Coordinate installation and testing of heat tracing.

1.8 SCHEDULING

A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.

B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Comply with requirements in "Piping Insulation Schedule, General," "Indoor Piping Insulation Schedule," "Outdoor, Aboveground Piping Insulation Schedule," and "Outdoor, Underground Piping Insulation Schedule" articles for where insulating materials shall be applied.

B. Products shall not contain asbestos, lead, mercury, or mercury compounds.

C. Products that come into contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested in accordance with ASTM C871.

D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable in accordance with ASTM C795.

E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

F. Cellular Glass: Inorganic, incombustible, foamed or cellulated glass with annealed, rigid, hermetically sealed cells. Comply with ASTM C552.

1. Preformed Pipe Insulation: Type II, Class 1, without jacket.
2. Preformed Pipe Insulation: Type II, Class 2, with factory-applied ASJ jacket.
3. Factory fabricate shapes in accordance with ASTM C450 and ASTM C585.
4. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

G. Flexible Elastomeric: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C534/C534M, Type I for tubular materials.

H. Mineral-Fiber, Preformed Pipe: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C547.

1. 850 Deg.F.
2. Factory fabricate shapes in accordance with ASTM C450 and ASTM C585.
3. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

I. Phenolic: Preformed pipe insulation of rigid, expanded, closed-cell structure. Comply with ASTM C1126.

1. Preformed Pipe Insulation: Type III, without factory-applied jacket.
2. Factory fabricate shapes in accordance with ASTM C450 and ASTM C585.
3. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

J. Polyolefin: Unicellular, polyethylene thermal plastic insulation. Comply with ASTM C534/C534M or ASTM C1427, Type I, Grade 1, for tubular materials.

2.2 INSULATING CEMENTS

A. Mineral-Fiber Insulating Cement: Comply with ASTM C195.

B. Expanded or Exfoliated Vermiculite Insulating Cement: Comply with ASTM C196.

C. Mineral-Fiber, Hydraulic-Setting Insulating and Finishing Cement: Comply with ASTM C449.

2.3 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.

B. Cellular-Glass Adhesive: Two-component, thermosetting urethane adhesive containing no flammable solvents, with a service temperature range of minus 100 to plus 200 Deg. F.

C. Flexible Elastomeric and Polyolefin Adhesive: Solvent-based adhesive.

1. Flame-spread index shall be 25 or less and smoke-developed index shall be 50 or less as tested in accordance with ASTM E84.
2. Wet Flash Point: Below 0 Deg. F.
3. Service Temperature Range: 40 to 200 Deg. F.

4. Color: Black.

D. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.

E. Phenolic Adhesive: Solvent-based resin adhesive, with a service temperature range of minus 75 to plus 300 Deg. F.

F. ASJ Adhesive and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A, for bonding insulation jacket lap seams and joints.

G. PVC Jacket Adhesive: Compatible with PVC jacket.

2.4 MASTICS AND COATINGS

A. Materials shall be compatible with insulation materials, jackets, and substrates.

B. Vapor-Retarder Mastic, Water Based: Suitable for indoor use on below-ambient services.

1. Water-Vapor Permeance: Comply with ASTM E96/E96M or ASTM F1249.
2. Service Temperature Range: 0 to plus 180 Deg. F.
3. Comply with MIL-PRF-19565C, Type II, for permeance requirements.
4. Color: White.

C. Vapor-Retarder Mastic, Solvent Based, Indoor Use: Suitable for indoor use on below-ambient services.

1. Water-Vapor Permeance: Comply with ASTM E96/E96M or ASTM F1249.
2. Service Temperature Range: 0 to 180 Deg. F.
3. Color: White.

D. Vapor-Retarder Mastic, Solvent Based, Outdoor Use: Suitable for outdoor use on below-ambient services.

1. Water-Vapor Permeance: Comply with ASTM E96/E96M or ASTM F1249.
2. Service Temperature Range: Minus 50 to plus 220 Deg. F.
3. Color: White.

E. Breather Mastic: Water based; suitable for indoor and outdoor use on above-ambient services.

1. Water-Vapor Permeance: ASTM E96/E96M, greater than 1.0 perm at manufacturer's recommended dry film thickness.
2. Service Temperature Range: 0 to plus 180 Deg. F.
3. Color: White.

2.5 LAGGING ADHESIVES

A. Adhesives shall comply with MIL-A-3316C, Class I, Grade A, and shall be compatible with insulation materials, jackets, and substrates.

1. Fire-resistant, water-based lagging adhesive and coating for use indoors to adhere fire-resistant lagging cloths over pipe insulation.
2. Service Temperature Range: 20 to plus 180 Deg. F.
3. Color: White.

2.6 SEALANTS

A. Joint Sealants:

1. Permanently flexible, elastomeric sealant.
2. Service Temperature Range: Minus 58 to plus 176 Deg. F.
3. Color: White or gray.

B. FSK and Metal Jacket Flashing Sealants:

1. Fire- and water-resistant, flexible, elastomeric sealant.
2. Service Temperature Range: Minus 40 to plus 250 Deg. F.
3. Color: Aluminum.

C. ASJ Flashing Sealants and PVC Jacket Flashing Sealants:

1. Fire- and water-resistant, flexible, elastomeric sealant.
2. Service Temperature Range: Minus 40 to plus 250 Deg. F.
3. Color: White.

2.7 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1. ASJ: White, Kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C1136, Type I.
2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C1136, Type I.
3. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with Kraft-paper backing; complying with ASTM C1136, Type II.

2.8 FIELD-APPLIED FABRIC-REINFORCING MESH

A. Woven Glass-Fiber Fabric: Approximately 2 oz./sq. yd. with a thread count of 10 strands by 10 strands/sq. in. for covering pipe and pipe fittings.

B. Woven Polyester Fabric: Approximately 1 oz./sq. yd. with a thread count of 10 strands by 10 strands/sq. in., in a Leno weave, for pipe.

2.9 FIELD-APPLIED CLOTHS

A. Woven Glass-Fiber Fabric: Comply with MIL-C-20079H, Type I, plain weave, and pre-sized a minimum of 8 oz./sq. yd.

2.10 FIELD-APPLIED JACKETS

A. Field-applied jackets shall comply with ASTM C1136, Type I, unless otherwise indicated.

B. FSK Jacket: Aluminum-foil-face, fiberglass-reinforced scrim with Kraft-paper backing.

C. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D1784, Class 16354-C; thickness as scheduled; roll stock ready for shop or field cutting and forming. Thickness is indicated in field-applied jacket schedules.
   1. Adhesive: As recommended by jacket material manufacturer.
   2. Color: Color as selected by Architect.
   3. Factory-fabricated fitting covers to match jacket if available; otherwise, field fabricate.

      a. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories.

D. Metal Jacket:
   1. Aluminum Jacket: Comply with ASTM B209, Alloy 3003, 3005, 3105, or 5005, Temper H-14.

      a. Finish and thickness are indicated in field-applied jacket schedules.
      b. Moisture Barrier for Indoor Applications: 3-mil-thick, heat-bonded polyethylene and Kraft paper.
      c. Moisture Barrier for Outdoor Applications: 3-mil-thick, heat-bonded polyethylene and Kraft paper.
      d. Factory-Fabricated Fitting Covers:

         1) Same material, finish, and thickness as jacket.
         2) Preformed two-piece or gore, 45- and 90-degree, short- and long-radius elbows.
         3) Tee covers.
         4) Flange and union covers.
         5) End caps.
         6) Beveled collars.
         7) Valve covers.
         8) Field fabricate fitting covers only if factory-fabricated fitting covers are not available.

   2. Stainless-Steel Jacket: ASTM A240/A240M.

      a. Material, finish, and thickness are indicated in field-applied jacket schedules.
      b. Moisture Barrier for Indoor Applications: 3-mil-thick, heat-bonded polyethylene and Kraft paper.
      c. Moisture Barrier for Outdoor Applications: 3-mil-thick, heat-bonded polyethylene and Kraft paper.
      d. Factory-Fabricated Fitting Covers:

         1) Same material, finish, and thickness as jacket.
         2) Preformed two-piece or gore, 45- and 90-degree, short- and long-radius elbows.
         3) Tee covers.
         4) Flange and union covers.
         5) End caps.
         6) Beveled collars.
         7) Valve covers.
         8) Field fabricate fitting covers only if factory-fabricated fitting covers are not available.

E. Underground Direct-Buried Jacket: 125-mil-thick vapor barrier and waterproofing membrane, consisting of a rubberized bituminous resin reinforced with a woven-glass fiber or polyester scrim and laminated aluminum foil.

F. Self-Adhesive Outdoor Jacket: 60-mil-thick, laminated vapor barrier and waterproofing membrane for installation over insulation located aboveground outdoors; consisting of a rubberized bituminous resin on a cross-laminated polyethylene film covered with aluminum-foil facing.

2.11 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C1136.

1. Width: 3 inches.
2. Thickness: 11.5 mils.
3. Adhesion: 90 ounces force/inch in width.
4. Elongation: 2 percent.
5. Tensile Strength: 40 pound-force/inch in width.
6. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C1136.

1. Width: 3 inches.
2. Thickness: 6.5 mils.
3. Adhesion: 90 ounces force/inch in width.
4. Elongation: 2 percent.
5. Tensile Strength: 40 pound-force/inch in width.
6. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.

C. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive; suitable for indoor and outdoor applications.

1. Width: 2 inches.
2. Thickness: 6 mils.
3. Adhesion: 64 ounces force/inch in width.
4. Elongation: 500 percent.
5. Tensile Strength: 18 pound-force/inch in width.

D. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.

1. Width: 2 inches.
2. Thickness: 3.7 mils.
3. Adhesion: 100 ounces force/inch in width.
4. Elongation: 5 percent.
5. Tensile Strength: 34 pound-force/inch in width.

2.12 SECUREMENTS

A. Bands:

1. Stainless Steel: ASTM A240/A240M,; 0.015 inch thick, 3/4 inch wide.

2. Aluminum: ASTM B209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 1/2 inch 3/4 inch wide with wing seal.

B. Staples: Outward-clinching insulation staples, nominal 3/4-inch-wide, stainless steel or Monel.

C. Wire: 0.062-inch soft-annealed, stainless steel.

2.13 PROTECTIVE SHIELDING GUARDS

A. Protective Shielding Pipe Covers:
1. Description: Manufactured plastic wraps for covering plumbing fixture hot- and cold-water supplies and trap and drain piping. Comply with Americans with Disabilities Act (ADA) requirements.

B. Protective Shielding Piping Enclosures:
1. Description: Manufactured plastic enclosure for covering plumbing fixture hot- and cold-water supplies and trap and drain piping. Comply with ADA requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.

1. Verify that systems to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

B. Clean and prepare surfaces to be insulated. Before insulating, apply a corrosion coating to insulated surfaces as follows:

1. Stainless Steel: Coat 300 series stainless steel with an epoxy primer 5 mils thick and an epoxy finish 5 mils thick if operating in a temperature range of between 140 and 300 Deg. F. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.
2. Carbon Steel: Coat carbon steel operating at a service temperature of between 32 and 300 Deg. F with an epoxy coating. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.

C. Coordinate insulation installation with the tradesman installing heat tracing. Comply with requirements for heat tracing that apply to insulation.

D. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless steel surfaces, use demineralized water.

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping, including fittings, valves, and specialties.

B. Install insulation materials, forms, vapor barriers or retarders, jackets, and of thicknesses required for each item of pipe system, as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Install multiple layers of insulation with longitudinal and end seams staggered.

F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.

G. Keep insulation materials dry during storage, application, and finishing. Replace insulation materials that get wet.

H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

I. Install insulation with least number of joints practical.

J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.

1. Install insulation continuously through hangers and around anchor attachments.
2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends attached to structure with vapor-barrier mastic.
3. Install insert materials and insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.

K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

L. Install insulation with factory-applied jackets as follows:

1. Draw jacket tight and smooth.
2. Cover circumferential joints with 3-inch-wide strips, of same material as insulation jacket. Secure strips with adhesive and outward-clinching staples along both edges of strip, spaced 4 inches O.C.
3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward-clinching staples along edge at 4 inches O.C.

    a. For below-ambient services, apply vapor-barrier mastic over staples.

4. Cover joints and seams with tape, in accordance with insulation material manufacturer's written instructions, to maintain vapor seal.
5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.

M. Cut insulation in a manner to avoid compressing insulation more than 25 percent of its nominal thickness.

N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches in similar fashion to butt joints.

P. For above-ambient services, do not install insulation to the following:

1. Vibration-control devices.
2. Testing agency labels and stamps.
3. Nameplates and data plates.
4. Cleanouts.

3.4 PENETRATIONS

A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
4. Seal jacket to roof flashing with flashing sealant.

B. Insulation Installation at Underground Exterior Wall Penetrations: Terminate insulation flush with sleeve seal. Seal terminations with flashing sealant.

C. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
4. Seal jacket to wall flashing with flashing sealant.

D. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

E. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.

1. Comply with requirements in Section 07 84 13 "Penetration Firestopping" for firestopping and fire-resistive joint sealers.

F. Insulation Installation at Floor Penetrations:

1. Pipe: Install insulation continuously through floor penetrations.
2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 07 84 13 "Penetration Firestopping."

3.5 GENERAL PIPE INSULATION INSTALLATION

A. Requirements in this article generally apply to all insulation materials, except where more specific requirements are specified in various pipe insulation material installation articles.

B. Insulation Installation on Fittings, Valves, Strainers, Flanges, Mechanical Couplings, and Unions:

1. Install insulation over fittings, valves, strainers, flanges, mechanical couplings, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
2. Insulate pipe elbows using preformed fitting insulation made from same material and density as that of adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
3. Insulate tee fittings with preformed fitting insulation of same material and thickness as that used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
4. Insulate valves using preformed fitting insulation of same material, density, and thickness as that used for adjacent pipe. Overlap adjoining pipe insulation by not less than 2 times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
5. Insulate strainers using preformed fitting insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than 2 times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers, so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
6. Insulate flanges, mechanical couplings, and unions, using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than 2 times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Stencil or label the outside insulation jacket of each union with the word "union" matching size and color of pipe labels.
7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for above-ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.
8. For services not specified to receive a field-applied jacket, except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and

unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing, using PVC tape.

C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.

D. Install removable insulation covers at locations indicated. Installation shall conform to the following:

1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as that of adjoining pipe insulation.
2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union at least 2 times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless steel or aluminum bands. Select band material compatible with insulation and jacket.
3. Construct removable valve insulation covers in same manner as for flanges, except divide the two-part section on the vertical center line of valve body.
4. When covers are made from block insulation, make two halves, each consisting of mitered blocks wired to stainless steel fabric. Secure this wire frame, with its attached insulation, to flanges with tie wire. Extend insulation at least 2 inches over adjacent pipe insulation on each side of valve. Fill space between flange or union cover and pipe insulation with insulating cement. Finish cover assembly with insulating cement applied in two coats. After first coat is dry, apply and trowel second coat to a smooth finish.
5. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

3.6 INSTALLATION OF CELLULAR-GLASS INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of insulation to pipe with wire or bands, and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above-ambient services, secure laps with outward-clinched staples at 6 inches O.C.
4. For insulation with factory-applied jackets on below-ambient services, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive, as recommended by insulation material manufacturer, and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of cellular-glass block insulation of same thickness as that of pipe insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as that of straight segments of pipe insulation when available. Secure according to manufacturer's written instructions.
2. When preformed sections of insulation are not available, install mitered sections of cellular-glass insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of cellular-glass insulation to valve body.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.

3.7 INSTALLATION OF FLEXIBLE ELASTOMERIC INSULATION

A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of sheet insulation of same thickness as that of pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed valve covers manufactured of same material as that of pipe insulation when available.
2. When preformed valve covers are not available, install cut sections of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.
4. Secure insulation to valves and specialties, and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.8 INSTALLATION OF MINERAL-FIBER INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of preformed pipe insulation to pipe with wire or bands, and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward-clinched staples at 6 inches O.C.
4. For insulation with factory-applied jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive, as recommended by insulation material manufacturer, and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with mineral-fiber blanket insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as that of straight segments of pipe insulation when available.
2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of same material as that of straight segments of pipe insulation when available.
2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.
3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
4. Install insulation to flanges as specified for flange insulation application.

3.9 INSTALLATION OF PHENOLIC INSULATION

A. General Installation Requirements:

1. Secure single-layer insulation with stainless steel bands at 12-inch intervals, and tighten bands without deforming insulation materials.
2. Install two-layer insulation with joints tightly butted and staggered at least 3 inches. Secure inner layer with 0.062-inch wire spaced at 12-inch intervals. Secure outer layer with stainless steel bands at 12-inch intervals.

B. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of insulation to pipe with wire or bands, and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.

3. For insulation with factory-applied jackets on above-ambient services, secure laps with outward-clinched staples at 6 inches O.C.
4. For insulation with factory-applied jackets with vapor retarders on below-ambient services, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive, as recommended by insulation material manufacturer, and seal with vapor-barrier mastic and flashing sealant.

C. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of block insulation of same material and thickness as that of pipe insulation.

D. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed insulation sections of same material as that of straight segments of pipe insulation. Secure according to manufacturer's written instructions.

E. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed insulation sections of same material as that of straight segments of pipe insulation. Secure according to manufacturer's written instructions.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.

3.10 INSTALLATION OF POLYOLEFIN INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Seal split-tube longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of polyolefin sheet insulation of same thickness as that of pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of polyolefin pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install cut sections of polyolefin pipe and sheet insulation to valve body.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.
4. Secure insulation to valves and specialties, and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.11 FIELD-APPLIED JACKET INSTALLATION

A. Where glass-cloth jackets are indicated, install directly over bare insulation or insulation with factory-applied jackets.

1. Draw jacket smooth and tight to surface with 2-inch overlap at seams and joints.
2. Embed glass cloth between two 0.062-inch-thick coats of lagging adhesive.
3. Completely encapsulate insulation with coating, leaving no exposed insulation.

B. Where FSK jackets are indicated, install as follows:

1. Draw jacket material smooth and tight.
2. Install lap or joint strips with same material as jacket.
3. Secure jacket to insulation with manufacturer's recommended adhesive.
4. Install jacket with 1-1/2-inch laps at longitudinal seams and 3-inch-wide joint strips at end joints.
5. Seal openings, punctures, and breaks in vapor-retarder jackets and exposed insulation with vapor-barrier mastic.

C. Where PVC jackets are indicated, install with 1-inch overlap at longitudinal seams and end joints. Seal with manufacturer's recommended adhesive.

1. Apply two continuous beads of adhesive to seams and joints, one bead under lap and the finish bead along seam and joint edge.

D. Where metal jackets are indicated, install with 2-inch overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless steel bands 12 inches O.C. and at end joints.

3.12 FINISHES

A. Insulation with ASJ, Glass-Cloth, or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Section 09 91 13 "Exterior Painting" and Section 09 91 23 "Interior Painting."

1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.

a. Finish Coat Material: Interior, flat, latex-emulsion size.

B. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.

C. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.

D. Do not field paint aluminum or stainless steel jackets.

3.13 FIELD QUALITY CONTROL

A. Owner will engage a qualified testing agency to perform tests and inspections.

B. Engage a qualified testing agency to perform tests and inspections.

C. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

D. Perform tests and inspections with the assistance of a factory-authorized service representative.

E. Tests and Inspections: Inspect pipe, fittings, strainers, and valves, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe, three locations of threaded fittings, three locations of welded fittings, two locations of threaded strainers, two locations of welded strainers, three locations of threaded valves, and three locations of flanged valves for each pipe service defined in the "Piping Insulation Schedule, General" Article.

F. All insulation applications will be considered defective if they do not pass tests and inspections.

G. Prepare test and inspection reports.

3.14 PIPING INSULATION SCHEDULE, GENERAL

A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.

B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:

1. Drainage piping located in crawl spaces.
2. Underground piping.
3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

3.15 INDOOR PIPING INSULATION SCHEDULE

A. Domestic Cold Water:

1. NPS 3 and Smaller: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Flexible Elastomeric: 1 inch thick.
c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
d. Phenolic: 1 inch thick.
e. Polyolefin: 1 inch thick.

B. Domestic Hot and Recirculated Hot Water:

1. NPS 1-1/2 and Smaller: Insulation shall be one of the following:

    a. Cellular Glass: 1-1/2 inches thick.
    b. Flexible Elastomeric: 1 inch thick.
    c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
    d. Phenolic: 1 inch thick.
    e. Polyolefin: 1 inch thick.

2. NPS 1-1/2 and Larger: Insulation shall be one of the following:

    a. Cellular Glass: 1-1/2 inches thick.
    b. Flexible Elastomeric: 1 inch thick.
    c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
    d. Phenolic: 1 inch thick.
    e. Polyolefin: 1 inch thick.

C. Exposed Sanitary Drains, Domestic Water, Domestic Hot Water, and Stops for Plumbing Fixtures for People with Disabilities:

1. All Pipe Sizes: Insulation shall be one of the following:

    a. Flexible Elastomeric: 1 inch thick.
    b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
    c. Polyolefin: 1 inch thick.

D. Sanitary Waste Piping Where Heat Tracing Is Installed:

1. All Pipe Sizes: Insulation shall be one of the following:
    a. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1-1/2 inches thick.
    b. Phenolic: 1-1/2 inches thick.

E. Floor Drains, Traps, and Sanitary Drain Piping within 10 Feet of Drain Receiving Condensate and Equipment Drain Water below 60 Deg. F:

1. All Pipe Sizes: Insulation shall be one of the following:

    a. Cellular Glass: 1-1/2 inches thick.
    b. Flexible Elastomeric: 1 inch thick.
    c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
    d. Phenolic: 1 inch thick.
    e. Polyolefin: 1 inch thick.

3.16 OUTDOOR, ABOVEGROUND PIPING INSULATION SCHEDULE

A. Domestic Water Piping:

1. All Pipe Sizes: Insulation shall be one of the following:

    a. Cellular Glass: 2 inches thick.
    b. Flexible Elastomeric: 2 inches thick.
    c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 2 inches thick.
    d. Phenolic: 2 inches thick.
    e. Polyolefin: 2 inches thick.

B. Domestic Hot and Recirculated Hot Water:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 2 inches thick.
b. Flexible Elastomeric: 2 inches thick.
c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 2 inches thick.
d. Phenolic: 2 inches thick.
e. Polyolefin: 2 inches thick.

C. Sanitary Waste Piping Where Heat Tracing Is Installed:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 2 inches thick.
b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 2 inches thick.
c. Phenolic: 2 inches thick.

D. Hot Service Drains:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.

3.17 OUTDOOR, FIELD-APPLIED JACKET SCHEDULE

A. Piping, Exposed:

1. Stainless Steel, Type 304 or Type 316, Smooth No. 2B Finish: 0.010 inch thick.

END OF SECTION 22 07 19

SECTION 22 08 00
COMMISSIONING OF PLUMBING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes Cx process requirements for the following plumbing systems, assemblies, and equipment:

1. Domestic hot- and cold-water piping.
2. Sanitary waste and vent piping.
3. Storm drainage piping.
4. Plumbing pumps.
5. Plumbing equipment.

B. Related Requirements:

1. Section 01 91 13 "General Commissioning Requirements" for general Cx process requirements and CxA responsibilities.
2. For construction checklists, comply with requirements in various Division 22 Sections specifying plumbing systems, system components, equipment, and products.

1.3 DEFINITIONS

A. Cx: Commissioning, as defined in Section 01 91 13 "General Commissioning Requirements."

B. CxA: Commissioning Authority, as defined in Section 01 91 13 "General Commissioning Requirements."

C. IAPMO: International Association of Plumbing and Mechanical Officials.

D. I.G.C.C.: International Green Construction Code.

E. "Systems," "Assemblies," "Subsystems," "Equipment," and "Components": Where these terms are used together or separately, they shall mean "as-built" systems, assemblies, subsystems, equipment, and components.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For plumbing testing technician.

B. Construction Checklists:

1. Cx plan, including material, installation, and performance construction checklists for systems, assemblies, subsystems, equipment, and components relating to plumbing to be part of the Cx process and in accordance with requirements in Section 01 91 13 "General Commissioning Requirements", IAPMO "Green Plumbing and Mechanical Code Supplement," and ASHRAE 202.

C. Test Equipment and Instruments: For all test equipment and instruments to be used in conducting Cx tests by Contractor, provide the following:

1. Equipment/instrument identification number.
2. Planned Cx application or use.
3. Manufacturer, make, model, and serial number.
4. Calibration history, including certificates from agencies that calibrate the equipment and instrumentation.
5. Equipment manufacturers' proprietary instrumentation and tools. For each instrument or tool, identify the following:

a. Instrument or tool identification number.
b. Equipment schedule designation of equipment for which the instrument or tool is required.
c. Manufacturer, make, model, and serial number.
d. Calibration history, including certificates from agencies that calibrate the instrument or tool, where appropriate.

1.5 QUALITY ASSURANCE

A. Plumbing Testing Technician Qualifications: Technicians to perform plumbing Construction Checklist verification tests. Construction Checklist verification test demonstrations, Cx tests, and Cx test demonstrations shall have the following minimum qualifications:

1. Journey level or equivalent skill level with knowledge of plumbing system, electrical concepts, and building operations.
2. Minimum three years' experience installing, servicing, and operating systems manufactured by approved manufacturer.

B. Testing Equipment and Instrumentation Quality and Calibration:

1. Capable of testing and measuring performance within the specified acceptance criteria.
2. Be calibrated at manufacturer's recommended intervals with current calibration tags permanently affixed to the instrument being used.
3. Be maintained in good repair and operating condition throughout duration of use on Project.
4. Be recalibrated/repaired if dropped or damaged in any way since last calibrated.

C. Proprietary Test Instrumentation and Tools:

1. Equipment Manufacturer's Proprietary Instrumentation and Tools: For installed equipment included in the Cx process, test instrumentation and tools manufactured or prescribed by equipment manufacturer to service, calibrate, adjust, repair, or otherwise work on its equipment or required as a condition of equipment warranty, shall comply with the following:

a. Be calibrated by manufacturer with current calibration tags permanently affixed.

b. Include a separate list of proprietary test instrumentation and tools in operation and maintenance manuals.
c. Plumbing system proprietary test instrumentation and tools become property of Owner at the time of Substantial Completion.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 Cx PROCESS:

A. Perform Cx process for plumbing systems in accordance with:

1. I.G.C.C., which requires compliance with ASHRAE 202.
2. ASHRAE 202.
3. Commissioning standards acceptable to the authority having jurisdiction.

3.2 CONSTRUCTION CHECKLISTS

A. Preliminary detailed construction checklists are to be prepared under Section 01 91 13 "General Commissioning Requirements" for each plumbing system, assembly, subsystem, equipment, and component required to be commissioned, as detailed in ASHRAE 202 I.G.C.C. IAPMO's "Green Plumbing and Mechanical Code Supplement". Contractor performs the following:

1. Review plumbing preliminary construction checklists and provide written comments on Construction Checklist items where appropriate.
2. Return preliminary Construction Checklist with review comments within 10 days of receipt.
3. When review comments have been resolved, the CxA will provide final construction checklists marked "Approved for Use, (date)."
4. Use only construction checklists marked "Approved for Use, (date)." Mark construction checklists in the appropriate place, as indicated Project events are completed, and provide pertinent details and other information.

B. Prepare preliminary detailed construction checklists for each plumbing system, assembly, subsystem, equipment, and component required to be commissioned, as detailed in ASHRAE 202 I.G.C.C. IAPMO's "Green Plumbing and Mechanical Code Supplement".

1. Submit preliminary construction checklists to CxA and Designer for review.
2. When review comments have been resolved, the CxA will provide final construction checklists marked "Approved for Use, (date)."
3. Use only construction checklists marked "Approved for Use, (date)." Mark construction checklists in the appropriate place as indicated Project events are completed, and provide pertinent details and other information.

C. Systems required to be commissioned under I.G.C.C.:

1. Domestic hot-water systems and controls.
2. Water-pumping and -mixing systems over 5 HP and purification systems.

D. Additional systems required to be commissioned:

1. Facility water-distribution piping, including the following:

   a. Domestic and fire-suppression water piping, fittings, and specialties outside the building.
   b. Pumps, motors, accessories, and controls.
   c. Sleeves and sleeve seals.
   d. Meters and gauges.
   e. General-duty and specialty valves.
   f. Hangers and supports.
   g. Heat tracing.
   h. Vibration isolation.

2. Domestic water piping, including the following:

   a. Domestic cold- and hot-water piping, fittings, and specialties inside the building.
   b. Pumps, motors, accessories, and controls.
   c. Sleeves and sleeve seals.
   d. Indoor water-storage tanks.
   e. Meters and gauges.
   f. General-duty and specialty valves.
   g. Hangers and supports.
   h. Heat tracing.
   i. Vibration isolation.

3. Sanitary waste and vent piping, including the following:

   a. Gravity and forced-main sewerage piping, fittings, and specialties.
   b. Sanitary waste interceptors.
   c. Pumps, motors, accessories, and controls.
   d. Drains.
   e. Sleeves and sleeve seals.
   f. Meters and gauges.
   g. General-duty and specialty valves.
   h. Hangers and supports.
   i. Heat tracing.
   j. Vibration isolation.

4. Storm-water piping, including the following:

   a. Drainage piping, fittings, and specialties.
   b. Pumps, motors, accessories, and controls.
   c. Drains and collection basins.
   d. Sleeves and sleeve seals.
   e. Meters and gauges.
   f. General-duty and specialty valves.
   g. Hangers and supports.
   h. Heat tracing.
   i. Vibration isolation.

5. Plumbing fixtures, including the following:

   a. Water closets, supports and connections, supplies, and flush valves.
   b. Lavatories, supports, supplies, drain connections, and faucets.

c. Sinks, supports, supplies, drain connections, and faucets.
d. Showers, supplies, drain connections, and faucets.
e. Emergency plumbing fixtures, supplies, drain connections, and controls.
f. Drinking fountains, supplies, and drainage connections.

3.3 Cx TESTING PREPARATION

A. Certify that plumbing systems, subsystems, and equipment have been installed, calibrated, and started and that they are operating in accordance with the Contract Documents and approved submittals.

B. Certify that plumbing system instrumentation and control systems have been completed and calibrated, point-to-point checkout has been successfully completed, and systems are operating in accordance with their design sequence of operation, Contract Documents, and approved submittals. Certify that all sensors are operating within specified accuracy and that all systems are set to and maintaining set points as required by the design documents.

C. Set systems, subsystems, and equipment into operating mode to be tested in accordance with approved test procedures (for example, normal shutdown, normal auto position, normal manual position, unoccupied cycle, emergency power, and alarm conditions).

3.4 Cx TEST CONDITIONS

A. Perform tests using design conditions, whenever possible.

1. Simulated conditions may, with approval of Architect, be imposed using an artificial load when it is impractical to test under design conditions. Before simulating conditions, calibrate testing instruments. Provide equipment to simulate loads. Set simulated conditions as directed by CxA, and document simulated conditions and methods of simulation. After tests, return configurations and settings to normal operating conditions.
2. Cx test procedures may direct that set points be altered when simulating conditions is impractical.
3. Cx test procedures may direct that sensor values be altered with a signal generator when design or simulating conditions and altering set points are impractical.

B. If tests cannot be completed because of a deficiency outside the scope of the plumbing system, document the deficiency and report it to Architect. After deficiencies are resolved, reschedule tests.

C. If seasonal testing is specified, complete appropriate initial performance tests and documentation and schedule seasonal tests.

3.5 Cx TESTS COMMON TO PLUMBING SYSTEMS

A. Measure capacities and effectiveness of systems, assemblies, subsystems, equipment, and components, including operational and control functions, to verify compliance with acceptance criteria.

B. Test systems, assemblies, subsystems, equipment, and components for operating modes, interlocks, control responses, responses to abnormal or emergency conditions, and response compared to acceptance criteria.

C. Coordinate schedule with, and perform Cx activities at the direction of, CxA.

D. Comply with Construction Checklist requirements, including material verification, installation checks, startup, and performance test requirements specified in Division 22 Sections specifying plumbing systems and equipment.

E. Provide technicians, instrumentation, tools, and equipment to perform and document the following:

1. Cx Construction Checklist verification tests.
2. Cx Construction Checklist verification test demonstrations.

3.6 CONSTRUCTION CHECKLIST EXAMPLES

A. Vibration Isolation in Plumbing Systems:

1. Prerequisites: Acceptance of results of construction checklists for vibration control devices specified in Section 22 05 48 "Vibration Controls for Plumbing Piping and Equipment" Section 22 05 48.13 "Vibration Controls for Plumbing Piping and Equipment".
2. Components to Be Tested:

    a. Vibration isolation control devices in plumbing systems.
    b. Support systems.

3. Test Purpose: Evaluate effectiveness of vibration isolation control devices.
4. Test Conditions: Measure vibration of the facility structure at three locations designated by Owner's witness at the following operating conditions:

    a. Maximum speed.
    b. Minimum speed.
    c. Critical speed.

5. Acceptance Criteria: Structure-borne vibration not to exceed specified performance.

B. Supervision of Alarms in Plumbing Systems:

1. Prerequisites: Acceptance of results of construction checklists for plumbing systems specified in the following Sections:

    a. Section 22 11 13 "Facility Water Distribution Piping."
    b. Section 22 14 29 "Sump Pumps."

2. Test Scope:

    a. Supervised plumbing system alarms.

3. Test Purpose:

    a. Verify reporting of supervised plumbing alarm at building management system.

4. Test Conditions:

    a. Alarm monitoring systems operating in normal, automatic mode.

b. Activate supervised plumbing alarms, one at a time.

5. Acceptance Criteria:

a. Activation of supervised plumbing alarm generates alarm at building management system control panel.

C. Heat Tracing in Plumbing Systems:

1. Prerequisites: Acceptance of results of construction checklists for heat tracing specified in heat-tracing systems. Comply with requirements listed in Section 22 05 33 "Heat Tracing for Plumbing Piping."
2. Equipment and Systems To Be Tested:

a. Self-regulating, parallel-resistance heating cables.
b. Heater trace circuit controller.

3. Test Purpose:

a. Evaluate response to ambient temperature below freeze-protection set point.
b. Evaluate heating cable fault alarm.

4. Test Conditions:

a. Subject temperature sensor to temperature approximately 3 Deg. F above freeze-protection set point (initial set point 41 Deg. F). Monitor sensed temperature with a calibration-grade thermometer. Gradually change set point or sensed temperature until freeze-protection circuit is energized.
b. Subject temperature sensor to temperature approximately 3 Deg. F below freeze-protection set point (initial set point 41 Deg. F). Monitor sensed temperature with a calibration-grade thermometer. Gradually change set point or sensed temperature until freeze-protection circuit is de-energized.
c. Simulate an electrical fault on the heating cable.

5. Acceptance Criteria:

a. Freeze-protection circuit is energized at set-point temperature of minus 2 Deg. F.
b. Freeze-protection circuit is de-energized at set-point temperature of plus 2 Deg. F.
c. Heater trace circuit controller initiates an alarm of cable fault. Alarm is correctly reported at the fire-alarm control panel.

END OF SECTION 22 08 00

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SECTION 22 11 16
DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Copper tube and fittings.
2. Stainless steel piping and fittings.
3. Piping joining materials.
4. Transition fittings.
5. Dielectric fittings.

B. Related Requirements:

1. Section 22 11 13 "Facility Water Distribution Piping" for water-service piping and water meters outside the building from source to the point where water-service piping enters the building.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Pipe and tube.
2. Fittings.
3. Joining materials.
4. Transition fittings.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Piping layout, or BIM model, drawn to scale, showing the items described in this Section, and coordinated with all building trades.

B. System purging and disinfecting activities report.

C. Field quality-control reports.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Potable-water piping and components shall comply with NSF 14, NSF 61, and NSF 372. Include marking "NSF-pw" on piping.

2.2 COPPER TUBE AND FITTINGS

A. Cast-Copper, Solder-Joint Fittings: ASME B16.18, pressure fittings.

B. Wrought-Copper, Solder-Joint Fittings: ASME B16.22, pressure fittings.

C. Bronze Flanges: ASME B16.24, Class 150, with solder-joint ends.

D. Cast Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body, with ball-and-socket, metal-to-metal seating surfaces and solder-joint or threaded ends.

E. Wrought Copper Unions: ASME B16.22.

F. Copper-Tube, Mechanically Formed Tee Fitting: For forming T-branch on copper water tube.
1. Description: Tee formed in copper tube in accordance with ASTM F2014.

G. Grooved, Mechanical-Joint, Copper Tube Appurtenances:
1. Grooved-End, Copper Fittings: ASTM B75 copper tube or ASTM B584 bronze castings.
2. Grooved-End-Tube Couplings: To fit copper-tube dimensions; rigid pattern unless otherwise indicated; gasketed fitting, EPDM-rubber gasket, UL classified per NSF 61 and NSF 372, and rated for minimum 180 Deg. F, for use with ferrous housing and steel bolts and nuts; 300 psig minimum CWP pressure rating.

H. Copper Tube, Pressure-Seal-Joint Fittings:
1. Fittings: Cast-brass, cast-bronze, or wrought-copper with EPDM O-ring seal in each end.
2. Minimum 200-psig working-pressure rating at 250 Deg. F.

I. Copper-Tube, Push-on-Joint Fittings:
1. Description:

a. Cast-copper fitting complying with ASME B16.18 or wrought-copper fitting complying with ASME B 16.22.
b. Stainless steel teeth and EPDM-rubber, O-ring seal in each end instead of solder-joint ends.

2.3 DUCTILE-IRON PIPE AND FITTINGS

A. Mechanical-Joint, Ductile-Iron Pipe:

1. AWWA C151/A21.51, with mechanical-joint bell and plain spigot end unless grooved or flanged ends are indicated.

2. Glands, Gaskets, and Bolts: AWWA C111/A21.11, ductile- or gray-iron glands, rubber gaskets, and steel bolts.

B. Standard-Pattern, Mechanical-Joint Fittings:

1. AWWA C110/A21.10, ductile or gray iron.
2. Glands, Gaskets, and Bolts: AWWA C111/A21.11, ductile- or gray-iron glands, rubber gaskets, and steel bolts.

C. Compact-Pattern, Mechanical-Joint Fittings:

1. AWWA C153/A21.53, ductile iron.
2. Glands, Gaskets, and Bolts: AWWA C111/A21.11, ductile- or gray-iron glands, rubber gaskets, and steel bolts.

D. Push-on-Joint, Ductile-Iron Pipe:

1. AWWA C151/A21.51.
2. Push-on-joint bell and plain spigot end unless grooved or flanged ends are indicated.

E. Standard-Pattern, Push-on-Joint Fittings:

1. AWWA C110/A21.10, ductile or gray iron.
2. Gaskets: AWWA C111/A21.11, rubber.

F. Compact-Pattern, Push-on-Joint Fittings:

1. AWWA C153/A21.53, ductile iron.
2. Gaskets: AWWA C111/A21.11, rubber.

G. Plain-End, Ductile-Iron Pipe: AWWA C151/A21.51.

H. Appurtenances for Grooved-End, Ductile-Iron Pipe:
1. Fittings for Grooved-End, Ductile-Iron Pipe: ASTM A47/A47M, malleable-iron castings or ASTM A536, ductile-iron castings with dimensions that match pipe.
2. Mechanical Couplings for Grooved-End, Ductile-Iron-Piping:

a. AWWA C606 for ductile-iron-pipe dimensions.
b. Ferrous housing sections.
c. EPDM-rubber gaskets suitable for hot and cold water.
d. Bolts and nuts.
e. Minimum Pressure Rating:

2.4 PIPING JOINING MATERIALS

A. Pipe-Flange Gasket Materials:

1. AWWA C110/A21.10, rubber, flat face, 1/8 inch thick or ASME B16.21, nonmetallic and asbestos free unless otherwise indicated.
2. Full-face or ring type unless otherwise indicated.

B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

C. Solder Filler Metals: ASTM B32, lead-free alloys.

D. Flux: ASTM B813, water flushable.

E. Brazing Filler Metals: AWS A5.8M/A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.

2.5 TRANSITION FITTINGS

A. General Requirements:

1. Same size as pipes to be joined.
2. Pressure rating at least equal to pipes to be joined.
3. End connections compatible with pipes to be joined.

B. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.

C. Sleeve-Type Transition Coupling: AWWA C219.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Cascade Waterworks Mfg. Co.
b. Dresser, Inc.
c. Ford Meter Box Company, Inc. (The).
d. Jay R. Smith Mfg Co; a division of Morris Group International.
e. JCM Industries, Inc.
f. Romac Industries, Inc.
g. Smith-Blair, Inc.
h. Viking Johnson.

D. Plastic-to-Metal Transition Fittings:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Aquatherm.
b. Charlotte Pipe and Foundry Company.
c. Harvel Plastics, Inc.
d. Sioux Chief Manufacturing Company, Inc.
e. Spears Manufacturing Company.
f. Uponor.

2. Description:

E. Plastic-to-Metal Transition Unions:

1. Description:

    a. Brass or stainless steel threaded end.
    b. Rubber O-ring.
    c. Union nut.

2.6 DIELECTRIC FITTINGS

A. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.

B. Dielectric Unions:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. A.Y. McDonald Mfg. Co.
    b. Capitol Manufacturing Company.
    c. Central Plastics Company.
    d. HART Industrial Unions, LLC.
    e. Jomar Valve.
    f. Matco-Norca.
    g. WATTS.
    h. Wilkins.
    i. Zurn Industries, LLC.

2. Standard: ASSE 1079.
3. Pressure Rating: 125 psig minimum at 180 Deg. For 150 psig.
4. End Connections: Solder-joint copper alloy and threaded ferrous.

C. Dielectric Flanges:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Capitol Manufacturing Company.
    b. Central Plastics Company.
    c. Matco-Norca.
    d. WATTS.
    e. Wilkins.
    f. Zurn Industries, LLC.

2. Standard: ASSE 1079.
3. Factory-fabricated, bolted, companion-flange assembly.
4. Pressure Rating: 125 psig minimum at 180 Deg. F or 150 psig 175 psig 300 psig.
5. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.

D. Dielectric-Flange Insulating Kits:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Advance Products & Systems, Inc.
    b. Calpico, Inc.
    c. Central Plastics Company.
    d. Pipeline Seal and Insulator, Inc.

2. Nonconducting materials for field assembly of companion flanges.
3. Pressure Rating: 150 psig.
4. Gasket: Neoprene or phenolic.
5. Bolt Sleeves: Phenolic or polyethylene.
6. Washers: Phenolic with steel backing washers.

E. Dielectric Nipples:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Elster Perfection Corporation.
    b. Grinnell G-Fire by Johnson Controls Company.
    c. Matco-Norca.
    d. Precision Plumbing Products.
    e. Sioux Chief Manufacturing Company, Inc.
    f. Victaulic Company.

2. Standard: IAPMO PS 66.
3. Electroplated steel nipple complying with ASTM F1545.
4. Pressure Rating and Temperature: 300 psig at 225 deg F.
5. End Connections: Male threaded or grooved.
6. Lining: Inert and noncorrosive, propylene.

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS

A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

B. Flanges and unions may be used for aboveground piping joints unless otherwise indicated.

C. Fitting Option: Extruded-tee connections and brazed joints may be used on aboveground copper tubing.

D. Under-building-slab, domestic water, building-service piping, NPS 3 and smaller, shall be one of the following:

E. Aboveground domestic water piping, NPS 2-1/2 to NPS 3:

1. Drawn-temper copper tube, ASTM B88, Type L copper, solder-joint fittings; and soldered joints.
2. Drawn-temper copper tube, ASTM B88, Type L copper pressure-seal-joint fittings; and pressure-sealed joints.
3. Drawn-temper copper tube, ASTM B88, Type L; grooved-joint, copper-tube appurtenances; and grooved joints.

3.2 EARTHWORK

A. Comply with requirements in Section 31 20 00 "Earth Moving" for excavating, trenching, and backfilling.

3.3 INSTALLATION OF PIPING

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of domestic water piping. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install copper tubing under building slab according to CDA's "Copper Tube Handbook."

C. Install ductile-iron piping under building slab with restrained joints according to AWWA C600 and AWWA M41.

D. Install underground copper tube and ductile-iron pipe in PE encasement according to ASTM A674 or AWWA C105/A21.5.

E. Install valves according to the following:

1. Section 22 05 23.12 "Ball Valves for Plumbing Piping."
2. Section 22 05 23.14 "Check Valves for Plumbing Piping."
3. Section 22 05 23.15 "Gate Valves for Plumbing Piping."

F. Install water-pressure-reducing valves downstream from shutoff valves. Comply with requirements for pressure-reducing valves in Section 22 11 19 "Domestic Water Piping Specialties."

G. Install domestic water piping level and plumb.

H. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.

I. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

J. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal, and coordinate with other services occupying that space.

K. Install piping to permit valve servicing.

L. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than the system pressure rating used in applications below unless otherwise indicated.

M. Install piping free of sags and bends.

N. Install fittings for changes in direction and branch connections.

O. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty.

P. Install pressure gauges on suction and discharge piping for each plumbing pump and packaged booster pump. Comply with requirements for pressure gauges in Section 22 05 19 "Meters and Gages for Plumbing Piping."

Q. Install thermometers on inlet and outlet piping from each water heater. Comply with requirements for thermometers in Section 22 05 19 "Meters and Gages for Plumbing Piping."

R. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 22 05 17 "Sleeves and Sleeve Seals for Plumbing Piping."

S. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 22 05 17 "Sleeves and Sleeve Seals for Plumbing Piping."

T. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 22 05 18 "Escutcheons for Plumbing Piping."

3.4 JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.

D. Brazed Joints for Copper Tubing: Comply with CDA's "Copper Tube Handbook," "Brazed Joints" chapter.

E. Soldered Joints for Copper Tubing: Apply ASTM B813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B828 or CDA's "Copper Tube Handbook."

F. Pressure-Sealed Joints for Copper Tubing: Join copper tube and pressure-seal fittings with tools and procedure recommended by pressure-seal-fitting manufacturer. Leave insertion marks on pipe after assembly.

G. Push-on Joints for Copper Tubing: Clean end of tube. Measure insertion depth with manufacturer's depth gage. Join copper tube and push-on-joint fittings by inserting tube to measured depth.

H. Extruded-Tee Connections: Form tee in copper tube according to ASTM F2014. Use tool designed for copper tube; drill pilot hole, form collar for outlet, dimple tube to form seating stop, and braze branch tube into collar.

I. Joint Construction for Grooved-End Copper Tubing: Make joints according to AWWA C606. Roll groove ends of tubes. Lubricate and install gasket over ends of tubes or tube and fitting. Install coupling housing sections over gasket with keys seated in tubing grooves. Install and tighten housing bolts.

J. Joint Construction for Grooved-End, Ductile-Iron Piping: Make joints according to AWWA C606. Cut round-bottom grooves in ends of pipe at gasket-seat dimension required for specified (flexible or rigid) joint. Lubricate and install gasket over ends of pipes or pipe and fitting. Install coupling housing sections over gasket with keys seated in piping grooves. Install and tighten housing bolts.

K. Flanged Joints: Select appropriate asbestos-free, nonmetallic gasket material in size, type, and thickness suitable for domestic water service. Join flanges with gasket and bolts according to ASME B31.9.

L. Joints for Dissimilar-Material Piping: Make joints using adapters compatible with materials of both piping systems.

3.5 INSTALLATION OF TRANSITION FITTINGS

A. Install transition couplings at joints of dissimilar piping.

B. Transition Fittings in Underground Domestic Water Piping:

1. Fittings for NPS 1-1/2 and Smaller: Fitting-type coupling.
2. Fittings for NPS 2 and Larger: Sleeve-type coupling.

C. Transition Fittings in Aboveground Domestic Water Piping NPS 2 and Smaller: Plastic-to-metal transition fittings or unions.

3.6 INSTALLATION OF DIELECTRIC FITTINGS

A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.

B. Dielectric Fittings for NPS 2 and Smaller: Use dielectric couplings.

C. Dielectric Fittings for NPS 2-1/2 to NPS 4: Use dielectric flanges or flange kits.

3.7 INSTALLATION OF HANGERS AND SUPPORTS

A. Comply with requirements for hangers, supports, and anchor devices in Section 22 05 29 "Hangers and Supports for Plumbing Piping and Equipment."

B. Install hangers for copper tubing and piping, with maximum horizontal spacing and minimum rod diameters, to comply with MSS-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

C. Support horizontal piping within 12 inches of each fitting.

D. Support vertical runs of copper ductile iron galvanized steel and stainless steel tubing and piping to comply with MSS-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

3.8 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. When installing piping adjacent to equipment and machines, allow space for service and maintenance.

C. Connect domestic water piping to exterior water-service piping. Use transition fitting to join dissimilar piping materials.

D. Connect domestic water piping to water-service piping with shutoff valve; extend and connect to the following:

1. Water Heaters: Cold-water inlet and hot-water outlet piping in sizes indicated, but not smaller than sizes of water heater connections.
2. Plumbing Fixtures: Cold- and hot-water-supply piping in sizes indicated, but not smaller than that required by plumbing code.
3. Equipment: Cold- and hot-water-supply piping as indicated, but not smaller than equipment connections. Provide shutoff valve and union for each connection. Use flanges instead of unions for NPS 2-1/2 and larger.

3.9 IDENTIFICATION

A. Identify system components. Comply with requirements for identification materials and installation in Section 22 05 53 "Identification for Plumbing Piping and Equipment."

3.10 ADJUSTING

A. Perform the following adjustments before operation:

1. Close drain valves, hydrants, and hose bibbs.
2. Open shutoff valves to fully open position.
3. Open throttling valves to proper setting.
4. Adjust balancing valves in hot-water-circulation return piping to provide adequate flow.

a. Manually adjust ball-type balancing valves in hot-water-circulation return piping to provide hot-water flow in each branch.
b. Adjust calibrated balancing valves to flows indicated.

5. Remove plugs used during testing of piping and for temporary sealing of piping during installation.
6. Remove and clean strainer screens. Close drain valves and replace drain plugs.
7. Remove filter cartridges from housings and verify that cartridges are as specified for application where used and are clean and ready for use.
8. Check plumbing specialties and verify proper settings, adjustments, and operation.

3.11 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Piping Inspections:

a. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
b. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:

1) Roughing-in Inspection: Arrange for inspection of piping before concealing or closing in after roughing in and before setting fixtures.
2) Final Inspection: Arrange for authorities having jurisdiction to observe tests specified in "Piping Tests" Subparagraph below and to ensure compliance with requirements.

c. Re-inspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for re-inspection.
d. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

2. Piping Tests:

a. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
b. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.
c. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
d. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow it to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
e. Hydrostatic testing and documentation of test results for polypropylene piping to be in accordance with the manufacturer's instructions and submitted to the manufacturer upon successful completion per warranty requirements.

f. Repair leaks and defects with new materials, and retest piping or portion thereof until satisfactory results are obtained.
g. Prepare reports for tests and for corrective action required.

B. Domestic water piping will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.12 CLEANING

A. Clean and disinfect potable domestic water piping as follows:

1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652 or follow procedures described below:

a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
b. Fill and isolate system according to either of the following:

1) Fill system or part thereof with water/chlorine solution with at least 50 ppm of chlorine. Isolate with valves and allow to stand for 24 hours.

c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
d. Repeat procedures if biological examination shows contamination.
e. Submit water samples in sterile bottles to authorities having jurisdiction.

B. Clean non-potable domestic water piping as follows:

1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
2. Use purging procedures prescribed by authorities having jurisdiction or; if methods are not prescribed, follow procedures described below:

a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
b. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedures if biological examination shows contamination.

C. Prepare and submit reports of purging and disinfecting activities. Include copies of water-sample approvals from authorities having jurisdiction.

D. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

END OF SECTION 22 11 16

SECTION 22 11 19
DOMESTIC WATER PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Vacuum breakers.
2. Backflow preventers.
3. Balancing valves.
4. Temperature-actuated, water mixing valves.
5. Strainers for domestic water piping.
6. Outlet boxes.
7. Hose stations.
8. Hose bibbs.
9. Wall hydrants.
10. Post hydrants.
11. Roof hydrants.
12. Drain valves.
13. Water-hammer arresters.
14. Trap-seal primer device.
15. Trap-seal primer systems.
16. Flexible connectors.

B. Related Requirements:

1. Section 21 11 00 "Facility Fire-Suppression Water-Service Piping" for fire water-service backflow prevention devices.
2. Section 22 05 19 "Meters and Gauges for Plumbing Piping" for thermometers, pressure gauges, and flow meters in domestic water piping.
3. Section 22 45 00 "Emergency Plumbing Fixtures" for water tempering equipment.

1.3 DEFINITIONS

A. AMI: Advanced Metering Infrastructure.

B. AMR: Automatic Meter Reading.

C. FKM: A family of flouro-elastomer materials defined by ASTM D1418.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For domestic water piping specialties.

1. Include diagrams for power, signal, and control wiring.

1.5 INFORMATIONAL SUBMITTALS

A. Test and inspection reports.

B. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For domestic water piping specialties to include in emergency, operation, and maintenance manuals.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PIPING SPECIALTIES

A. Domestic water piping specialties intended to convey or dispense water for human consumption are to comply with the SDWA, requirements of authorities having jurisdiction, and NSF 61 and NSF 372, or to be certified in compliance with NSF 61 and NSF 372 by an American National Standards Institute (ANSI)-accredited third-party certification body that the weighted average lead content at wetted surfaces is less than or equal to 0.25 percent.

2.2 PERFORMANCE REQUIREMENTS

A. Minimum Working Pressure for Domestic Water Piping Specialties: 125 psig unless otherwise indicated.

2.3 VACUUM BREAKERS

A. Pipe-Applied, Atmospheric-Type Vacuum Breakers:

1. Standard: ASSE 1001.
2. Size: NPS 1/4 to NPS 3, as required to match connected piping.
3. Body: Bronze.
4. Inlet and Outlet Connections: Threaded.
5. Finish: Chrome plated.

B. Hose-Connection Vacuum Breakers:

1. Standard: ASSE 1011.
2. Body: Bronze, Non-removable, with manual drain.

3. Outlet Connection: Garden-hose threaded complying with ASME B1.20.7.
4. Finish: Chrome or nickel plated.

2.4 BACKFLOW PREVENTERS

A. Intermediate Atmospheric-Vent Backflow Preventers:

1. Standard: ASSE 1012.
2. Operation: Continuous-pressure applications.
3. Size: NPS ½ or 3/4 NPS.
4. Body: Bronze.
5. End Connections: Union, solder joint.
6. Finish: Rough bronze.

2.5 BALANCING VALVES

A. Copper-Alloy Calibrated Balancing Valves:

1. Type: Ball or Y-pattern globe valve with two readout ports and memory-setting indicator.
2. Body: Brass or bronze.
3. Size: Same as connected piping, but not larger than NPS 2.
4. Accessories: Meter hoses, fittings, valves, differential pressure meter, and carrying case.

B. Memory-Stop Balancing Valves:

1. Standard: MSS SP-110 for two-piece, copper-alloy ball valves.
2. Pressure Rating: 400-psig minimum CWP.
3. Size: NPS 2 or smaller.
4. Body: Copper alloy.
5. Port: Standard or full port.
6. Ball: Chrome-plated brass or stainless steel.
7. Seats and Seals: Replaceable.
8. End Connections: Solder joint or threaded.
9. Handle: Vinyl-covered steel with memory-setting device.

C. Automatic Flow Control Balancing Valves:

1. Flow Regulation: Plus or minus 5 percent over 95 percent of the working range.
2. Pressure Rating: 200 psig.
3. Size: NPS 2 or smaller.
4. Body: Stainless steel or brass.
5. Flow Cartridge: Stainless steel or anti-scale polymer.
6. End Connections: Threaded or solder joint.

2.6 TEMPERATURE-ACTUATED, WATER MIXING VALVES

A. Primary, Thermostatic, Water Mixing Valves:

1. Standard: ASSE 1017.
2. Pressure Rating: 125 psig minimum unless otherwise indicated.
3. Type: Cabinet-type, thermostatically controlled, water mixing valve.

4. Material: Bronze body with corrosion-resistant interior components.
5. Connections: Threaded union inlets and outlet.
6. Accessories: Manual temperature control, check stops on hot- and cold-water supplies, and adjustable, temperature-control handle.
7. Tempered-Water Setting: <109 deg. F>.
8. Tempered-Water Design Flow Rate: 96 GPM.
9. Selected Valve Flow Rate at 10-psig Pressure Drop: 96 GPM.
10. Pressure Drop at Design Flow Rate: 10 psig.
11. Valve Finish: Rough bronze.
12. Piping Finish: Copper.
13. Cabinet: Factory fabricated, stainless steel, surface mounting and with hinged, stainless steel door.

2.7 OUTLET BOXES

A. Icemaker Outlet Boxes:

1. Mounting: Recessed. Fire rated.
2. Material and Finish: Enameled-steel, epoxy-painted-steel, or Stainless steel box and faceplate.
3. Faucet: Valved fitting complying with ASME A112.18.1. Include NPS 1/2 or smaller copper tube outlet.
4. Accessory: Water hammer arrestor.
5. Supply Shutoff Fitting: NPS 1/2 gate, globe, or ball valve and NPS 1/2 copper, water tubing.

2.8 HOSE STATIONS

2.9 HOSE BIBBS

A. Hose Bibbs:

1. Standard: ASME A112.18.1 for sediment faucets.
2. Body Material: Bronze.
3. Seat: Bronze, replaceable.
4. Supply Connections: NPS 1/2 or NPS 3/4 threaded or solder-joint inlet.
5. Outlet Connection: Garden-hose thread complying with ASME B1.20.7.
6. Pressure Rating: 125 psig.
7. Vacuum Breaker: Integral non-removable, drainable, hose-connection vacuum breaker complying with ASSE 1011.
8. Finish for Equipment Rooms: Rough bronze, or chrome or nickel plated.
9. Finish for Service Areas: Rough bronze.
10. Finish for Finished Rooms: Chrome or nickel plated.
11. Operation for Equipment Rooms: operating key.
12. Operation for Service Areas: Operating key.
13. Operation for Finished Rooms: Operating key.
14. Include operating key with each operating-key hose bibb.
15. Include integral wall flange with each chrome- or nickel-plated hose bibb.

2.10 WALL HYDRANTS

A. Non-freeze Wall Hydrants:

1. Standard: ASME A112.21.3M for concealed-outlet, self-draining wall hydrants.
2. Pressure Rating: 125 psig.
3. Operation: Loose key.
4. Casing and Operating Rod: Of length required to match wall thickness. Include wall clamp.
5. Inlet: NPS 3/4 or NPS 1.
6. Outlet, Concealed: With integral vacuum breaker and garden-hose thread complying with ASME B1.20.7.
7. Box: Deep, flush mounted with cover.
8. Box and Cover Finish: Polished nickel bronze.
9. Outlet, Exposed: With integral vacuum breaker and garden-hose thread complying with ASME B1.20.7.
10. Nozzle and Wall-Plate Finish: Polished nickel bronze.
11. Operating Keys(s): One with each wall hydrant.

2.11 POST HYDRANTS

A. Non-freeze, Draining-Type Post Hydrants:

1. Standard: ASME A112.21.3M.

2. Type: Non-Freeze, exposed-outlet roof hydrant with coated cast-iron head and lift handle with lock option. Provide with deck flange and under deck clamp.

3. Casing and Operating Rod: Bronze interior parts, galvanized-steel casing, and bronze valve housing designed with hole to drain.

4. Inlet: NPS 3/4.

5. Outlet: Garden-hose thread complying with ASME B1.20.7.

6. Vacuum Breaker:

a. Non-Removable, drainable, hose-connection vacuum breaker complying with ASSE 1011 or backflow preventer complying with ASSE 1052.

b. Garden-hose thread complying with ASME B1.20.7 on outlet.

2.12 ROOF HYDRANTS

A. Non-freeze, Draining-Type Roof Hydrants:

1. Standard: ASME A112.21.3M.
2. Type: Non-Freeze, exposed-outlet roof hydrant with coated cast-iron head and lift handle with lock option. Provide with deck flange and under deck clamp.
3. Casing and Operating Rod: Bronze interior parts, galvanized-steel casing, and bronze valve housing designed with hole to drain.
4. Inlet: NPS 3/4.

5. Outlet: Garden-hose thread complying with ASME B1.20.7.
6. Vacuum Breaker:

    a. Non-Removable, drainable, hose-connection vacuum breaker complying with ASSE 1011 or backflow preventer complying with ASSE 1052.
    b. Garden-hose thread complying with ASME B1.20.7 on outlet.

2.13 DRAIN VALVES

A. Ball-Valve-Type, Hose-End Drain Valves:

1. Standard: MSS SP-110 for standard-port, two-piece ball valves.
2. Pressure Rating: 400-psig minimum CWP.
3. Size: NPS 3/4.
4. Body: Copper alloy.
5. Ball: Chrome-plated brass.
6. Seats and Seals: Replaceable.
7. Handle: Vinyl-covered steel.
8. Inlet: Threaded or solder joint.
9. Outlet: Threaded, short nipple with garden-hose thread complying with ASME B1.20.7 and cap with brass chain.

B. Stop-and-Waste Drain Valves:

1. Standard: MSS SP-110 for ball valves or MSS SP-80 for gate valves.
2. Pressure Rating: 200-psig minimum CWP or Class 125.
3. Size: NPS 3/4.
4. Body: Copper alloy or ASTM B62 bronze.
5. Drain: NPS 1/8 side outlet with cap.

2.14 WATER-HAMMER ARRESTERS

A. Water-Hammer Arresters:

1. Standard: ASSE 1010 or PDI-WH 201.
2. Type: Metal bellows.
3. Size: ASSE 1010, Sizes AA and A through F, or PDI-WH 201, Sizes A through F.

2.15 TRAP-SEAL PRIMER DEVICE

A. Supply-Type, Trap-Seal Primer Device:

1. Standard: ASSE 1018.
2. Pressure Rating: 125 psig minimum.
3. Body: Bronze.
4. Inlet and Outlet Connections: NPS 1/2 threaded, union, or solder joint.
5. Gravity Drain Outlet Connection: NPS 1/2 threaded or solder joint.
6. Finish: Chrome plated, or rough bronze for units used with pipe or tube that is not chrome finished.

B. Drainage-Type, Trap-Seal Primer Device:

1. Standard: ASSE 1044, lavatory P-trap with NPS 3/8 minimum, trap makeup connection.
2. Size: NPS 1/2 minimum.
3. Material: Chrome-plated, cast brass.

2.16 TRAP-SEAL PRIMER SYSTEMS

A. Trap-Seal Primer Systems:

1. Standard: ASSE 1044.
2. Inlet Size: NPS 1/2, ASTM B88, Type L; copper, water tubing.
3. Cabinet: Surface-mounted steel box with stainless steel cover.
4. Electric Controls: 24-hour timer, solenoid valve, and manual switch for 120 V ac power.

    a. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

5. Vacuum Breaker: ASSE 1001.
6. Number Outlets: Four.
7. Size Outlets: NPS 1/2.

2.17 FLEXIBLE CONNECTORS

A. Bronze-Hose Flexible Connectors: Corrugated-bronze tubing with bronze wire-braid covering and ends brazed to inner tubing.

1. Working-Pressure Rating: Minimum 200 psig.
2. End Connections NPS 2 and Smaller: Threaded copper pipe or plain-end copper tube.

B. Stainless Steel-Hose Flexible Connectors: Corrugated-stainless steel tubing with stainless steel wire-braid covering and ends welded to inner tubing.

1. Working-Pressure Rating: Minimum 200 psig.
2. End Connections NPS 2 and Smaller: Threaded steel-pipe nipple.

PART 3 - EXECUTION

3.1 INSTALLATION OF PIPING SPECIALTIES

A. Backflow Preventers: Install in each water supply to mechanical equipment and systems and to other equipment and water systems that may be sources of contamination. Comply with authorities having jurisdiction.

1. Locate backflow preventers in same room as connected equipment or system.
2. Install drain for backflow preventers with atmospheric-vent drain connection with air-gap fitting, fixed air-gap fitting, or equivalent positive pipe separation of at least two pipe diameters in drain piping and pipe-to-floor drain. Locate air-gap device attached to or under backflow preventer. Simple air breaks are unacceptable for this application.
3. Do not install bypass piping around backflow preventers.

B. Water Regulators: Install with inlet and outlet shutoff valves and bypass with memory-stop balancing valve. Install pressure gauges on inlet and outlet.

C. Balancing Valves: Install in locations where they can easily be adjusted. Set at indicated design flow rates.

D. Temperature-Actuated, Water Mixing Valves: Install with check stops or shutoff valves on inlets and with shutoff valve on outlet.

1. Install cabinet-type units recessed in or surface mounted on wall as specified.

E. Y-Pattern Strainers: For water, install on supply side of each control valve water pressure-reducing valve solenoid valve, and pump.

F. Outlet Boxes: Install boxes recessed in wall. Install 1-1/2-by-3-1/2-inch fire-retardant-treated-wood blocking, wall reinforcement between studs. Comply with requirements for fire-retardant-treated-wood blocking in Section 06 10 00 "Rough Carpentry."

G. Hose Stations: Install with check stops or shutoff valves on inlets and with thermometer on outlet.

1. Install cabinet-type units recessed in or surface mounted on wall as specified. Install 1-1/2-by-3-1/2-inch fire-retardant-treated-wood blocking, wall reinforcement between studs. Comply with requirements for fire-retardant-treated-wood blocking in Section 06 10 00 "Rough Carpentry."

H. Water-Hammer Arresters: Install in water piping in accordance with PDI-WH 201.

I. Supply-Type, Trap-Seal Primer Device: Install with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting. Adjust valve for proper flow.

J. Drainage-Type, Trap-Seal Primer Device: Install as lavatory trap with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting.

K. Trap-Seal Primer Systems: Install with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting. Adjust system for proper flow.

3.2 PIPING CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. When installing piping specialties adjacent to equipment and machines, allow space for service and maintenance.

3.3 ELECTRICAL CONNECTIONS

A. Connect wiring in accordance with Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables."

B. Ground equipment in accordance with Section 26 05 26 "Grounding and Bonding for Electrical Systems."

C. Install electrical devices furnished by manufacturer, but not factory mounted, in accordance with NFPA 70 and NECA 1.

3.4 CONTROL CONNECTIONS

A. Connect control wiring in accordance with Section 26 05 23 "Control-Voltage Electrical Power Cables."

3.5 IDENTIFICATION

A. Plastic Labels for Equipment: Install engraved equipment nameplate or sign on or near each of the following:

1. Vacuum breakers.
2. Backflow preventers.
3. Balancing valves.
4. Temperature-actuated, water mixing valves.
5. Outlet boxes.
6. Hose stations.
7. Wall hydrants.
8. Post hydrants.
9. Trap-seal primer device.
10. Trap-seal primer systems.

B. Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to identifying unit. Nameplates and signs are specified in Section 22 05 53 "Identification for Plumbing Piping and Equipment."

3.6 ADJUSTING

A. Set field-adjustable flow set points of balancing valves.

B. Set field-adjustable temperature set points of temperature-actuated, water mixing valves.

C. Adjust each pressure vacuum breaker and double-check, backflow-prevention assembly in accordance with manufacturer's written instructions, authorities having jurisdiction and the device's reference standard.

3.7 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

C. Perform the following tests and inspections with the assistance of a factory-authorized service representative.

1. Test each pressure vacuum breaker reduced-pressure-principle backflow preventer double-check, backflow-prevention assembly according to authorities having jurisdiction and the device's reference standard.
2. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
3. Operational Test: After electrical circuitry has been energized, start units to confirm unit operation.
4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Domestic water piping specialties will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports.

END OF SECTION 22 11 19

SECTION 22 11 23.21
INLINE, DOMESTIC-WATER PUMPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. In-line, seal-less centrifugal pumps.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include construction materials, rated capacities, certified performance curves with operating points plotted on curves, operating characteristics, electrical characteristics, and furnished specialties and accessories.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Detail pumps and adjacent equipment. Show support locations, type of support, weight on each support, required clearances, and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Structural members to which pumps will be attached.
2. Size and location of initial access modules for acoustical tile.

B. Seismic Qualification Data: Certificates, for inline, domestic-water pumps, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

C. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For inline, domestic-water pumps to include in operation and maintenance manuals.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Retain shipping flange protective covers and protective coatings during storage.

B. Protect bearings and couplings against damage.

C. Comply with pump manufacturer's written instructions for handling.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. UL Compliance: UL 778 for motor-operated water pumps.

C. Drinking Water System Components - Health Effects and Drinking Water System Components - Lead Content Compliance: NSF 61 and NSF 372.

2.2 IN-LINE, SEALLESS CENTRIFUGAL PUMPS

A. Description: Factory-assembled and -tested, in-line, close-coupled, canned-motor, sealless, overhung-impeller centrifugal pumps.

B. Capacities and Characteristics:

1. Capacity: 10gpm.
2. Total Dynamic Head: 9.5 feet.
3. Inlet and Outlet Size: 3/4NPS.
4. Pump Control: Thermostat and Timer.
5. Motor Horsepower: 1/40 HP.
6. Electrical Characteristics:

    a. Volts: 115 V.
    b. Phase: Single phase.
    c. Hertz: 60 Hz.
    d. Full-Load Amperes: 20 A.

C. Pump Construction:

1. Pump and Motor Assembly: Hermetically sealed, replaceable-cartridge type with motor and impeller on common shaft and designed for installation with pump and motor shaft horizontal.
2. Minimum Working Pressure: 125 psig.

3. Maximum Continuous Operating Temperature: 220 deg F.
4. Casing: Bronze and Stainless steel, with threaded or companion-flange connections.
5. Impeller: Plastic, composite or stainless steel.
6. Motor: Three speed.

2.3 MOTORS

A. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Section 22 05 13 "Common Motor Requirements for Plumbing Equipment."

1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.

2.4 CONTROLS

A. Pressure Switches: Electric, adjustable for control of water-supply pump.

1. Type: Water-immersion pressure sensor, for installation in piping.
2. Enclosure: NEMA 250, Type 4X.
3. Operation of Pump: On or off.

B. Timers: Electric, for control of hot-water circulation pump.

1. Type: Programmable, seven-day clock with manual override on-off switch.
2. Enclosure: NEMA 250, Type 1, suitable for wall mounting.
3. Operation of Pump: On or off.
4. Transformer: Provide if required.
5. Power Requirement: 120 V A.C.
6. Programmable Sequence of Operation: Up to two on-off cycles each day for seven days.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in for domestic-water-piping system to verify actual locations of piping connections before pump installation.

3.2 PUMP INSTALLATION

A. Comply with Manufacturer’s recommendations for installation.

B. Mount pumps in orientation complying with manufacturer's written instructions.

C. Pump Mounting:

1. Install vertically mounted, in-line, close-coupled centrifugal pumps with cast-iron base mounted on concrete base using vibration isolation type and deflection as specified.

D. Install continuous-thread hanger rods and vibration isolation of size required to support pump weight.

1. Comply with requirements for hangers and supports specified in Section 22 05 29 "Hangers and Supports for Plumbing Piping and Equipment."

E. Install pressure switches in water-supply piping.

F. Install thermostats in hot-water return piping.

G. Install timers on wall in Mechanical Room.

3.3 PIPING CONNECTIONS

A. Comply with requirements for piping specified in Section 22 11 16 "Domestic Water Piping." Drawings indicate general arrangement of piping, fittings, and specialties.

B. Where installing piping adjacent to inline, domestic-water pumps, allow space for service and maintenance.

C. Connect domestic-water piping to pumps. Install suction and discharge piping equal to or greater than size of pump nozzles.

1. Install flexible connectors adjacent to pumps in suction and discharge piping of the following pumps:

a. Horizontally mounted, in-line, close-coupled centrifugal pumps.
b. Comply with requirements for flexible connectors specified in Section 22 11 16 "Domestic Water Piping."

D. Install shutoff valve and strainer on suction side of each pump, and check, shutoff, and throttling valves on discharge side of each pump. Install valves same size as connected piping. Comply with requirements for strainers specified in Section 22 11 19 "Domestic Water Piping Specialties." Comply with requirements for valves specified in the following:

1. Section 22 05 23.12 "Ball Valves for Plumbing Piping."
2. Section 22 05 23.14 "Check Valves for Plumbing Piping."
3. Install pressure gauge at suction of each pump and pressure gauge at discharge of each pump. Install at integral pressure-gauge tappings where provided or install pressure-gauge connectors in suction and discharge piping around pumps. Comply with requirements for pressure gauges and snubbers specified in Section 22 05 19 "Meters and Gages for Plumbing Piping."

3.4 CONTROL CONNECTIONS

A. Install control and electrical power wiring to field-mounted control devices.

B. Connect control wiring between temperature controllers and devices.

3.5 IDENTIFICATION

A. Identify system components. Comply with requirements for identification specified in Section 22 05 53 "Identification for Plumbing Piping and Equipment" for identification of pumps.

3.6 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

C. Perform tests and inspections with the assistance of a factory-authorized service representative.

D. Tests and Inspections:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Inline, domestic-water pump will be considered defective if it does not pass tests and inspections.

F. Prepare test and inspection reports.

3.7 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.
2. Check piping connections for tightness.
3. Clean strainers on suction piping.
4. Set pressure switches, thermostats, timers, and time-delay relays for automatic starting and stopping operation of pumps.
5. Perform the following startup checks for each pump before starting:

    a. Verify bearing lubrication.
    b. Verify that pump is free to rotate by hand and that pump for handling hot liquid is free to rotate with pump hot and cold. If pump is bound or drags, do not operate until cause of trouble is determined and corrected.
    c. Verify that pump is rotating in the correct direction.

6. Prime pump by opening suction valves and closing drains, and prepare pump for operation.
7. Start motor.
8. Open discharge valve slowly.
9. Adjust temperature settings on thermostats.
10. Adjust timer settings.

3.8 ADJUSTING

A. Adjust inline, domestic-water pumps to function smoothly, and lubricate as recommended by manufacturer.

B. Adjust initial temperature set points.

C. Set field-adjustable switches and circuit-breaker trip ranges as indicated.

END OF SECTION 22 11 23.21

SECTION 22 13 16
SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Copper tube and fittings.
2. PVC pipe and fittings.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.5 WARRANTY

A. Listed manufacturers to provide labeling and warranty of their respective products.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Soil, Waste, and Vent Piping: 10-foot head of water.

2.2 PIPING MATERIALS

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.3 COPPER TUBE AND FITTINGS

A. Copper Type DWV Tube: ASTM B 306, drainage tube, drawn temper.

B. Copper Drainage Fittings: ASME B16.23, cast copper or ASME B16.29, wrought copper, solder-joint fittings.

C. Hard Copper Tube: ASTM B 88, Type L and Type M, water tube, drawn temper.

D. Soft Copper Tube: ASTM B 88, Type L, water tube, annealed temper.

E. Copper Pressure Fittings:

1. Copper Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint fittings. Furnish wrought-copper fittings if indicated.
2. Copper Unions: MSS SP-123, copper-alloy, hexagonal-stock body with ball-and-socket, metal-to-metal seating surfaces, and solder-joint or threaded ends.

F. Copper Flanges: ASME B16.24, Class 150, cast copper with solder-joint end.

1. Flange Gasket Materials: ASME B16.21, full-face, flat, nonmetallic, asbestos-free, 1/8-inch maximum thickness unless thickness or specific material is indicated.
2. Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

G. Solder: ASTM B 32, lead free with ASTM B 813, water-flushable flux.

2.4 PVC PIPE AND FITTINGS

A. Comply with NSF 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-DWV" for plastic drain, waste, and vent piping and "NSF-sewer" for plastic sewer piping.

B. Solid-Wall PVC Pipe: ASTM D 2665, drain, waste, and vent.

C. PVC Socket Fittings: ASTM D 2665, made to ASTM D 3311, drain, waste, and vent patterns and to fit Schedule 40 pipe.

D. Adhesive Primer: ASTM F 656.

E. Solvent Cement: ASTM D 2564.

2.5 SPECIALTY PIPE FITTINGS

A. Transition Couplings:

1. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.
2. Unshielded, Non-pressure Transition Couplings:

a. Standard: ASTM C 1173.

b. Description: Elastomeric, sleeve-type, reducing or transition pattern. Include shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.
c. End Connections: Same size as and compatible with pipes to be joined.
d. Sleeve Materials:

1) For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
2) For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.

3. Shielded, Non-pressure Transition Couplings:

a. Standard: ASTM C 1460.
b. Description: Elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.
c. End Connections: Same size as and compatible with pipes to be joined.

PART 3 - EXECUTION

3.1 EARTH MOVING

A. Comply with requirements for excavating, trenching, and backfilling specified in Section 31 20 00 "Earth Moving."

3.2 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems.

1. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations.
2. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

E. Install piping at indicated slopes.

F. Install piping free of sags and bends.

G. Install fittings for changes in direction and branch connections.

H. Install piping to allow application of insulation.

I. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends.

1. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical.
2. Use long-turn, double Y-branch and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe.

    a. Straight tees, elbows, and crosses may be used on vent lines.

3. Do not change direction of flow more than 90 degrees.
4. Use proper size of standard increasers and reducers if pipes of different sizes are connected.

    a. Reducing size of waste piping in direction of flow is prohibited.

J. Lay buried building waste piping beginning at low point of each system.

1. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream.
2. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.
3. Maintain swab in piping and pull past each joint as completed.

K. Install soil and waste and vent piping at the following minimum slopes unless otherwise indicated:

1. Building Sanitary Waste: 2 percent downward in direction of flow for piping NPS 2 and smaller; 1 percent downward in direction of flow for piping NPS 4 and larger.
2. Horizontal Sanitary Waste Piping: 2 percent downward in direction of flow.
3. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.

L. Install aboveground copper tubing according to CDA's "Copper Tube Handbook."

M. Install aboveground PVC piping according to ASTM D 2665.

N. Install PVC piping according to ASTM D 2321.

O. Install engineered soil and waste and vent piping systems as follows:

1. Combination Waste and Vent: Comply with standards of authorities having jurisdiction.

2. Install buried piping inside building between wall and floor penetrations and connection to sanitary sewer piping outside building with restrained joints.
3. Anchor pipe to wall or floor. Install thrust-block supports at vertical and horizontal offsets.
4. Install encasement on piping according to ASTM A 674 or AWWA C105/A 21.5.

P. Install underground, copper, force-main tubing according to CDA's "Copper Tube Handbook."

Q. Plumbing Specialties:

1. Install backwater valves in sanitary waster gravity-flow piping.

a. Comply with requirements for backwater valves specified in Section 22 13 19 "Sanitary Waste Piping Specialties."

2. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers in sanitary waste gravity-flow piping.

a. Install cleanout fitting with closure plug inside the building in sanitary drainage force-main piping.
b. Comply with requirements for cleanouts specified in Section 22 13 19 "Sanitary Waste Piping Specialties."

3. Install drains in sanitary waste gravity-flow piping.

a. Comply with requirements for drains specified in Section 22 13 19 "Sanitary Waste Piping Specialties."

R. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

S. Install sleeves for piping penetrations of walls, ceilings, and floors.

1. Comply with requirements for sleeves specified in Section 22 05 17 "Sleeves and Sleeve Seals for Plumbing Piping."

T. Install sleeve seals for piping penetrations of concrete walls and slabs.

1. Comply with requirements for sleeve seals specified in Section 22 05 17 "Sleeves and Sleeve Seals for Plumbing Piping."

U. Install escutcheons for piping penetrations of walls, ceilings, and floors.

1. Comply with requirements for escutcheons specified in Section 22 05 18 "Escutcheons for Plumbing Piping."

3.3 JOINT CONSTRUCTION

A. Join copper tube and fittings with soldered joints according to ASTM B 828. Use ASTM B 813, water-flushable, lead-free flux and ASTM B 32, lead-free-alloy solder.

B. Grooved Joints: Cut groove ends of pipe according to AWWA C606. Lubricate and install gasket over ends of pipes or pipe and fitting. Install coupling housing sections, over gasket, with keys seated in piping grooves. Install and tighten housing bolts.

C. Plastic, Non-pressure-Piping, Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:

1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
2. PVC Piping: Join according to ASTM D 2855 and ASTM D 2665 appendixes.

3.4 SPECIALTY PIPE FITTING INSTALLATION

A. Transition Couplings:

1. Install transition couplings at joints of piping with small differences in ODs.
2. In Waste Drainage Piping: Unshielded, non-pressure transition couplings.
3. In Aboveground Force Main Piping: Fitting-type transition couplings.
4. In Underground Force Main Piping:

    a. NPS 1-1/2 and Smaller: Fitting-type transition couplings.
    b. NPS 2 and Larger: Pressure transition couplings.

3.5 VALVE INSTALLATION

A. Comply with requirements in Section 22 05 23.12 "Ball Valves for Plumbing Piping," for Plumbing Piping," and Section 22 05 23.15 "Gate Valves for Plumbing Piping" for general-duty valve installation requirements.

B. Shutoff Valves:

1. Install gate or full-port ball valve for piping NPS 2 and smaller.

C. Check Valves: Install swing check valve, between pump and shutoff valve, on each sewage pump discharge.

D. Backwater Valves: Install backwater valves in piping subject to backflow.

1. Horizontal Piping: Horizontal backwater valves. Use normally closed type unless otherwise indicated.
2. Floor Drains: Drain outlet backwater valves unless drain has integral backwater valve.
3. Install backwater valves in accessible locations.
4. Comply with requirements for backwater valve specified in Section 22 13 19 "Sanitary Waste Piping Specialties."

3.6 INSTALLATION OF HANGERS AND SUPPORTS

A. Comply with requirements for seismic-restraint devices specified in Section 22 05 48 "Vibration and Seismic Controls for Plumbing Piping and Equipment."

B. Comply with requirements for pipe hanger and support devices and installation specified in Section 22 05 29 "Hangers and Supports for Plumbing Piping and Equipment." Section 22 05 48.13 "Vibration Controls for Plumbing Piping and Equipment."

1. Install carbon-steel pipe hangers for horizontal piping in noncorrosive environments.
2. Install stainless-steel pipe hangers for horizontal piping in corrosive environments.
3. Install carbon-steel pipe support clamps for vertical piping in noncorrosive environments.
4. Install stainless-steel pipe support clamps for vertical piping in corrosive environments.
5. Vertical Piping: MSS Type 8 or Type 42, clamps.
6. Install individual, straight, horizontal piping runs:

    a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
    b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.

c. Longer Than 100 Feet if Indicated: MSS Type 49, spring cushion rolls.

7. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
8. Base of Vertical Piping: MSS Type 52, spring hangers.

C. Install hangers for copper soil piping, with maximum horizontal spacing and minimum rod diameters, to comply with MSS-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

D. Install hangers for PVC piping, with maximum horizontal spacing and minimum rod diameters, to comply with manufacturer's written instructions, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

E. Support horizontal piping and tubing within 12 inches of each fitting, valve, and coupling.

F. Support vertical runs of copper soil piping to comply with MSS-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

G. Support vertical runs of PVC piping to comply with manufacturer's written instructions, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

3.7 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.

C. Connect waste and vent piping to the following:

1. Plumbing Fixtures: Connect waste piping in sizes indicated, but not smaller than required by plumbing code.
2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
3. Plumbing Specialties: Connect waste and vent piping in sizes indicated, but not smaller than required by plumbing code.
4. Install test tees (wall cleanouts) in conductors near floor and floor cleanouts with cover flush with floor.

D. Where installing piping adjacent to equipment, allow space for service and maintenance of equipment.

E. Make connections according to the following unless otherwise indicated:

1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.

3.8 IDENTIFICATION

A. Identify exposed sanitary waste and vent piping.

B. Comply with requirements for identification specified in Section 22 05 53 "Identification for Plumbing Piping and Equipment."

3.9 FIELD QUALITY CONTROL

A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.

1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

B. Re-inspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for re-inspection.

C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

D. Test sanitary waste and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:

1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired.

    a. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.

2. Leave uncovered and unconcealed new, altered, extended, or replaced waste and vent piping until it has been tested and approved.

    a. Expose work that was covered or concealed before it was tested.

3. Roughing-in Plumbing Test Procedure: Test waste and vent piping except outside leaders on completion of roughing-in.

    a. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water.
    b. From 15 minutes before inspection starts to completion of inspection, water level must not drop.
    c. Inspect joints for leaks.

4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight.

    a. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1-inch W.G.
    b. Use U-tube or manometer inserted in trap of water closet to measure this pressure.

c. Air pressure must remain constant without introducing additional air throughout period of inspection.
d. Inspect plumbing fixture connections for gas and water leaks.

5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
6. Prepare reports for tests and required corrective action.

E. Test force-main piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:

1. Leave uncovered and unconcealed new, altered, extended, or replaced force-main piping until it has been tested and approved.

a. Expose work that was covered or concealed before it was tested.

2. Cap and subject piping to static-water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials.

a. Isolate test source and allow to stand for four hours.
b. Leaks and loss in test pressure constitute defects that must be repaired.

3. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
4. Prepare reports for tests and required corrective action.

3.10 CLEANING AND PROTECTION

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect sanitary waste and vent piping during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

C. Place plugs in ends of uncompleted piping at end of day and when work stops.

D. Exposed PVC Piping: Protect plumbing vents exposed to sunlight with two coats of water-based latex paint.

E. Repair damage to adjacent materials caused by waste and vent piping installation.

3.11 PIPING SCHEDULE

A. Aboveground, soil and waste piping NPS 6 and smaller shall be any of the following:

1. Copper Type DWV tube, copper drainage fittings, and soldered joints.
2. Solid-wall PVC pipe, PVC socket fittings, and solvent-cemented joints.

B. Aboveground, vent piping NPS 4 and smaller shall be any of the following:

1. Copper Type DWV tube, copper drainage fittings, and soldered joints.
2. Solid-wall PVC pipe, PVC socket fittings, and solvent-cemented joints.

C. Underground, soil, waste, and vent piping NPS 6 and smaller shall be any of the following:

1. Solid wall PVC pipe, PVC socket fittings, and solvent-cemented joints.
2. Dissimilar Pipe-Material Couplings: Shielded, non-pressure transition couplings.

END OF SECTION 22 13 16

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SECTION 22 13 19
SANITARY WASTE PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Backwater valves.
2. Cleanouts.
3. Air-admittance valves.
4. Miscellaneous sanitary drainage piping specialties.

B. Related Requirements:

1. Section 07 62 00 "Sheet Metal Flashing and Trim" for metal roof flashing assemblies.
2. Section 07 72 00 "Roof Accessories" for preformed flashings.
3. Section 07 84 13 "Penetration Firestopping" for through-penetration firestop assemblies.
4. Section 22 13 23 "Sanitary Waste Interceptors" for metal and concrete interceptors outside the building, grease interceptors, grease-removal devices, oil interceptors, and solids interceptors.
5. Section 22 14 23 "Storm Drainage Piping Specialties" for trench drains for storm water, channel drainage systems for storm water, roof drains, and catch basins.
6. Section 22 43 00 "Healthcare Plumbing Fixtures" for plaster sink interceptors.
7. Section 33 42 00 "Storm water Conveyance" for storm drainage piping and piping specialties outside the building.

1.3 DEFINITIONS

A. PVC: Polyvinyl chloride.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:

1. Show fabrication and installation details for frost-resistant vent terminals.

1.5 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For sanitary waste piping specialties to include in emergency, operation, and maintenance manuals.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTIONS

A. Sanitary waste piping specialties shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF 14 for plastic sanitary waste piping specialty components.

2.2 BACKWATER VALVES

A. Horizontal, Cast-Iron Backwater Valves:

1. Standard: ASME A112.14.1.
2. Size: Same as connected piping.
3. Body: Cast iron.
4. Cover: Cast iron with bolted or threaded access check valve.
5. End Connections: Hub and spigot or hub-less.
6. Type Check Valve: Removable, bronze, swing check, factory assembled or field modified to hang open for airflow unless subject to backflow condition.
7. Extension: ASTM A74, Service Class; full-size, cast-iron, soil-pipe extension to field-installed cleanout at floor; replaces backwater valve cover.

B. Drain-Outlet Backwater Valves:

1. Size: Same as floor drain outlet.
2. Body: Cast iron or bronze; made for vertical installation in bottom outlet of floor drain.
3. Check Valve: Removable ball float.
4. Inlet: Threaded.
5. Outlet: Threaded or spigot.

C. Horizontal, Plastic Backwater Valves:

1. Size: Same as connected piping.
2. Body: PVC.
3. Cover: Same material as body with threaded access to check valve.
4. Check Valve: Removable swing check.
5. End Connections: Socket type.

2.3 CLEANOUTS

A. Cast-Iron Exposed Cleanouts:

1. Standard: ASME A112.36.2M.
2. Size: Same as connected drainage piping
3. Body Material: Hub-less, cast-iron soil pipe test tee as required to match connected piping.
4. Closure: Countersunk or raised-head, cast-iron plug.
5. Closure Plug Size: Same as or not more than one size smaller than cleanout size.

B. Stainless Steel Exposed Cleanouts:

1. Standard: ASME A112.3.1.
2. Size: Same as connected drainage piping.
3. Body Material: Stainless steel tee with side cleanout as required to match connected piping.
4. Closure: Stainless steel plug with seal.

C. Stainless Steel Exposed Floor Cleanouts:

1. Standards: ASME A112.3.1; NSF listed.
2. Size: Same as connected branch.
3. Housing: Type 304 stainless steel.
4. Closure: Stainless steel with seal, Plastic plug.
5. Body or Ferrule: Stainless steel.
6. Clamping Device: Not required.
7. Outlet Connection: Inside caulk.
8. Frame and Cover Material and Finish: Stainless steel.
9. Frame and Cover Shape: Round.
10. Top-Loading Classification: Medium Duty.

D. Cast-Iron Wall Cleanouts:

1. Wall Access, Cover Plate: Round, deep, chrome-plated bronze cover plate with screw.
2. Wall Access, Frame and Cover: Round, stainless steel.

2.4 AIR-ADMITTANCE VALVES

A. Fixture Air-Admittance Valves:

1. Standard: ASSE 1051, Type A for single fixture or Type B for branch piping.
2. Housing: Plastic.
3. Operation: Mechanical sealing diaphragm.
4. Size: Same as connected fixture or branch vent piping.

B. Stack Air-Admittance Valves:

1. Standard: ASSE 1050 for vent stacks.
2. Housing: Plastic.
3. Operation: Mechanical sealing diaphragm.
4. Size: Same as connected stack vent or vent stack.

C. Wall Box for Air-Admittance Valves:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

   a. Oatey.
   b. Sioux Chief Manufacturing Company, Inc.
   c. Studor, Inc.

2. Description: White plastic housing with white plastic grille, made for recessed installation. Include bottom pipe connection and space to contain one air-admittance valve.
3. Size: Approximately 6 inches wide by 6 inches high by 4 inches deep.

2.5 MISCELLANEOUS SANITARY DRAINAGE PIPING SPECIALTIES

A. Open Drains:

1. Description: Shop or field fabricate from PVC ASTM A74, Service Class, hub-and-spigot, cast-iron soil-pipe fittings. Include P-trap, hub-and-spigot riser section; and where required, increaser fitting joined with ASTM C564 rubber gaskets.
2. Size: Same as connected waste piping with increaser fitting of size indicated.

B. Deep-Seal Traps:

1. Description: Cast-iron or bronze casting, with inlet and outlet matching connected piping and cleanout trap-seal primer valve connection.
2. Size: Same as connected waste piping.

   a. NPS 2: 4-inch-minimum water seal.
   b. NPS 2-1/2 and Larger: 5-inch-minimum water seal.

C. Floor-Drain, Trap-Seal Primer Fittings:
1. Description: PVC, with threaded inlet and threaded or spigot outlet, and trap-seal primer valve connection.
2. Size: Same as floor drain outlet with NPS 1/2 side inlet.

D. Floor-Drain, Inline Trap Seal:

1. Description: Inline floor drain trap seal, forming a physical barrier to slow trap evaporation while not impeding flow from drain.
2. Material: Polymer.
3. Standard: Tested and certified in accordance with ASSE 1072.
4. Listing: ICC or IAPMO listed.
5. Size: Same as floor drain outlet or strainer throat.

E. Air-Gap Fittings:

1. Standard: ASME A112.1.2, for fitting designed to ensure fixed, positive air gap between installed inlet and outlet piping.
2. Body: Bronze or cast iron.
3. Inlet: Opening in top of body.
4. Outlet: Larger than inlet.

5. Size: Same as connected waste piping and with inlet large enough for associated indirect waste piping.

F. Sleeve Flashing Device:

1. Description: Manufactured, cast-iron fitting, with clamping device that forms sleeve for pipe floor penetrations of floor membrane. Include galvanized-steel pipe extension in top of fitting that will extend 1 inch above finished floor and galvanized-steel pipe extension in bottom of fitting that will extend through floor slab.
2. Size: As required for close fit to riser or stack piping.

G. Stack Flashing Fittings:

1. Description: Counterflashing-type, cast-iron fitting, with bottom recess for terminating roof membrane, and with threaded or hub top for extending vent pipe.
2. Size: Same as connected stack vent or vent stack.

H. Vent Caps:

1. Description: Cast-iron body with threaded or hub inlet and vandal-proof design. Include vented hood and setscrews to secure to vent pipe.
2. Size: Same as connected stack vent or vent stack.

I. Expansion Joints:

1. Standard: ASME A112.6.4.
2. Body: Cast iron with bronze sleeve, packing, and gland.
3. End Connections: Matching connected piping.
4. Size: Same as connected soil, waste, or vent piping.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install backwater valves in building drain piping.

1. For interior installation, provide cleanout deck plate flush with floor and centered over backwater valve cover, and of adequate size to remove valve cover for servicing.

B. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:

1. Size same as drainage piping up to NPS 4. Use NPS 4 for larger drainage piping unless larger cleanout is indicated.
2. Locate at each change in direction of piping greater than 45 degrees.
3. Locate at minimum intervals of 50 feet for piping NPS 4 and smaller and 100 feet for larger piping.
4. Locate at base of each vertical soil and waste stack.

C. For floor cleanouts for piping below floors, install cleanout deck plates with top flush with finished floor.

D. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.

E. Install fixture air-admittance valves on fixture drain piping.

F. Install air-admittance-valve wall boxes recessed in wall.

G. Assemble open drain fittings and install with top of hub 1 inch above floor.

H. Install deep-seal traps on floor drains and other waste outlets, if indicated.

I. Install floor-drain, trap-seal primer fittings on inlet to floor drains that require trap-seal primer connection.

1. Exception: Fitting may be omitted if trap has trap-seal primer connection.
2. Size: Same as floor drain inlet.

J. Install air-gap fittings on draining-type backflow preventers and on indirect-waste piping discharge into sanitary drainage system.

K. Install sleeve and sleeve seals with each riser and stack passing through floors with waterproof membrane.

L. Install vent caps on each vent pipe passing through roof.

M. Install expansion joints on vertical stacks and conductors. Position expansion joints for easy access and maintenance.

N. Install wood-blocking reinforcement for wall-mounting-type specialties.

O. Install traps on plumbing specialty drain outlets. Omit traps on indirect wastes unless trap is indicated.

3.2 PIPING CONNECTIONS

A. Comply with requirements in Section 22 13 16 "Sanitary Waste and Vent Piping" for piping installation requirements. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment, to allow service and maintenance.

3.3 LABELING AND IDENTIFYING

A. Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to identifying unit.

1. Nameplates and signs are specified in Section 22 05 53 "Identification for Plumbing Piping and Equipment."

3.4 PROTECTION

A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.

B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

END OF SECTION 22 13 19

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SECTION 22 13 19.13
SANITARY DRAINS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Floor drains.

1.3 DEFINITIONS

A. PVC: Polyvinyl chloride.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 DRAIN ASSEMBLIES

A. Sanitary drains shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF 14 for plastic sanitary piping specialty components.

2.2 FLOOR DRAINS

A. Cast-Iron Floor Drains:

1. Standard: ASME A112.6.3 with backwater valve.
2. Pattern: Area, Floor, Funnel Floor sanitary drain.
3. Body Material: Gray iron.
4. Seepage Flange: Required.
5. Anchor Flange: Required.
6. Clamping Device: Required.
7. Outlet: Bottom.
8. Backwater Valve: Drain-outlet type.
9. Coating on Interior and Exposed Exterior Surfaces: Acid-resistant enamel.

10. Sediment Bucket: Not required except in Mechanical Room.
11. Top or Strainer Material: Nickel bronze.
12. Top of Body and Strainer Finish: Nickel bronze.
13. Top Shape: Round.
14. Dimensions of Top or Strainer: 5” Round.
15. Top Loading Classification: Light Duty @ Restrooms, Heavy Duty at Mechanical Rm. & Holding Cells.
16. Funnel: Required at Mech. Rm.
17. Inlet Fitting: threaded or spigot outlet, and trap-seal primer valve connection.
18. Trap Material: same as waste piping.
19. Trap Pattern: Standard P-trap.
20. Trap Features: Trap-seal primer valve drain connection.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install floor drains at low points of surface areas to be drained. Set grates of drains flush with finished floor, unless otherwise indicated.

1. Position floor drains for easy access and maintenance.
2. Set floor drains below elevation of surrounding finished floor to allow floor drainage.
3. Set with grates depressed according to the following drainage area radii:

    a. Radius, 30 to 60 Inches: Equivalent to 1 percent slope.

4. Install floor-drain flashing collar or flange, so no leakage occurs between drain and adjoining flooring.

    a. Maintain integrity of waterproof membranes where penetrated.

5. Install individual traps for floor drains connected to sanitary building drain, unless otherwise indicated.

3.2 CONNECTIONS

A. Comply with requirements in Section 22 13 16 "Sanitary Waste and Vent Piping" for piping installation requirements. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Comply with requirements in Section 22 13 19 "Sanitary Waste Piping Specialties" for backwater valves, air admittance devices and miscellaneous sanitary drainage piping specialties.

3.3 LABELING AND IDENTIFYING

A. Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to identifying unit. Nameplates and signs are specified in Section 22 05 53 "Identification for Plumbing Piping and Equipment."

3.4 PROTECTION

A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.

B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

END OF SECTION 22 13 19.13

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SECTION 22 14 13
FACILITY STORM DRAINAGE PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Hub-and-spigot, cast-iron soil pipe and fittings.
2. Hub-less, cast-iron soil pipe and fittings.
3. Copper tube and fittings.
4. PVC pipe and fittings.
5. Encasement for underground metal piping.

B. Related Requirements:

1. Section 22 14 29 "Sump Pumps" for storm drainage pumps.
2. Section 33 44 00 "Stormwater Utility Equipment" for storm drainage piping outside the building.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For controlled-flow, siphonic roof drainage system. Include calculations, plans, and details.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Detail storm drainage piping. Show support locations, type of support, weight on each support, required clearances, and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Structural members to which drainage piping will be attached or suspended from.

B. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

1.6 FIELD CONDITIONS

A. Interruption of Existing Storm Drainage Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:

1. Notify Architect, Construction Manager, & Owner no fewer than two days in advance of proposed interruption of storm drainage service.
2. Do not proceed with interruption of storm drainage service without Architect, Construction Manager, & Owner written permission.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Storm Drainage, Force-Main Piping: 50 psig.

2.2 PVC PIPE AND FITTINGS

A. NSF Marking: Comply with NSF 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-drain" for plastic storm drain and "NSF-sewer" for plastic storm sewer piping.

B. Solid-Wall PVC Pipe: ASTM D 2665; drain, waste, and vent.

C. PVC Socket Fittings: ASTM D 2665, made to ASTM D 3311, drain, waste, and vent patterns and to fit Schedule 40 pipe.

D. Adhesive Primer: ASTM F 656.

E. Solvent Cement: ASTM D 2564.

2.3 SPECIALTY PIPE FITTINGS

A. Transition Couplings:

1. General Requirements: Fitting or device for joining piping with small differences in ODs or of different materials. Include end connections same size as and compatible with pipes to be joined.
2. Fitting-Type Transition Couplings: Manufactured piping coupling or specified-piping-system fitting.

a. Standard: ASTM C 1173.
b. Description: Elastomeric sleeve, reducing or transition pattern. Include shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.
c. Sleeve Materials:

1) For Cast-Iron Soil Pipes: ASTM C 564, rubber.
2) For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
3) For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.

3. Pressure Transition Couplings:

a. Standard: AWWA C219.
b. Description: Metal, sleeve-type couplings same size as pipes to be joined, and with pressure rating at least equal to and ends compatible with pipes to be joined.
c. Center-Sleeve Material: Manufacturer's standard Stainless steel.
d. Gasket Material: Natural or synthetic rubber.
e. Metal Component Finish: Corrosion-resistant coating or material.

PART 3 - EXECUTION

3.1 EARTH MOVING

A. Comply with requirements for excavating, trenching, and backfilling specified in Section 31 20 00 "Earth Moving."

3.2 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems.

1. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations.
2. Install piping as indicated unless deviations from layout are approved on coordination drawings.

B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

E. Install piping to permit valve servicing.

F. Install piping at indicated slopes.

G. Install piping free of sags and bends.

H. Install fittings for changes in direction and branch connections.

I. Install piping to allow application of insulation.

J. Make changes in direction for piping using appropriate branches, bends, and long-sweep bends.

1. Do not change direction of flow more than 90 degrees.
2. Use proper size of standard increasers and reducers if pipes of different sizes are connected.

a. Reducing size of drainage piping in direction of flow is prohibited.

K. Lay buried building piping beginning at low point of each system.

1. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream.
2. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.
3. Maintain swab in piping and pull past each joint as completed.

L. Install piping at the following minimum slopes unless otherwise indicated:

1. Building Storm Drain: 2 percent downward in direction of flow for piping NPS 3 and smaller.

M. Install aboveground copper tubing according to CDA's "Copper Tube Handbook."

N. Install aboveground PVC piping according to ASTM D 2665.

O. Install underground, copper, force-main tubing according to CDA's "Copper Tube Handbook."

P. Plumbing Specialties:

1. Install backwater valves in storm drainage gravity-flow piping.

a. Comply with requirements for backwater valves specified in Section 22 14 23 "Storm Drainage Piping Specialties."

2. Install cleanouts at grade and extend to where building storm drains connect to building storm sewers in storm drainage gravity-flow piping.

a. Install cleanout fitting with closure plug inside the building in storm drainage force-main piping.
b. Comply with requirements for cleanouts specified in Section 22 14 23 "Storm Drainage Piping Specialties."

Q. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

R. Install sleeves for piping penetrations of walls, ceilings, and floors.

1. Comply with requirements for sleeves specified in Section 22 05 17 "Sleeves and Sleeve Seals for Plumbing Piping."

S. Install sleeve seals for piping penetrations of concrete walls and slabs.

1. Comply with requirements for sleeve seals specified in Section 22 05 17 "Sleeves and Sleeve Seals for Plumbing Piping."

T. Install escutcheons for piping penetrations of walls, ceilings, and floors.

1. Comply with requirements for escutcheons specified in Section 22 05 18 "Escutcheons for Plumbing Piping."

3.3 JOINT CONSTRUCTION

A. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1.

1. Cut threads full and clean using sharp dies.
2. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

a. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
b. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.
c. Do not use pipe sections that have cracked or open welds.

B. Join copper tube and fittings with soldered joints according to ASTM B 828 procedure. Use ASTM B 813, water-flushable, lead-free flux and ASTM B 32, lead-free-alloy solder.

C. Grooved Joints: Cut groove ends of pipe according to AWWA C606. Lubricate and install gasket over ends of pipes or pipe and fittings. Install coupling housing sections, over gasket, with keys seated in piping grooves. Install and tighten housing bolts.

D. Plastic, Nonpressure-Piping, Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:

1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
2. PVC Piping: Join according to ASTM D 2855 and ASTM D 2665 appendices.

3.4 SPECIALTY PIPE FITTING INSTALLATION

A. Transition Couplings:

1. Install transition couplings at joints of piping with small differences in ODs.
2. In Drainage Piping: Shielded, non-pressure transition couplings.
3. In Aboveground Force-Main Piping: Fitting-type transition couplings.
4. In Underground Force-Main Piping:

a. NPS 2 and Larger: Pressure transition couplings.

B. Dielectric Fittings:

1. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
2. Dielectric Fittings for NPS 2 and Smaller: Use dielectric unions.

3.5 VALVE INSTALLATION

A. General valve installation requirements for general-duty valve installations are specified in the following Sections:

1. Section 22 05 23.12 "Ball Valves for Plumbing Piping."
2. Section 22 05 23.14 "Check Valves for Plumbing Piping."
3. Section 22 05 23.15 "Gate Valves for Plumbing Piping."

B. Shutoff Valves:

1. Install shutoff valve on each sump pump discharge.
2. Install full port ball valve for piping NS 2 and smaller.

C. Check Valves: Install swing-check valve, between pump and shutoff valve, on each sump pump discharge.

D. Backwater Valves: Install backwater valves in piping subject to backflow.

1. Horizontal Piping: Horizontal backwater valves. Use normally closed type unless otherwise indicated.
2. Install backwater valves in accessible locations.
3. Comply with requirements for backwater valves specified in Section 22 14 23 "Storm Drainage Piping Specialties."

3.6 INSTALLATION OF HANGERS AND SUPPORTS

A. Comply with requirements for seismic-restraint devices specified in Section 22 05 48 "Vibration and Seismic Controls for Plumbing Piping and Equipment."

B. Comply with requirements for hangers, supports, and anchor devices specified in Section 22 05 29 "Hangers and Supports for Plumbing Piping and Equipment."

1. Install carbon-steel pipe hangers for horizontal piping in noncorrosive environments.
2. Install stainless-steel pipe hangers for horizontal piping in corrosive environments.
3. Install carbon-steel pipe support clamps for vertical piping in noncorrosive environments.
4. Install stainless-steel pipe support clamps for vertical piping in corrosive environments.
5. Vertical Piping: MSS Type 8 or Type 42, clamps.
6. Install individual, straight, horizontal piping runs:

    a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.

C. Install hangers for PVC piping, with maximum horizontal spacing and minimum rod diameters, to comply with manufacturer's written instructions, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

D. Support horizontal piping and tubing within 12 inches of each fitting and/or valve and coupling.

E. Support vertical copper tubing and piping to comply with MSS-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent, but as a minimum at base and at each floor.

F. Support vertical PVC piping with manufacturer's written instructions, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

3.7 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

1. Install horizontal backwater valves in pit with pit cover flush with floor.
2. Comply with requirements for backwater valves, cleanouts and drains specified in Section 22 14 23 "Storm Drainage Piping Specialties."

B. Connect force-main piping to the following:

1. Sump Pumps: To sump pump discharge.

C. Where installing piping adjacent to equipment, allow space for service and maintenance.

D. Make connections according to the following unless otherwise indicated:

1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.

3.8 IDENTIFICATION

A. Identify exposed storm drainage piping.

B. Comply with requirements for identification specified in Section 22 05 53 "Identification for Plumbing Piping and Equipment."

3.9 FIELD QUALITY CONTROL

A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.

1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in.
2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

B. Test storm drainage piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:

1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired.

a. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.

2. Leave uncovered and unconcealed new, altered, extended, or replaced storm drainage piping until it has been tested and approved.

a. Expose work that was covered or concealed before it was tested.

3. Test Procedure:

a. Test storm drainage piping, except Architectural downspouts/leaders, on completion of roughing-in.
b. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water. From 15 minutes before inspection starts until completion of inspection, water level must not drop. Inspect joints for leaks.

4. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
5. Prepare reports for tests and required corrective action.

C. Test force-main piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:

1. Leave uncovered and unconcealed new, altered, extended, or replaced force-main piping until it has been tested and approved.

a. Expose work that was covered or concealed before it was tested.

2. Cap and subject piping to static-water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials.

a. Isolate test source and allow to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.

3. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
4. Prepare reports for tests and required corrective action.

D. Piping will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

3.10 CLEANING AND PROTECTION

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

C. Place plugs in ends of uncompleted piping at end of day and when work stops.

3.11 PIPING SCHEDULE

A. Flanges and unions may be used on aboveground pressure piping unless otherwise indicated.

B. Aboveground storm drainage piping NPS 2 and smaller shall be any of the following:
1. Galvanized-steel pipe, drainage fittings, and threaded joints.
2. Copper Type DWV tube, copper drainage fittings, and soldered joints.

3. Solid-wall PVC pipe, PVC socket fittings, and solvent-cemented joints.
4. Dissimilar Pipe-Material Couplings: Shielded, non-pressure transition couplings.

C. Aboveground, storm drainage piping NPS 3 and larger shall be one of the following:
1. Copper Type DWV tube, copper drainage fittings, and soldered joints.
2. Solid-wall PVC pipe, PVC socket fittings, and solvent-cemented joints.
3. Dissimilar Pipe-Material Couplings: Shielded, non-pressure transition couplings.

D. Underground storm drainage piping NPS 2 and larger shall be the following:

1. Solid-wall PVC pipe, PVC socket fittings, and solvent-cemented joints.
2. Dissimilar Pipe-Material Couplings: Shielded, non-pressure transition couplings.

E. Aboveground storm drainage force mains shall be any of the following:

F. 1. Solid-wall PVC pipe, PVC socket fittings, and solvent-cemented joints.

G. 2. Dissimilar Pipe-Material Couplings: Shielded, non-pressure transition couplings. If using more than one type of material and joining method, identify various materials on Drawings and show points of transition from one material to another.

H. Underground storm drainage force mains NPS 4 and smaller shall be any of the following:
1. Ductile-iron, mechanical-joint piping and mechanical joints.
2. Ductile-iron, push-on-joint piping and push-on joints.
3. Ductile-iron, grooved-joint piping and grooved joints.
4. Galvanized-steel pipe, drainage fittings, and threaded joints.
5. Solid-wall PVC pipe, PVC socket fittings, and solvent-cemented joints

END OF SECTION 22 14 13

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SECTION 22 14 23
STORM DRAINAGE PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Cleanouts.
   2. Backwater valves.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 QUALITY ASSURANCE

A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.

PART 2 - PRODUCTS

2.1 CLEANOUTS

A. Cast-Iron Exposed Cleanouts:

   1. Standard: ASME A112.36.2M.
   2. Size: Same as connected branch.
   3. Closure: Countersunk or raised-head, brass plug.
   4. Closure Plug Size: Same as, or not more than, one size smaller than cleanout size.

B. Cast-Iron Exposed Floor Cleanouts:

   1. Standard: ASME A112.36.2M.
   2. Size: Same as connected branch.
   3. Type: Adjustable housing.
   4. Body or Ferrule: Cast iron.
   5. Outlet Connection: Threaded.
   6. Closure: Brass plug with straight threads and gasket Brass plug with tapered threads.
   7. Adjustable Housing Material: Cast iron with threads setscrews or other device.
   8. Frame and Cover Material and Finish: Nickel-bronze, copper alloy Polished bronze.

9. Frame and Cover Shape: Round.
10. Top Loading Classification: Medium Duty.

C. Plastic Floor Cleanouts:

1. Size: Same as connected branch.
2. Body Material: PVC.
3. Closure Plug: PVC.
4. Riser: Drainage pipe fitting and riser to clean-out of same material as drainage piping.

D. Cast-Iron Wall Cleanouts:

1. Standard: ASME A112.36.2M. Include wall access.
2. Size: Same as connected drainage piping.
3. Body: Hub-and-spigot, cast-iron soil pipe T-branch as required to match connected piping.
4. Closure Plug:

   a. Brass or Cast iron.
   b. Countersunk or raised head.
   c. Drilled and threaded for cover attachment screw.
   d. Size: Same as, or not more than, one size smaller than cleanout size.

5. Wall Access, Cover Plate: Round, deep, chrome-plated bronze or flat, chrome-plated brass or stainless steel cover plate with screw.
6. Wall Access, Frame and Cover: Round, nickel-bronze, copper-alloy, or stainless steel wall-installation frame and cover.

E. Test Tees:

1. Standard: ASME A112.36.2M and ASTM A74, ASTM A888, or CISPI 301.
2. Size: Same as connected drainage piping.
3. Body Material: Hub-and-spigot, cast-iron soil-pipe T-branch or no-hub, cast-iron soil-pipe test tee as required to match connected piping.
4. Closure Plug: b. Countersunk or raised head, brass.
5. Closure Plug Size: Same as, or not more than, one size smaller than cleanout size.

2.2 BACKWATER VALVES

A. Cast-Iron, Horizontal Backwater Valves:

1. Standard: ASME A112.14.1.
2. Size: Same as connected piping.
3. Body Material: Cast iron.
4. Cover: Cast iron with threaded access check valve.
5. End Connections: no hub.
6. Check Valve: Removable, bronze, swing check, factory assembled or field modified to hang closed.
7. Extension: ASTM A74, Service class; full-size, cast-iron soil-pipe extension to field-installed cleanout at floor; replaces backwater valve cover.

B. Cast-Iron, Drain-Outlet Backwater Valves:

1. Standard: ASME A112.14.1.
2. Size: Same as floor drain outlet.
3. Body Material: Cast iron or bronze made for vertical installation in bottom outlet of floor drain.
4. Check Valve: Removable ball float.
5. Inlet: Threaded.
6. Outlet: Threaded or spigot.

C. Plastic, Horizontal Backwater Valves:

1. Standard: ASME A112.14.1.
2. Size: Same as connected piping.
3. Body Material: PVC.
4. Cover: Same material as body with threaded access to check valve.
5. Check Valve: Removable swing check.
6. End Connections: Socket type.

PART 3 - EXECUTION (Not used)

END OF SECTION 22 14 23

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SECTION 22 14 29
SUMP PUMPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Submersible sump pumps.

B. Related Requirements:

1. Section 22 13 29 "Sanitary Sewerage Pumps" for effluent and sewage pumps.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings:

1. Include plans, elevations, sections, and mounting/ attachment details.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include adjustable motor bases, rails, and frames for equipment mounting.
4. Include diagrams for power, signal, and control wiring.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For pumps and controls, to include in operation and maintenance manuals.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Retain shipping flange protective covers and protective coatings during storage.

B. Protect bearings and couplings against damage.

C. Comply with manufacturer's written instructions for handling.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. UL Compliance: Comply with UL 778 for motor-operated water pumps.

2.2 SUBMERSIBLE SUMP PUMPS

A. Submersible, Fixed-Position, Single-Seal Sump Pumps:

1. Description: Factory-assembled and -tested sump-pump unit.
2. Pump Type: Submersible, end-suction, single-stage, close-coupled, overhung-impeller.
3. Pump Casing: Cast iron, with strainer inlet, legs that elevate pump to permit flow into impeller, and vertical discharge for piping connection.
4. Impeller: Statically and dynamically balanced, ASTM A48/A48M, Class No. 25 A cast iron, design for clear wastewater handling, and keyed and secured to shaft.
5. Pump and Motor Shaft: Stainless steel or steel, with factory-sealed, grease-lubricated ball bearings.
6. Seal: Mechanical.
7. Motor: Hermetically sealed, capacitor-start type; with built-in overload protection; lifting eye or lug; and three-conductor, waterproof power cable of length required and with grounding plug and cable-sealing assembly for connection at pump.

    a. Motor Housing Fluid: Air.

8. Controls:

    a. Enclosure: NEMA 250, Type 1 Type 4X.
    b. Switch Type: Pedestal-mounted float switch with float rods and rod buttons.
    c. Float Guides: Pipe or other restraint for floats and rods in basins of depth greater than 60 inches.
    d. High-Water Alarm: Cover-mounted, compression-probe alarm, with electric bell; 120 V ac, with transformer and contacts for remote alarm bell.

2.3 SUMP-PUMP CAPACITIES AND CHARACTERISTICS

A. Unit Capacity: 50 GPM.

B. Number of Pumps: One.

C. Each Pump:

1. Total Dynamic Head: 20feet.
2. Speed: 3500rpm.
3. Electrical Characteristics:

a. Motor Horsepower: ½ hp.
b. Phases: Single.
c. Hertz: 60.

2.4 MOTORS

A. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Section 22 05 13 "Common Motor Requirements for Plumbing Equipment."

1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.

B. Motors for submersible pumps shall be hermetically sealed.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavation and filling are specified in Section 31 20 00 "Earth Moving."

3.2 EXAMINATION

A. Examine roughing-in for plumbing piping to verify actual locations of storm drainage piping connections before sump pump installation.

3.3 INSTALLATION

A. Pump Installation Standards: Comply with HI 1.4 for installation of sump pumps.

3.4 CONNECTIONS

A. Comply with requirements for piping specified in Section 22 14 13 "Facility Storm Drainage Piping." Drawings indicate general arrangement of piping, fittings, and specialties.

B. Where installing piping adjacent to equipment, allow space for service and maintenance.

3.5 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to test, inspect, and adjust components, assemblies, and equipment installations, including connections.

B. Perform the following tests and inspections:

1. Perform each visual and mechanical inspection.

2. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
3. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

C. Pumps and controls will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

3.6 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.

3.7 ADJUSTING

A. Adjust pumps to function smoothly, and lubricate as recommended by manufacturer.

B. Adjust control set points.

3.8 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain pumps.

END OF SECTION 22 14 29

SECTION 22 33 00
ELECTRIC, DOMESTIC-WATER HEATERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Commercial, electric, domestic-water heaters.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings:

1. Include diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Equipment room drawing or BIM model, drawn to scale, on which the items described in this Section are shown and coordinated with all building trades.

B. Product Certificates: For each type of commercial, electric, domestic-water heater.

C. Domestic-Water Heater Labeling: Certified and labeled by testing agency acceptable to authorities having jurisdiction.

D. Source quality-control reports.

E. Field quality-control reports.

F. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For electric, domestic-water heaters to include emergency, operation, and maintenance manuals.

1.6 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of electric, domestic-water heaters that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including water heating unit and supports.
b. Faulty operation of controls.
c. Deterioration of metals, metal finishes, and other materials beyond normal use.

2. Warranty Periods: From date of Substantial Completion.
a. Commercial, Electric, Tank-less, Domestic-Water Heaters:
1) Commercial, Electric, Tank-less, Domestic-Water Heater: Seven years

2) Controls and Other Components: Three years.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by an NRTL, and marked for intended location and use.

B. ASHRAE/IES Compliance: Applicable requirements in ASHRAE/IES 90.1.

C. ASME Compliance: Where ASME-code construction is indicated/required, fabricate and label commercial, domestic-water heater storage tanks to comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 1.

D. NSF Compliance: Fabricate and label equipment components that will be in contact with potable water to comply with NSF 61 and NSF 372.

2.2 COMMERCIAL, ELECTRIC, TANK-LESS, DOMESTIC-WATER HEATERS

A. Thermostat-Control, Electric, Tank-less, Domestic-Water Heaters:

1. Source Limitations: Obtain domestic-water heaters from single source from single manufacturer.

2. Standard: UL 499 for electric, tank-less, (domestic-water-heater) heating appliance.

3. Construction: Copper piping or tubing complying with NSF 61 and NSF 372 barrier materials for potable water, without storage capacity.

a. Connections: ASME B1.20.1 pipe thread.

b. Pressure Rating: 150 psig.

c. Heating Element: copper clad, higher kw, Thermostatic.

d. Temperature Control: Thermostatic.

e. Safety Control: High-temperature-limit cutoff device or system.

f. Jacket: Aluminum or steel with enameled finish or plastic.

5. Support: Bracket for wall mounting.

6. Capacity and Characteristics:

a. Flow Rate: <Insert 1.25 GPM at 109 deg F temperature rise.

b. Temperature Setting: 109 Deg. F.

c. Power Demand: 12 KW

d. Electrical Characteristics:

1) Volts: 208 V.

2) Phases: Single.

3) Hertz: 60 Hz.

4) Full-Load Amperes: 30 A.

5) Minimum Circuit Ampacity: 30 A.

6) Maximum Overcurrent Protection: <Insert value> A.

a. Tappings: ASME B1.20.1 pipe thread.
b. Pressure Rating: 150 psig.
c. Interior Finish: Comply with NSF 61 and NSF 372 barrier materials for potable-water tank linings, including extending lining material into tappings.
d. Temperature Control: Adjustable thermostat.
e. Safety Control: High-temperature-limit cutoff device or system.

2.3 DOMESTIC-WATER HEATER ACCESSORIES

a. Tappings: Factory-fabricated steel, welded to tank before testing and labeling. Include ASME B1.20.1 pipe thread.
b. Interior Finish: Comply with NSF 61 and NSF 372 barrier materials for potable-water tank linings, including extending finish into and through tank fittings and outlets.

B. Combination Temperature-and-Pressure Relief Valves: ASME rated and stamped. Include relieving capacity at least as great as heat input, and include pressure setting less than working-pressure rating of domestic-water heater. Select relief valves.

2.4 SOURCE QUALITY CONTROL

A. Factory Tests: Test and inspect domestic-water heaters.

B. Hydrostatically test commercial domestic-water heaters to minimum of one and one-half times pressure rating before shipment.

C. Electric, domestic-water heaters will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 DOMESTIC-WATER HEATER INSTALLATION

A. Commercial, Electric, Domestic-Water Heater Mounting: Install commercial, electric, domestic-water heaters on bracket or mount with unistrut to wall

1. Install on stand, bracket, suspended platform.
2. Maintain manufacturer's recommended clearances.
3. Arrange unit so controls and devices that require servicing are accessible.
4. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
5. Install anchor bolts to elevations required for proper attachment to supported equipment.
6. Anchor domestic-water heaters to substrate.

B. Install electric, domestic-water heaters level and plumb, in accordance with layout drawings, original design, and referenced standards. Maintain manufacturer's recommended clearances. Arrange units so controls and devices needing service are accessible.

1. Install shutoff valves on domestic-water-supply piping to domestic-water heaters and on domestic-hot-water outlet piping. Comply with requirements for shutoff valves specified in Section 22 05 23.12 "Ball Valves for Plumbing Piping," Section 22 05 23.13 "Butterfly Valves for Plumbing Piping," and Section 22 05 23.15 "Gate Valves for Plumbing Piping."

C. Install commercial, electric, domestic-water heaters with seismic-restraint devices.

D. Install thermometers on outlet piping of electric, domestic-water heaters. Comply with requirements for thermometers specified in Section 22 05 19 "Meters and Gages for Plumbing Piping."

E. Fill electric, domestic-water heaters with water.

F. Install dielectric fittings in all locations where piping of dissimilar metals is to be joined. The wetted surface of the dielectric fitting contacted by potable water shall contain less than 0.25 percent of lead by weight.

3.2 PIPING CONNECTIONS

A. Comply with requirements for piping specified in Section 22 11 16 "Domestic Water Piping." Drawings indicate general arrangement of piping, fittings, and specialties.

B. Where installing piping adjacent to electric, domestic-water heaters, allow space for service and maintenance of water heaters. Arrange piping for easy removal of domestic-water heaters.

3.3 IDENTIFICATION

A. Identify system components. Comply with requirements for identification specified in Section 22 05 53 "Identification for Plumbing Piping and Equipment."

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

B. Perform tests and inspections with the assistance of a factory-authorized service representative.

C. Tests and Inspections:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
2. Operational Test: After electrical circuitry has been energized, start units to confirm proper operation.
3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Electric, domestic-water heaters will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain commercial, electric, domestic-water heaters. Training shall be a minimum of one hour.

END OF SECTION 22 33 00

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Division 23

Heating, Ventilating and Air Conditioning

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SECTION 23 05 00
COMMON WORK RESULTS FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Owner's General Conditions of the Contract, and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Piping materials and installation instructions common to most piping systems.
2. Dielectric fittings.
3. Mechanical sleeve seals.
4. Sleeves.
5. Escutcheons.
6. Grout.
7. HVAC demolition.
8. Equipment installation requirements common to equipment sections.
9. Painting and finishing.
10. Concrete bases.
11. Supports and anchorages.

1.3 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and chases.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

F. The following are industry abbreviations for plastic materials:

1. CPVC: Chlorinated polyvinyl chloride plastic.
2. PVC: Polyvinyl chloride plastic.

G. The following are industry abbreviations for rubber materials:

1. EPDM: Ethylene-propylene-diene terpolymer rubber.

2. NBR: Acrylonitrile-butadiene rubber.

1.4 SUBMITTALS

A. Product Data: For the following:

1. Dielectric fittings.
2. Mechanical sleeve seals.
3. Escutcheons.

B. Welding certificates.

1.5 QUALITY ASSURANCE

A. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel."

B. Steel Pipe Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."

1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

C. Electrical Characteristics for HVAC Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.

B. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

1.7 COORDINATION

A. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction, to allow for HVAC installations.

B. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.

C. Coordinate requirements for access panels and doors for HVAC items requiring access that are concealed behind finished surfaces. Access panels and doors are specified in Division 08 Section "Access Doors and Frames."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.

2.2 PIPE, TUBE, AND FITTINGS

A. Refer to individual Division 23 piping Sections for pipe, tube, and fitting materials and joining methods.

B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

2.3 JOINING MATERIALS

A. Refer to individual Division 23 piping Sections for special joining materials not listed below.

B. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.

1. ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch maximum thickness unless thickness or specific material is indicated.

a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.

2. AWWA C110, rubber, flat face, 1/8 inch thick, unless otherwise indicated; and full-face or ring type, unless otherwise indicated.

C. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.

D. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

E. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

F. Brazing Filler Metals: AWS A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing, unless otherwise indicated; and AWS A5.8, BAg1, silver alloy for refrigerant piping, unless otherwise indicated.

G. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

H. Solvent Cements for Joining Plastic Piping:

1. CPVC Piping: ASTM F 493.

2. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.

2.4 DIELECTRIC FITTINGS

A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder-joint, plain, or weld-neck end connections that match piping system materials.

B. Insulating Material: Suitable for system fluid, pressure, and temperature.

C. Dielectric Unions: Factory-fabricated, union assembly, for 250-psig minimum working pressure at 180 deg F.

1. Manufacturers:

a. Epco Sales, Inc.
b. Watts Industries, Inc.; Water Products Div.
c. Zurn Industries, Inc.; Wilkins Div.

D. Dielectric Flanges: Factory-fabricated, companion-flange assembly, for 150- or 300-psig minimum working pressure as required to suit system pressures.

1. Manufacturers:

a. Capitol Manufacturing Co.
b. Epco Sales, Inc.
c. Watts Industries, Inc.; Water Products Div.

E. Dielectric-Flange Kits: Companion-flange assembly for field assembly. Include flanges, full-face- or ring-type neoprene or phenolic gasket, phenolic or polyethylene bolt sleeves, phenolic washers, and steel backing washers.

1. Manufacturers:

a. Advance Products & Systems, Inc.
b. Calpico, Inc.
c. Central Plastics Company.
d. Pipeline Seal and Insulator, Inc.

2. Separate companion flanges and steel bolts and nuts shall have 150- or 300-psig minimum working pressure where required to suit system pressures.

F. Dielectric Couplings: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining; threaded ends; and 300-psig minimum working pressure at 225 deg F.

1. Manufacturers:

a. Calpico, Inc.
b. Lochinvar Corp.

G. Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; plain, threaded, or grooved ends; and 300-psig minimum working pressure at 225 deg F.

1. Manufacturers:

a. Perfection Corp.
b. Precision Plumbing Products, Inc.
c. Sioux Chief Manufacturing Co., Inc.
d. Victaulic Co. of America.

2.5 MECHANICAL SLEEVE SEALS

A. Description: Modular sealing element unit, designed for field assembly, to fill annular space between pipe and sleeve.

1. Manufacturers:

a. Advance Products & Systems, Inc.
b. Calpico, Inc.
c. Metraflex Co.
d. Pipeline Seal and Insulator, Inc.

2. Sealing Elements: EPDM interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
3. Pressure Plates: Carbon steel. Include two for each sealing element.
4. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.6 SLEEVES

A. Galvanized-Steel Sheet: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.

B. Steel Pipe: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.

C. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

D. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.

1. Underdeck Clamp: Clamping ring with set screws.

2.7 ESCUTCHEONS

A. Description: Manufactured wall and ceiling escutcheons and floor plates, with an ID to closely fit around pipe, tube, and insulation of insulated piping and an OD that completely covers opening.

B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with polished chrome-plated finish.

C. One-Piece, Cast-Brass Type: With set screw.

1. Finish: Polished chrome-plated.

D. Split-Casting, Cast-Brass Type: With concealed hinge and set screw.

1. Finish: Polished chrome-plated.

E. One-Piece, Stamped-Steel Type: With set screw or spring clips and chrome-plated finish.

F. Split-Plate, Stamped-Steel Type: With concealed hinge, and chrome-plated finish.

2.8 GROUT

A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.

1. Characteristics: Post-hardening, volume-adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.

2. Design Mix: 5000-psi, 28-day compressive strength.

3. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 HVAC DEMOLITION

A. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

3.2 PIPING SYSTEMS - COMMON REQUIREMENTS

A. Install piping according to the following requirements and Division 23 Sections specifying piping systems.

B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.

D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

F. Install piping to permit valve servicing.

G. Install piping at indicated slopes.

H. Install piping free of sags and bends.

I. Install fittings for changes in direction and branch connections.

J. Install piping to allow application of insulation.

K. Select system components with pressure rating equal to or greater than system operating pressure.

L. Install escutcheons for penetrations of walls, ceilings, and floors according to the following:

1. New Piping:

a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.
b. Insulated Piping: One-piece, stamped-steel type with spring clips.
c. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, cast-brass type with polished chrome-plated finish.
d. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece or split-casting, cast-brass type with polished chrome-plated finish.

2. Existing Piping: Use the following:

a. Bare Piping at Wall and Floor Penetrations in Finished Spaces: Split-casting, cast-brass type with chrome-plated finish.
b. Bare Piping at Ceiling Penetrations in Finished Spaces: Split-casting, cast-brass type with chrome-plated finish.

M. Sleeves are not required for core-drilled holes.

N. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.

1. Cut sleeves to length for mounting flush with both surfaces.

a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.

2. Install sleeves in new walls and slabs as new walls and slabs are constructed.
3. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation. Use the following sleeve materials:

a. Steel Pipe Sleeves: For pipes smaller than NPS 6.
b. Steel Sheet Sleeves: For pipes NPS 6 and larger, penetrating gypsum-board partitions.
c. Stack Sleeve Fittings: For pipes penetrating floors with membrane waterproofing. Secure flashing between clamping flanges. Install section of cast-iron soil pipe to extend sleeve to 2 inches above finished floor level. Refer to Division 07 Section "Sheet Metal Flashing and Trim" for flashing.

1) Seal space outside of sleeve fittings with grout.

4. Except for underground wall penetrations, seal annular space between sleeve and pipe or pipe insulation, using joint sealants appropriate for size, depth, and location of joint. Refer to Division 07 Section "Joint Sealants" for materials and installation.

O. Aboveground, Exterior-Wall Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

1. Install steel pipe for sleeves smaller than 6 inches in diameter.

2. Install cast-iron "wall pipes" for sleeves 6 inches and larger in diameter.

3. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten

bolts against pressure plates that cause sealing elements to expand and make watertight seal.

P. Underground, Exterior-Wall Pipe Penetrations: Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

1. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

Q. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Refer to Division 07 Section "Penetration Firestopping" for materials.

R. Verify final equipment locations for roughing-in.

S. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

3.3 PIPING JOINT CONSTRUCTION

A. Join pipe and fittings according to the following requirements and Division 23 Sections specifying piping systems.

B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.

E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.

F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

G. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.

H. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

3.4 PIPING CONNECTIONS

A. Make connections according to the following, unless otherwise indicated:

1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.
3. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

3.5 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.

B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.

C. Install HVAC equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.

D. Install equipment to allow right of way for piping installed at required slope.

3.6 PAINTING

A. Painting of HVAC systems, equipment, and components is specified in Division 09 Sections "Interior Painting" and "Exterior Painting."

B. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

3.7 CONCRETE BASES

A. Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.

1. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit.
2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of the base.
3. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
5. Install anchor bolts to elevations required for proper attachment to supported equipment.
6. Install anchor bolts according to anchor-bolt manufacturer's written instructions.
7. Use 3000-psi , 28-day compressive-strength concrete and reinforcement as specified in Division 03 Section "Cast-in-Place Concrete."

3.8 ERECTION OF METAL SUPPORTS AND ANCHORAGES

A. Refer to Division 5 Section "Metal Fabrications" for structural steel.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor HVAC materials and equipment.

C. Field Welding: Comply with AWS D1.1.

3.9 GROUTING

A. Mix and install grout for HVAC equipment base bearing surfaces, pump and other equipment base plates, and anchors.

B. Clean surfaces that will come into contact with grout.

C. Provide forms as required for placement of grout.

D. Avoid air entrapment during placement of grout.

E. Place grout, completely filling equipment bases.

F. Place grout on concrete bases and provide smooth bearing surface for equipment.

G. Place grout around anchors.

H. Cure placed grout.

END OF SECTION 23 05 00

SECTION 23 05 13
COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Owner's General Conditions of the Contract, and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general requirements for single-phase and poly-phase, general-purpose, horizontal, small and medium, squirrel-cage induction motors for use on ac power systems up to 600 V and installed at equipment manufacturer's factory or shipped separately by equipment manufacturer for field installation.

1.3 COORDINATION

A. Coordinate features of motors, installed units, and accessory devices to be compatible with the following:

1. Motor controllers.
2. Torque, speed, and horsepower requirements of the load.
3. Ratings and characteristics of supply circuit and required control sequence.
4. Ambient and environmental conditions of installation location.

PART 2 - PRODUCTS

2.1 GENERAL MOTOR REQUIREMENTS

A. Comply with requirements in this Section except when stricter requirements are specified in HVAC equipment schedules or Sections.

B. Comply with NEMA MG 1 unless otherwise indicated.

C. Comply with IEEE 841 for severe-duty motors.

2.2 MOTOR CHARACTERISTICS

A. Duty: Continuous duty at ambient temperature of 40 deg C and at altitude of 3300 feet above sea level.

B. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

2.3 POLYPHASE MOTORS

A. Description: NEMA MG 1, Design B, medium induction motor.

B. Efficiency: Energy efficient, as defined in NEMA MG 1.

C. Service Factor: 1.15.

D. Multispeed Motors: Variable torque.

1. For motors with 2:1 speed ratio, consequent pole, single winding.
2. For motors with other than 2:1 speed ratio, separate winding for each speed.

E. Rotor: Random-wound, squirrel cage.

F. Bearings: Regreasable, shielded, antifriction ball bearings suitable for radial and thrust loading.

G. Temperature Rise: Match insulation rating.

H. Insulation: Class F.

I. Code Letter Designation:

1. Motors 15 HP and Larger: NEMA starting Code F or Code G.
2. Motors Smaller than 15 HP: Manufacturer's standard starting characteristic.

J. Enclosure Material: Cast iron for motor frame sizes 324T and larger; rolled steel for motor frame sizes smaller than 324T.

2.4 POLYPHASE MOTORS WITH ADDITIONAL REQUIREMENTS

A. Motors Used with Reduced-Voltage and Multispeed Controllers: Match wiring connection requirements for controller with required motor leads. Provide terminals in motor terminal box, suited to control method.

B. Motors Used with Variable Frequency Controllers: Ratings, characteristics, and features coordinated with and approved by controller manufacturer.

1. Windings: Copper magnet wire with moisture-resistant insulation varnish, designed and tested to resist transient spikes, high frequencies, and short time rise pulses produced by pulse-width modulated inverters.
2. Energy- and Premium-Efficient Motors: Class B temperature rise; Class F insulation.
3. Inverter-Duty Motors: Class F temperature rise; Class H insulation.
4. Thermal Protection: Comply with NEMA MG 1 requirements for thermally protected motors.
5. Shaft Grounding Rings:
   a. All motors controlled by Variable Frequency Controllers shall be equipped with Shaft Grounding Ring kits. Kits shall be installed by motor or equipment manufacturer or installed in the field by contractor in accordance with NEMA MG-1 31.4.4.3. Shaft Grounding Ring kits shall be manufactured by AEGIS or approved equal.
   b. Ensure Shaft Grounding Kit is installed on motors in accordance with the manufacturer’s recommendations.

c. Motors shall be NEMA Premium® and inverter duty and have class F, G or H insulation and have the capability to install Shaft Grounding Ring. Motors shall be Marathon (Mod Central), Baldor (Mod Express) or approved equal.

C. Severe-Duty Motors: Comply with IEEE 841, with 1.15 minimum service factor.

2.5 SINGLE-PHASE MOTORS

A. Motors larger than 1/20 hp shall be one of the following, to suit starting torque and requirements of specific motor application:

1. Permanent-split capacitor.
2. Split phase.
3. Capacitor start, inductor run.
4. Capacitor start, capacitor run.

B. Multispeed Motors: Variable-torque, permanent-split-capacitor type.

C. Bearings: Prelubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.

D. Motors 1/20 HP and Smaller: Shaded-pole type.

E. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 23 05 13

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SECTION 23 05 17
SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Owner's General Conditions of the Contract, and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Sleeves.
2. Stack-sleeve fittings.
3. Sleeve-seal systems.
4. Sleeve-seal fittings.
5. Grout.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 SLEEVES

A. Cast-Iron Wall Pipes: Cast or fabricated of cast or ductile iron and equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop unless otherwise indicated.

B. Galvanized-Steel Wall Pipes: ASTM A 53/A 53M, Schedule 40, with plain ends and welded steel collar; zinc coated.

C. Galvanized-Steel-Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc coated, with plain ends.

D. PVC-Pipe Sleeves: ASTM D 1785, Schedule 40.

E. Galvanized-Steel-Sheet Sleeves: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.

F. Molded-PE or -PP Sleeves: Removable, tapered-cup shaped, and smooth outer surface with nailing flange for attaching to wooden forms.

G. Molded-PVC Sleeves: With nailing flange for attaching to wooden forms.

2.2 STACK-SLEEVE FITTINGS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Smith, Jay R. Mfg. Co.
2. Zurn Specification Drainage Operation; Zurn Plumbing Products Group.

B. Description: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring, bolts, and nuts for membrane flashing.

1. Underdeck Clamp: Clamping ring with setscrews.

2.3 SLEEVE-SEAL SYSTEMS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Advance Products & Systems, Inc.
2. CALPICO, Inc.
3. Metraflex Company (The).
4. Pipeline Seal and Insulator, Inc.
5. Proco Products, Inc.

B. Description: Modular sealing-element unit, designed for field assembly, for filling annular space between piping and sleeve.

1. Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
2. Pressure Plates: Carbon steel.
3. Connecting Bolts and Nuts: Carbon steel, with corrosion-resistant coating, of length required to secure pressure plates to sealing elements.

2.4 SLEEVE-SEAL FITTINGS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Presealed Systems.

B. Description: Manufactured plastic, sleeve-type, waterstop assembly made for imbedding in concrete slab or wall. Unit has plastic or rubber waterstop collar with center opening to match piping OD.

2.5 GROUT

A. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.

B. Characteristics: Nonshrink; recommended for interior and exterior applications.

C. Design Mix: 5000-psi, 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 SLEEVE INSTALLATION

A. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.

B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 1-inch annular clear space between piping and concrete slabs and walls.

1. Sleeves are not required for core-drilled holes.

C. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.

1. Permanent sleeves are not required for holes in slabs formed by molded-PE or -PP sleeves.
2. Cut sleeves to length for mounting flush with both surfaces.

a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level.

3. Using grout, seal the space outside of sleeves in slabs and walls without sleeve-seal system.

D. Install sleeves for pipes passing through interior partitions.

1. Cut sleeves to length for mounting flush with both surfaces.
2. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
3. Seal annular space between sleeve and piping or piping insulation; use joint sealants appropriate for size, depth, and location of joint. Comply with requirements for sealants specified in Section 07 92 00 "Joint Sealants."

E. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements for firestopping specified in Section 07 84 13 "Penetration Firestopping."

3.2 STACK-SLEEVE-FITTING INSTALLATION

A. Install stack-sleeve fittings in new slabs as slabs are constructed.

1. Install fittings that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
2. Secure flashing between clamping flanges for pipes penetrating floors with membrane waterproofing. Comply with requirements for flashing specified in Section 07 62 00 "Sheet Metal Flashing and Trim."
3. Install section of cast-iron soil pipe to extend sleeve to 2 inches above finished floor level.

4. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.
5. Using grout, seal the space around outside of stack-sleeve fittings.

B. Fire-Barrier Penetrations: Maintain indicated fire rating of floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements for firestopping specified in Section 07 84 13 "Penetration Firestopping."

3.3 SLEEVE-SEAL-SYSTEM INSTALLATION

A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at service piping entries into building.

B. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size. Position piping in center of sleeve. Center piping in penetration, assemble sleeve-seal system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

3.4 SLEEVE-SEAL-FITTING INSTALLATION

A. Install sleeve-seal fittings in new walls and slabs as they are constructed.

B. Assemble fitting components of length to be flush with both surfaces of concrete slabs and walls. Position waterstop flange to be centered in concrete slab or wall.

C. Secure nailing flanges to concrete forms.

D. Using grout, seal the space around outside of sleeve-seal fittings.

3.5 SLEEVE AND SLEEVE-SEAL SCHEDULE

A. Use sleeves and sleeve seals for the following piping-penetration applications:

1. Exterior Concrete Walls above Grade:

   a. Piping Smaller Than NPS 6: Cast-iron wall sleeves Sleeve-seal fittings.
   b. Piping NPS 6 Insert pipe size and Larger: Cast-iron wall sleeves Galvanized-steel wall sleeves Galvanized-steel-pipe sleeves.

2. Exterior Concrete Walls below Grade:

   a. Piping Smaller Than NPS 6: Cast-iron wall sleeves with sleeve-seal system Galvanized-steel wall sleeves with sleeve-seal system Galvanized-steel-pipe sleeves with sleeve-seal system Sleeve-seal fittings.

      1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

b. Piping NPS 6 and Larger: Cast-iron wall sleeves with sleeve-seal system Galvanized-steel wall sleeves with sleeve-seal system Galvanized-steel-pipe sleeves with sleeve-seal system.

1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

3. Concrete Slabs-on-Grade:

a. Piping Smaller Than NPS 6: Cast-iron wall sleeves with sleeve-seal system Galvanized-steel wall sleeves with sleeve-seal system Galvanized-steel-pipe sleeves with sleeve-seal system Sleeve-seal fittings.

1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

b. Piping NPS 6 and Larger: Cast-iron wall sleeves with sleeve-seal system Galvanized-steel wall sleeves with sleeve-seal system Galvanized-steel-pipe sleeves with sleeve-seal system Galvanized-steel-pipe sleeves.

1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

4. Concrete Slabs above Grade:

a. Piping Smaller Than NPS 6: Galvanized-steel-pipe sleeves PVC-pipe sleeves Stack-sleeve fittings Sleeve-seal fittings Molded-PE or -PP sleeves Molded-PVC sleeves.
b. Piping NPS 6 and Larger: Galvanized-steel-pipe sleeves PVC-pipe sleeves Stack-sleeve fittings.

5. Interior Partitions:

a. Piping Smaller Than NPS 6: Galvanized-steel-pipe sleeves PVC-pipe sleeves.
b. Piping NPS 6 and Larger: Galvanized-steel-sheet sleeves.

END OF SECTION 23 05 17

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SECTION 23 05 18
ESCUTCHEONS FOR HVAC PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Owner's General Conditions of the Contract, and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Escutcheons.
2. Floor plates.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 ESCUTCHEONS

A. One-Piece, Cast-Brass Type: With polished, chrome-plated finish and setscrew fastener.

B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with chrome-plated finish and spring-clip fasteners.

C. One-Piece, Stamped-Steel Type: With chrome-plated finish and spring-clip fasteners.

D. Split-Casting Brass Type: With polished, chrome-plated finish and with concealed hinge and setscrew.

E. Split-Plate, Stamped-Steel Type: With chrome-plated finish, concealed hinge, and spring-clip fasteners.

2.2 FLOOR PLATES

A. One-Piece Floor Plates: Cast-iron flange with holes for fasteners.

B. Split-Casting Floor Plates: Cast brass with concealed hinge.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.

B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.

1. Escutcheons for New Piping:

a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.
b. Chrome-Plated Piping: One-piece, cast-brass or split-casting brass type with polished, chrome-plated finish.
c. Insulated Piping: One-piece, stamped-steel type or split-plate, stamped-steel type with concealed hinge or split-plate, stamped-steel type with exposed-rivet hinge.
d. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, stamped-steel type or split-plate, stamped-steel type with concealed hinge.
e. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece, stamped-steel type or split-plate, stamped-steel type with concealed hinge.
f. Bare Piping in Unfinished Service Spaces: One-piece, cast-brass or split-casting brass type with rough-brass finish.
g. Bare Piping in Equipment Rooms: One-piece, cast-brass or split-casting brass type with rough-brass finish.

2. Escutcheons for Existing Piping:

a. Insulated Piping: Split-plate, stamped-steel type with concealed hinge.
b. Bare Piping at Wall and Floor Penetrations in Finished Spaces: Split-casting brass type with polished, chrome-plated finish.

C. Install floor plates for piping penetrations of equipment-room floors.

D. Install floor plates with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.

1. New Piping: One-piece, floor-plate type.
2. Existing Piping: Split-casting, floor-plate type.

3.2 FIELD QUALITY CONTROL

A. Replace broken and damaged escutcheons and floor plates using new materials.

END OF SECTION 23 05 18

SECTION 23 05 29
HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Owner's General Conditions of the Contract, and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Metal pipe hangers and supports.
2. Trapeze pipe hangers.
3. Metal framing systems.
4. Thermal-hanger shield inserts.
5. Fastener systems.
6. Pipe stands.
7. Equipment supports.

B. Related Sections:

1. Division 05 Section "Metal Fabrications" for structural-steel shapes and plates for trapeze hangers for pipe and equipment supports.
2. Division 23 Section "Vibration Controls for HVAC Piping and Equipment" for vibration isolation devices.
3. Division 23 Section(s) "Metal Ducts" and "Nonmetal Ducts" for duct hangers and supports.

1.3 DEFINITIONS

A. MSS: Manufacturers Standardization Society of The Valve and Fittings Industry Inc.

1.4 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design trapeze pipe hangers and equipment supports, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Hangers and supports for HVAC piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.

1. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.

2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Signed and sealed by a qualified professional engineer. Show fabrication and installation details and include calculations for the following; include Product Data for components:

1. Trapeze pipe hangers.
2. Metal framing systems.
3. Fiberglass strut systems.
4. Pipe stands.
5. Equipment supports.

C. Delegated-Design Submittal: For trapeze hangers indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1. Detail fabrication and assembly of trapeze hangers.
2. Design Calculations: Calculate requirements for designing trapeze hangers.

1.6 INFORMATIONAL SUBMITTALS

A. Welding certificates.

1.7 QUALITY ASSURANCE

A. Structural Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

PART 2 - PRODUCTS

2.1 METAL PIPE HANGERS AND SUPPORTS

A. Carbon-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Galvanized Metallic Coatings: Pregalvanized or hot dipped.
3. Nonmetallic Coatings: Plastic coating, jacket, or liner.
4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
5. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.

B. Copper Pipe Hangers:

1. Description: MSS SP-58, Types 1 through 58, copper-coated-steel, factory-fabricated components.
2. Hanger Rods: Continuous-thread rod, nuts, and washer made of copper-coated steel or stainless steel.

2.2 TRAPEZE PIPE HANGERS

A. Description: MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural carbon-steel shapes with MSS SP-58 carbon-steel hanger rods, nuts, saddles, and U-bolts.

2.3 METAL FRAMING SYSTEMS

A. MFMA Manufacturer Metal Framing Systems:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following :
2. Basis-of-Design Product: Subject to compliance with requirements, provide or comparable product by one of the following:
   a. Cooper B-Line, Inc.
   b. Flex-Strut Inc.
   c. GS Metals Corp.
   d. Thomas & Betts Corporation.
   e. Unistrut Corporation; Tyco International, Ltd.
3. Description: Shop- or field-fabricated pipe-support assembly for supporting multiple parallel pipes.
4. Standard: MFMA-4.
5. Channels: Continuous slotted steel channel with inturned lips.
6. Channel Nuts: Formed or stamped steel nuts or other devices designed to fit into channel slot and, when tightened, prevent slipping along channel.
7. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.
8. Metallic Coating: Hot-dipped galvanized.

2.4 THERMAL-HANGER SHIELD INSERTS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Carpenter & Paterson, Inc.
2. Clement Support Services.
3. ERICO International Corporation.
4. National Pipe Hanger Corporation.
5. PHS Industries, Inc.
6. Pipe Shields, Inc.; a subsidiary of Piping Technology & Products, Inc.
7. Piping Technology & Products, Inc.
8. Rilco Manufacturing Co., Inc.
9. Value Engineered Products, Inc.

B. Insulation-Insert Material for Cold Piping: ASTM C 552, Type II cellular glass with 100-psig or ASTM C 591, Type VI, Grade 1 polyisocyanurate with 125-psigminimum compressive strength and vapor barrier.

C. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.

D. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.

E. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

2.5 FASTENER SYSTEMS

A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

B. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel anchors, for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

2.6 PIPE STANDS

A. General Requirements for Pipe Stands: Shop- or field-fabricated assemblies made of manufactured corrosion-resistant components to support roof-mounted piping.

B. Compact Pipe Stand: One-piece plastic unit with integral-rod roller, pipe clamps, or V-shaped cradle to support pipe, for roof installation without membrane penetration.

C. Low-Type, Single-Pipe Stand: One-piece plastic base unit with plastic roller, for roof installation without membrane penetration.

D. Curb-Mounted-Type Pipe Stands: Shop- or field-fabricated pipe supports made from structural-steel shapes, continuous-thread rods, and rollers, for mounting on permanent stationary roof curb.

2.7 EQUIPMENT SUPPORTS

A. Description: Welded, shop- or field-fabricated equipment support made from structural carbon-steel shapes.

2.8 MISCELLANEOUS MATERIALS

A. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.

B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.

1. Properties: Nonstaining, noncorrosive, and nongaseous.
2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT INSTALLATION

A. Metal Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.

B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.

1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.
2. Field fabricate from ASTM A 36/A 36M, carbon-steel shapes selected for loads being supported. Weld steel according to AWS D1.1/D1.1M.

C. Metal Framing System Installation: Arrange for grouping of parallel runs of piping, and support together on field-assembled metal framing systems.

D. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.

E. Fastener System Installation:

1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

F. Pipe Stand Installation:

1. Pipe Stand Types except Curb-Mounted Type: Assemble components and mount on smooth roof surface. Do not penetrate roof membrane.
2. Curb-Mounted-Type Pipe Stands: Assemble components or fabricate pipe stand and mount on permanent, stationary roof curb. See Division 07 Section "Roof Accessories" for curbs.

G. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.

H. Equipment Support Installation: Fabricate from welded-structural-steel shapes.

I. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

J. Install lateral bracing with pipe hangers and supports to prevent swaying.

K. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

L. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

M. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.

N. Insulated Piping:

1. Attach clamps and spacers to piping.

   a. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
   b. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.

2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.

   a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.

3. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.

   a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4and larger if pipe is installed on rollers.

4. Shield Dimensions for Pipe: Not less than the following:

   a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.
   b. NPS 4: 12 inches long and 0.06 inch thick.
   c. NPS 5 and NPS 6: 18 inches long and 0.06 inch thick.
   d. NPS 8 to NPS 14: 24 inches long and 0.075 inch thick.

5. Pipes NPS 8and Larger: Include wood or reinforced calcium-silicate-insulation inserts of length at least as long as protective shield.
6. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

3.2 EQUIPMENT SUPPORTS

A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.

B. Grouting: Place grout under supports for equipment and make bearing surface smooth.

C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.3 METAL FABRICATIONS

A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.

B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Finish welds at exposed connections so no roughness shows after finishing and so contours of welded surfaces match adjacent contours.

3.4 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

3.5 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.

B. Touchup: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal are specified in Division 09 painting Sections.

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

3.6 HANGER AND SUPPORT SCHEDULE

A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.

B. Comply with MSS SP-69 for pipe-hanger selections and applications that are not specified in piping system Sections.

C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.

D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

E. Use carbon-steel pipe hangers and supports, metal trapeze pipe hangers and metal framing systems and attachments for general service applications.

F. Use copper-plated pipe hangers and copper attachments for copper piping and tubing.

G. Use padded hangers for piping that is subject to scratching.

H. Use thermal-hanger shield inserts for insulated piping and tubing.

I. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated, stationary pipes NPS 1/2 to NPS 30.
2. Steel Pipe Clamps (MSS Type 4): For suspension of cold pipes NPS 1/2 to NPS 24 if little or no insulation is required.
3. Pipe Hangers (MSS Type 5): For suspension of pipes NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.
4. Adjustable, Swivel Split- or Solid-Ring Hangers (MSS Type 6): For suspension of noninsulated, stationary pipes NPS 3/4 to NPS 8.
5. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
6. Adjustable Band Hangers (MSS Type 9): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
7. Adjustable, Swivel-Ring Band Hangers (MSS Type 10): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
8. U-Bolts (MSS Type 24): For support of heavy pipes NPS 1/2 to NPS 30.
9. Clips (MSS Type 26): For support of insulated pipes not subject to expansion or contraction.
10. Single-Pipe Rolls (MSS Type 41): For suspension of pipes NPS 1 to NPS 30, from two rods if longitudinal movement caused by expansion and contraction might occur.
11. Adjustable Roller Hangers (MSS Type 43): For suspension of pipes NPS 2-1/2 to NPS, from single rod if horizontal movement caused by expansion and contraction might occur.

J. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24.
2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers NPS 3/4 to NPS 24 if longer ends are required for riser clamps.

K. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.

2. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.

L. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction, to attach to top flange of structural shape.
3. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
4. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
5. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
6. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.
7. Welded-Steel Brackets: For support of pipes from below or for suspending from above by using clip and rod. Use one of the following for indicated loads:

   a. Light (MSS Type 31): 750 lb.
   b. Medium (MSS Type 32): 1500 lb.
   c. Heavy (MSS Type 33): 3000 lb.

M. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel-Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
3. Thermal-Hanger Shield Inserts: For supporting insulated pipe.

N. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Restraint-Control Devices (MSS Type 47): Where indicated to control piping movement.
2. Spring Cushions (MSS Type 48): For light loads if vertical movement does not exceed 1-1/4 inches.
3. Spring-Cushion Roll Hangers (MSS Type 49): For equipping Type 41, roll hanger with springs.
4. Variable-Spring Hangers (MSS Type 51): Preset to indicated load and limit variability factor to 25 percent to allow expansion and contraction of piping system from hanger.

O. Comply with MSS SP-69 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.

P. Comply with MFMA-103 for metal framing system selections and applications that are not specified in piping system Sections.

Q. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.

END OF SECTION 23 05 29

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SECTION 23 05 48.13
VIBRATION CONTROLS FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Owner's General Conditions of the Contract, and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Open-spring isolators.
2. Pipe-riser resilient supports.
3. Resilient pipe guides.
4. Spring hangers.
5. Vibration isolation equipment bases.

B. Related Requirements:

1. Section 21 05 48.13 "Vibration Controls for Fire Suppression" for devices for fire-suppression equipment and systems.
2. Section 22 05 48.13 "Vibration Controls for Plumbing" for devices for plumbing equipment and systems.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include rated load, rated deflection, and overload capacity for each vibration isolation device.
2. Illustrate and indicate style, material, strength, fastening provision, and finish for each type and size of vibration isolation device type required.

B. Shop Drawings:

1. Detail fabrication and assembly of equipment bases. Detail fabrication including anchorages and attachments to structure and to supported equipment. Include adjustable motor bases, rails, and frames for equipment mounting.
2. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include adjustable motor bases, rails, and frames for equipment mounting.

C. Delegated-Design Submittal: For each vibration isolation device.

1. Include design calculations for selecting vibration isolators and for designing vibration isolation bases.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Show coordination of vibration isolation device installation for HVAC piping and equipment with other systems and equipment in the vicinity, including other supports and restraints, if any.

B. Qualification Data: For testing agency.

C. Welding certificates.

1.5 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

PART 2 - PRODUCTS

2.1 OPEN-SPRING ISOLATORS

A. Freestanding, Laterally Stable, Open-Spring Isolators:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Ace Mountings Co., Inc.
   b. California Dynamics Corporation.
   c. Isolation Technology, Inc.
   d. Kinetics Noise Control, Inc.
   e. Mason Industries, Inc.
   f. Vibration Eliminator Co., Inc.
   g. Vibration Isolation.
   h. Vibration Mountings & Controls, Inc.

2. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
3. Minimum Additional Travel: 50 percent of the required deflection at rated load.
4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
6. Baseplates: Factory-drilled steel plate for bolting to structure with an elastomeric isolator pad attached to the underside. Baseplates shall limit floor load to 500 psig.
7. Top Plate and Adjustment Bolt: Threaded top plate with adjustment bolt and cap screw to fasten and level equipment.

2.2 PIPE-RISER RESILIENT SUPPORT

A. Description: All-directional, acoustical pipe anchor consisting of two steel tubes separated by a minimum 1/2-inch-thick neoprene.

1. Vertical-Limit Stops: Steel and neoprene vertical-limit stops arranged to prevent vertical travel in both directions.
2. Maximum Load Per Support: 500 psig on isolation material providing equal isolation in all directions.

2.3 SPRING HANGERS

A. Combination Coil-Spring and Elastomeric-Insert Hanger with Spring and Insert in Compression:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Ace Mountings Co., Inc.
    b. California Dynamics Corporation.
    c. Kinetics Noise Control, Inc.
    d. Mason Industries, Inc.
    e. Vibration Eliminator Co., Inc.
    f. Vibration Isolation.
    g. Vibration Mountings & Controls, Inc.

2. Frame: Steel, fabricated for connection to threaded hanger rods and to allow for a maximum of 30 degrees of angular hanger-rod misalignment without binding or reducing isolation efficiency.
3. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
4. Minimum Additional Travel: 50 percent of the required deflection at rated load.
5. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
6. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
7. Elastomeric Element: Molded, oil-resistant rubber or neoprene. Steel-washer-reinforced cup to support spring and bushing projecting through bottom of frame.
8. Adjustable Vertical Stop: Steel washer with neoprene washer "up-stop" on lower threaded rod.
9. Self-centering hanger rod cap to ensure concentricity between hanger rod and support spring coil.

2.4 VIBRATION ISOLATION EQUIPMENT BASES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. California Dynamics Corporation.
2. Kinetics Noise Control.
3. Mason Industries, Inc.
4. Vibration Eliminator Co., Inc.
5. Vibration Isolation.
6. Vibration Mountings & Controls, Inc.

B. Steel Rails: Factory-fabricated, welded, structural-steel rails.

1. Design Requirements: Lowest possible mounting height with not less than 1-inch clearance above the floor. Include equipment anchor bolts and auxiliary motor slide rails.

a. Include supports for suction and discharge elbows for pumps.

2. Structural Steel: Steel shapes, plates, and bars complying with ASTM A 36/A 36M. Rails shall have shape to accommodate supported equipment.
3. Support Brackets: Factory-welded steel brackets on frame for outrigger isolation mountings and to provide for anchor bolts and equipment support.

C. Steel Bases: Factory-fabricated, welded, structural-steel bases and rails.

1. Design Requirements: Lowest possible mounting height with not less than 1-inchclearance above the floor. Include equipment anchor bolts and auxiliary motor slide bases or rails.

a. Include supports for suction and discharge elbows for pumps.

2. Structural Steel: Steel shapes, plates, and bars complying with ASTM A 36/A 36M. Bases shall have shape to accommodate supported equipment.
3. Support Brackets: Factory-welded steel brackets on frame for outrigger isolation mountings and to provide for anchor bolts and equipment support.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and equipment to receive vibration isolation control devices for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in of reinforcement and cast-in-place anchors to verify actual locations before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 VIBRATION CONTROL DEVICE INSTALLATION

A. Coordinate the location of embedded connection hardware with supported equipment attachment and mounting points and with requirements for concrete reinforcement and formwork specified in Section 03 30 00 "Cast-in-Place Concrete."

B. Installation of vibration isolators must not cause any change of position of equipment, piping, or ductwork resulting in stresses or misalignment.

3.3 VIBRATION ISOLATION EQUIPMENT BASES INSTALLATION

A. Coordinate the location of embedded connection hardware with supported equipment attachment and mounting points and with requirements for concrete reinforcement and formwork specified in Section 03 30 00 "Cast-in-Place Concrete."

END OF SECTION 23 05 48.13

SECTION 23 05 93
TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Owner's General Conditions of the Contract, and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Balancing Air Systems:

a. Constant-volume air systems.
b. Variable-air-volume systems.

2. Balancing Hydronic Piping Systems:

a. Constant-flow hydronic systems.
b. Primary-secondary hydronic systems.

1.3 DEFINITIONS

A. AABC: Associated Air Balance Council.

B. NEBB: National Environmental Balancing Bureau.

C. TAB: Testing, adjusting, and balancing.

D. TABB: Testing, Adjusting, and Balancing Bureau.

E. TAB Specialist: An entity engaged to perform TAB Work.

1.4 SUBMITTALS

A. Qualification Data: Within 30 days of Contractor's Notice to Proceed, submit documentation that the TAB contractor and this Project's TAB team members meet the qualifications specified in "Quality Assurance" Article.

B. Contract Documents Examination Report: Within 30 days of Contractor's Notice to Proceed, submit the Contract Documents review report as specified in Part 3.

C. Strategies and Procedures Plan: Within 60 days of Contractor's Notice to Proceed, submit TAB strategies and step-by-step procedures as specified in "Preparation" Article.

D. Certified TAB reports.

E. Sample report forms.

F. Instrument calibration reports, to include the following:

1. Instrument type and make.
2. Serial number.
3. Application.
4. Dates of use.
5. Dates of calibration.

1.5 QUALITY ASSURANCE

A. TAB Contractor Qualifications: Engage a TAB entity certified by AABC NEBB.

1. TAB Field Supervisor: Employee of the TAB contractor and certified by AABC or NEBB.
2. TAB Technician: Employee of the TAB contractor and who is certified by AABC or NEBB as a TAB technician.

B. TAB Conference: Meet with Architect, Owner, Construction Manager or Commissioning Authority on approval of the TAB strategies and procedures plan to develop a mutual understanding of the details. Require the participation of the TAB field supervisor and technicians. Provide seven days' advance notice of scheduled meeting time and location.

1. Agenda Items:

a. The Contract Documents examination report.
b. The TAB plan.
c. Coordination and cooperation of trades and subcontractors.
d. Coordination of documentation and communication flow.

C. Certify TAB field data reports and perform the following:

1. Review field data reports to validate accuracy of data and to prepare certified TAB reports.
2. Certify that the TAB team complied with the approved TAB plan and the procedures specified and referenced in this Specification.

D. TAB Report Forms: Use standard TAB contractor's forms approved by Architect .

E. Instrumentation Type, Quantity, Accuracy, and Calibration: As described in ASHRAE 111, Section 5, "Instrumentation."

1.6 PROJECT CONDITIONS

A. Full Owner Occupancy: Owner will occupy the site and existing building during entire TAB period. Cooperate with Owner during TAB operations to minimize conflicts with Owner's operations.

B. Partial Owner Occupancy: Owner may occupy completed areas of building before Substantial Completion. Cooperate with Owner during TAB operations to minimize conflicts with Owner's operations.

1.7 COORDINATION

A. Notice: Provide seven days' advance notice for each test. Include scheduled test dates and times.

B. Perform TAB after leakage and pressure tests on air and water distribution systems have been satisfactorily completed.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems' designs that may preclude proper TAB of systems and equipment.

B. Examine systems for installed balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are accessible.

C. Examine the approved submittals for HVAC systems and equipment.

D. Examine design data including HVAC system descriptions, statements of design assumptions for environmental conditions and systems' output, and statements of philosophies and assumptions about HVAC system and equipment controls.

E. Examine ceiling plenums and underfloor air plenums used for supply, return, or relief air to verify that they meet the leakage class of connected ducts as specified in Division 23 Section "Metal Ducts " and are properly separated from adjacent areas. Verify that penetrations in plenum walls are sealed and fire-stopped if required.

F. Examine equipment performance data including fan and pump curves.

1. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
2. Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems - Duct Design." Compare results with the design data and installed conditions.

G. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.

H. Examine test reports specified in individual system and equipment Sections.

I. Examine HVAC equipment and filters and verify that bearings are greased, belts are aligned and tight, and equipment with functioning controls is ready for operation.

J. Examine terminal units, such as variable-air-volume boxes, and verify that they are accessible and their controls are connected and functioning.

K. Examine strainers. Verify that startup screens are replaced by permanent screens with indicated perforations.

L. Examine three-way valves for proper installation for their intended function of diverting or mixing fluid flows.

M. Examine heat-transfer coils for correct piping connections and for clean and straight fins.

N. Examine system pumps to ensure absence of entrained air in the suction piping.

O. Examine operating safety interlocks and controls on HVAC equipment.

P. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

3.2 PREPARATION

A. Prepare a TAB plan that includes strategies and step-by-step procedures.

B. Complete system-readiness checks and prepare reports. Verify the following:

1. Permanent electrical-power wiring is complete.
2. Hydronic systems are filled, clean, and free of air.
3. Automatic temperature-control systems are operational.
4. Equipment and duct access doors are securely closed.
5. Balance, smoke, and fire dampers are open.
6. Isolating and balancing valves are open and control valves are operational.
7. Ceilings are installed in critical areas where air-pattern adjustments are required and access to balancing devices is provided.
8. Windows and doors can be closed so indicated conditions for system operations can be met.

3.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

A. Perform testing and balancing procedures on each system according to the procedures contained in AABC's "National Standards for Total System Balance", ASHRAE 111, NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems" and in this Section.

1. Comply with requirements in ASHRAE 62.1-2013, Section 7.2.2, "Air Balancing."

B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures.

1. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts.
2. After testing and balancing, install test ports and duct access doors that comply with requirements in Division 23 Section "Air Duct Accessories."
3. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish according to Division 23 Section "HVAC Insulation."

C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.

D. Take and report testing and balancing measurements in inch-pound (IP) units.

3.4 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Crosscheck the summation of required outlet volumes with required fan volumes.

B. Prepare schematic diagrams of systems' "as-built" duct layouts.

C. For variable-air-volume systems, develop a plan to simulate diversity.

D. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.

E. Check airflow patterns from the outdoor-air louvers and dampers and the return- and exhaust-air dampers through the supply-fan discharge and mixing dampers.

F. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.

G. Verify that motor starters are equipped with properly sized thermal protection.

H. Check dampers for proper position to achieve desired airflow path.

I. Check for airflow blockages.

J. Check condensate drains for proper connections and functioning.

K. Check for proper sealing of air-handling-unit components.

L. Verify that air duct system is sealed as specified in Division 23 Section "Metal Ducts."

3.5 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS

A. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.

1. Measure total airflow.

    a. Where sufficient space in ducts is unavailable for Pitot-tube traverse measurements, measure airflow at terminal outlets and inlets and calculate the total airflow.

2. Measure fan static pressures as follows to determine actual static pressure:

    a. Measure outlet static pressure as far downstream from the fan as practical and upstream from restrictions in ducts such as elbows and transitions.
    b. Measure static pressure directly at the fan outlet or through the flexible connection.
    c. Measure inlet static pressure of single-inlet fans in the inlet duct as near the fan as possible, upstream from the flexible connection, and downstream from duct restrictions.
    d. Measure inlet static pressure of double-inlet fans through the wall of the plenum that houses the fan.

3. Measure static pressure across each component that makes up an air-handling unit, rooftop unit, and other air-handling and -treating equipment.

    a. Report the cleanliness status of filters and the time static pressures are measured.

4. Measure static pressures entering and leaving other devices, such as sound traps, heat-recovery equipment, and air washers, under final balanced conditions.
5. Review Record Documents to determine variations in design static pressures versus actual static pressures. Calculate actual system-effect factors. Recommend adjustments to accommodate actual conditions.
6. Obtain approval from Architect for adjustment of fan speed higher or lower than indicated speed. Comply with requirements in Division 23 Sections for air-handling units for adjustment of fans, belts, and pulley sizes to achieve indicated air-handling-unit performance.
7. Do not make fan-speed adjustments that result in motor overload. Consult equipment manufacturers about fan-speed safety factors. Modulate dampers and measure fan-motor amperage to ensure that no overload will occur. Measure amperage in full-cooling, full-heating, economizer, and any other operating mode to determine the maximum required brake horsepower.

B. Adjust volume dampers for main duct, submain ducts, and major branch ducts to indicated airflows within specified tolerances.

1. Measure airflow of submain and branch ducts.

    a. Where sufficient space in submain and branch ducts is unavailable for Pitot-tube traverse measurements, measure airflow at terminal outlets and inlets and calculate the total airflow for that zone.

2. Measure static pressure at a point downstream from the balancing damper, and adjust volume dampers until the proper static pressure is achieved.
3. Remeasure each submain and branch duct after all have been adjusted. Continue to adjust submain and branch ducts to indicated airflows within specified tolerances.

C. Measure air outlets and inlets without making adjustments.

1. Measure terminal outlets using a direct-reading hood or outlet manufacturer's written instructions and calculating factors.

D. Adjust air outlets and inlets for each space to indicated airflows within specified tolerances of indicated values. Make adjustments using branch volume dampers rather than extractors and the dampers at air terminals.

1. Adjust each outlet in same room or space to within specified tolerances of indicated quantities without generating noise levels above the limitations prescribed by the Contract Documents.
2. Adjust patterns of adjustable outlets for proper distribution without drafts.

3.6 PROCEDURES FOR VARIABLE-AIR-VOLUME SYSTEMS

A. Compensating for Diversity: When the total airflow of all terminal units is more than the indicated airflow of the fan, place a selected number of terminal units at a minimum set-point airflow with the remainder at maximum-airflow condition until the total airflow of the terminal units equals the indicated airflow of the fan. Select the reduced-airflow terminal units so they are distributed evenly among the branch ducts.

B. Pressure-Independent, Variable-Air-Volume Systems: After the fan systems have been adjusted, adjust the variable-air-volume systems as follows:

1. Set outdoor-air dampers at minimum, and set return- and exhaust-air dampers at a position that simulates full-cooling load.
2. Select the terminal unit that is most critical to the supply-fan airflow and static pressure. Measure static pressure. Adjust system static pressure so the entering static pressure for the critical terminal unit is not less than the sum of the terminal-unit manufacturer's recommended minimum inlet static pressure plus the static pressure needed to overcome terminal-unit discharge system losses.
3. Measure total system airflow. Adjust to within indicated airflow.
4. Set terminal units at maximum airflow and adjust controller or regulator to deliver the designed maximum airflow. Use terminal-unit manufacturer's written instructions to make this adjustment. When total airflow is correct, balance the air outlets downstream from terminal units the same as described for constant-volume air systems.
5. Set terminal units at minimum airflow and adjust controller or regulator to deliver the designed minimum airflow. Check air outlets for a proportional reduction in airflow the same as described for constant-volume air systems.

    a. If air outlets are out of balance at minimum airflow, report the condition but leave outlets balanced for maximum airflow.

6. Remeasure the return airflow to the fan while operating at maximum return airflow and minimum outdoor airflow.

    a. Adjust the fan and balance the return-air ducts and inlets the same as described for constant-volume air systems.

7. Measure static pressure at the most critical terminal unit and adjust the static-pressure controller at the main supply-air sensing station to ensure that adequate static pressure is maintained at the most critical unit.
8. Record final fan-performance data.

C. Pressure-Dependent, Variable-Air-Volume Systems without Diversity: After the fan systems have been adjusted, adjust the variable-air-volume systems as follows:

1. Balance variable-air-volume systems the same as described for constant-volume air systems.
2. Set terminal units and supply fan at full-airflow condition.
3. Adjust inlet dampers of each terminal unit to indicated airflow and verify operation of the static-pressure controller. When total airflow is correct, balance the air outlets downstream from terminal units the same as described for constant-volume air systems.
4. Readjust fan airflow for final maximum readings.
5. Measure operating static pressure at the sensor that controls the supply fan if one is installed, and verify operation of the static-pressure controller.
6. Set supply fan at minimum airflow if minimum airflow is indicated. Measure static pressure to verify that it is being maintained by the controller.
7. Set terminal units at minimum airflow and adjust controller or regulator to deliver the designed minimum airflow. Check air outlets for a proportional reduction in airflow the same as described for constant-volume air systems.

    a. If air outlets are out of balance at minimum airflow, report the condition but leave the outlets balanced for maximum airflow.

8. Measure the return airflow to the fan while operating at maximum return airflow and minimum outdoor airflow.

    a. Adjust the fan and balance the return-air ducts and inlets the same as described for constant-volume air systems.

D. Pressure-Dependent, Variable-Air-Volume Systems with Diversity: After the fan systems have been adjusted, adjust the variable-air-volume systems as follows:

1. Set system at maximum indicated airflow by setting the required number of terminal units at minimum airflow. Select the reduced-airflow terminal units so they are distributed evenly among the branch ducts.
2. Adjust supply fan to maximum indicated airflow with the variable-airflow controller set at maximum airflow.
3. Set terminal units at full-airflow condition.
4. Adjust terminal units starting at the supply-fan end of the system and continuing progressively to the end of the system. Adjust inlet dampers of each terminal unit to indicated airflow. When total airflow is correct, balance the air outlets downstream from terminal units the same as described for constant-volume air systems.
5. Adjust terminal units for minimum airflow.
6. Measure static pressure at the sensor.
7. Measure the return airflow to the fan while operating at maximum return airflow and minimum outdoor airflow. Adjust the fan and balance the return-air ducts and inlets the same as described for constant-volume air systems.

3.7 GENERAL PROCEDURES FOR HYDRONIC SYSTEMS

A. Prepare test reports with pertinent design data, and number in sequence starting at pump to end of system. Check the sum of branch-circuit flows against the approved pump flow rate. Correct variations that exceed plus or minus 5 percent.

B. Prepare schematic diagrams of systems' "as-built" piping layouts.

C. Prepare hydronic systems for testing and balancing according to the following, in addition to the general preparation procedures specified above:

1. Open all manual valves for maximum flow.
2. Check liquid level in expansion tank.
3. Check makeup water-station pressure gage for adequate pressure for highest vent.
4. Check flow-control valves for specified sequence of operation, and set at indicated flow.
5. Set differential-pressure control valves at the specified differential pressure. Do not set at fully closed position when pump is positive-displacement type unless several terminal valves are kept open.
6. Set system controls so automatic valves are wide open to heat exchangers.
7. Check pump-motor load. If motor is overloaded, throttle main flow-balancing device so motor nameplate rating is not exceeded.
8. Check air vents for a forceful liquid flow exiting from vents when manually operated.

3.8 PROCEDURES FOR CONSTANT-FLOW HYDRONIC SYSTEMS

A. Measure water flow at pumps. Use the following procedures except for positive-displacement pumps:

1. Verify impeller size by operating the pump with the discharge valve closed. Read pressure differential across the pump. Convert pressure to head and correct for differences in gage heights. Note the point on manufacturer's pump curve at zero flow and verify that the pump has the intended impeller size.

    a. If impeller sizes must be adjusted to achieve pump performance, obtain approval from Architect and comply with requirements in Division 23 Section "Hydronic Pumps."

2. Check system resistance. With all valves open, read pressure differential across the pump and mark pump manufacturer's head-capacity curve. Adjust pump discharge valve until indicated water flow is achieved.

    a. Monitor motor performance during procedures and do not operate motors in overload conditions.

3. Verify pump-motor brake horsepower. Calculate the intended brake horsepower for the system based on pump manufacturer's performance data. Compare calculated brake horsepower with nameplate data on the pump motor. Report conditions where actual amperage exceeds motor nameplate amperage.
4. Report flow rates that are not within plus or minus 10 percent of design.

B. Measure flow at all automatic flow control valves to verify that valves are functioning as designed.

C. Measure flow at all pressure-independent characterized control valves, with valves in fully open position, to verify that valves are functioning as designed.

D. Set calibrated balancing valves, if installed, at calculated presettings.

E. Measure flow at all stations and adjust, where necessary, to obtain first balance.

1. System components that have Cv rating or an accurately cataloged flow-pressure-drop relationship may be used as a flow-indicating device.

F. Measure flow at main balancing station and set main balancing device to achieve flow that is 5 percent greater than indicated flow.

G. Adjust balancing stations to within specified tolerances of indicated flow rate as follows:

1. Determine the balancing station with the highest percentage over indicated flow.
2. Adjust each station in turn, beginning with the station with the highest percentage over indicated flow and proceeding to the station with the lowest percentage over indicated flow.
3. Record settings and mark balancing devices.

H. Measure pump flow rate and make final measurements of pump amperage, voltage, rpm, pump heads, and systems' pressures and temperatures including outdoor-air temperature.

I. Measure the differential-pressure-control-valve settings existing at the conclusion of balancing.

J. Check settings and operation of each safety valve. Record settings.

3.9 PROCEDURES FOR VARIABLE-FLOW HYDRONIC SYSTEMS

A. Balance systems with automatic two- and three-way control valves by setting systems at maximum flow through heat-exchange terminals and proceed as specified above for hydronic systems.

3.10 PROCEDURES FOR PRIMARY-SECONDARY HYDRONIC SYSTEMS

A. Balance the primary circuit flow first and then balance the secondary circuits.

3.11 PROCEDURES FOR MOTORS

A. Motors, 1/2 HP and Larger: Test at final balanced conditions and record the following data:

1. Manufacturer's name, model number, and serial number.
2. Motor horsepower rating.
3. Motor rpm.
4. Efficiency rating.
5. Nameplate and measured voltage, each phase.
6. Nameplate and measured amperage, each phase.
7. Starter thermal-protection-element rating.

B. Motors Driven by Variable-Frequency Controllers: Test for proper operation at speeds varying from minimum to maximum. Test the manual bypass of the controller to prove proper operation. Record observations including name of controller manufacturer, model number, serial number, and nameplate data.

3.12 PROCEDURES FOR CHILLERS

A. Balance water flow through each evaporator and condenser to within specified tolerances of indicated flow with all pumps operating. With only one chiller operating in a multiple chiller installation, do not exceed the flow for the maximum tube velocity recommended by the chiller manufacturer. Measure and record the following data with each chiller operating at design conditions:

1. Evaporator-water entering and leaving temperatures, pressure drop, and water flow.
2. For water-cooled chillers, condenser-water entering and leaving temperatures, pressure drop, and water flow.
3. Evaporator and condenser refrigerant temperatures and pressures, using instruments furnished by chiller manufacturer.
4. Power factor if factory-installed instrumentation is furnished for measuring kilowatts.
5. Kilowatt input if factory-installed instrumentation is furnished for measuring kilowatts.
6. Capacity: Calculate in tons of cooling.
7. For air-cooled chillers, verify condenser-fan rotation and record fan and motor data including number of fans and entering- and leaving-air temperatures.

3.13 PROCEDURES FOR COOLING TOWERS

A. Shut off makeup water for the duration of the test, and verify that makeup and blowdown systems are fully operational after tests and before leaving the equipment. Perform the following tests and record the results:

1. Measure condenser-water flow to each cell of the cooling tower.
2. Measure entering- and leaving-water temperatures.
3. Measure wet- and dry-bulb temperatures of entering air.
4. Measure wet- and dry-bulb temperatures of leaving air.
5. Measure condenser-water flow rate recirculating through the cooling tower.
6. Measure cooling-tower spray pump discharge pressure.
7. Adjust water level and feed rate of makeup water system.
8. Measure flow through bypass.

3.14 PROCEDURES FOR HEAT-TRANSFER COILS

A. Measure, adjust, and record the following data for each water coil:

1. Entering- and leaving-water temperature.
2. Water flow rate.
3. Water pressure drop.
4. Dry-bulb temperature of entering and leaving air.
5. Wet-bulb temperature of entering and leaving air for cooling coils.
6. Airflow.

7. Air pressure drop.

B. Measure, adjust, and record the following data for each electric heating coil:

1. Nameplate data.
2. Airflow.
3. Entering- and leaving-air temperature at full load.
4. Voltage and amperage input of each phase at full load and at each incremental stage.
5. Calculated kilowatt at full load.
6. Fuse or circuit-breaker rating for overload protection.

C. Measure, adjust, and record the following data for each steam coil:

1. Dry-bulb temperature of entering and leaving air.
2. Airflow.
3. Air pressure drop.
4. Inlet steam pressure.

D. Measure, adjust, and record the following data for each refrigerant coil:

1. Dry-bulb temperature of entering and leaving air.
2. Wet-bulb temperature of entering and leaving air.
3. Airflow.
4. Air pressure drop.
5. Refrigerant suction pressure and temperature.

3.15 TOLERANCES

A. Set HVAC system's air flow rates and water flow rates within the following tolerances:

1. Supply, Return, and Exhaust Fans and Equipment with Fans: Plus or minus 10 percent .
2. Air Outlets and Inlets: Plus or minus 10 percent .
3. Heating-Water Flow Rate: Plus or minus 10 percent .
4. Cooling-Water Flow Rate: Plus or minus 10 percent .

3.16 REPORTING

A. Initial Construction-Phase Report: Based on examination of the Contract Documents as specified in "Examination" Article, prepare a report on the adequacy of design for systems' balancing devices. Recommend changes and additions to systems' balancing devices to facilitate proper performance measuring and balancing. Recommend changes and additions to HVAC systems and general construction to allow access for performance measuring and balancing devices.

B. Status Reports: Prepare biweekly progress reports to describe completed procedures, procedures in progress, and scheduled procedures. Include a list of deficiencies and problems found in systems being tested and balanced. Prepare a separate report for each system and each building floor for systems serving multiple floors.

3.17 FINAL REPORT

A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.

1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
2. Include a list of instruments used for procedures, along with proof of calibration.

B. Final Report Contents: In addition to certified field-report data, include the following:

1. Pump curves.
2. Fan curves.
3. Manufacturers' test data.
4. Field test reports prepared by system and equipment installers.
5. Other information relative to equipment performance; do not include Shop Drawings and product data.

C. General Report Data: In addition to form titles and entries, include the following data:

1. Title page.
2. Name and address of the TAB contractor.
3. Project name.
4. Project location.
5. Architect's name and address.
6. Engineer's name and address.
7. Contractor's name and address.
8. Report date.
9. Signature of TAB supervisor who certifies the report.
10. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
11. Summary of contents including the following:

    a. Indicated versus final performance.
    b. Notable characteristics of systems.
    c. Description of system operation sequence if it varies from the Contract Documents.

12. Nomenclature sheets for each item of equipment.
13. Data for terminal units, including manufacturer's name, type, size, and fittings.
14. Notes to explain why certain final data in the body of reports vary from indicated values.
15. Test conditions for fans and pump performance forms including the following:

    a. Settings for outdoor-, return-, and exhaust-air dampers.
    b. Conditions of filters.
    c. Cooling coil, wet- and dry-bulb conditions.
    d. Face and bypass damper settings at coils.
    e. Fan drive settings including settings and percentage of maximum pitch diameter.
    f. Inlet vane settings for variable-air-volume systems.
    g. Settings for supply-air, static-pressure controller.
    h. Other system operating conditions that affect performance.

D. System Diagrams: Include schematic layouts of air and hydronic distribution systems. Present each system with single-line diagram and include the following:

1. Quantities of outdoor, supply, return, and exhaust airflows.
2. Water and steam flow rates.
3. Duct, outlet, and inlet sizes.
4. Pipe and valve sizes and locations.
5. Terminal units.
6. Balancing stations.
7. Position of balancing devices.

E. Air-Handling-Unit Test Reports: For air-handling units with coils, include the following:

1. Unit Data:

a. Unit identification.
b. Location.
c. Make and type.
d. Model number and unit size.
e. Manufacturer's serial number.
f. Unit arrangement and class.
g. Discharge arrangement.
h. Sheave make, size in inches, and bore.
i. Center-to-center dimensions of sheave, and amount of adjustments in inches.
j. Number, make, and size of belts.
k. Number, type, and size of filters.

2. Motor Data:

a. Motor make, and frame type and size.
b. Horsepower and rpm.
c. Volts, phase, and hertz.
d. Full-load amperage and service factor.
e. Sheave make, size in inches, and bore.
f. Center-to-center dimensions of sheave, and amount of adjustments in inches.

3. Test Data (Indicated and Actual Values):

a. Total air flow rate in cfm.
b. Total system static pressure in inches wg.
c. Fan rpm.
d. Discharge static pressure in inches wg.
e. Filter static-pressure differential in inches wg.
f. Preheat-coil static-pressure differential in inches wg.
g. Cooling-coil static-pressure differential in inches wg.
h. Heating-coil static-pressure differential in inches wg.
i. Outdoor airflow in cfm.
j. Return airflow in cfm.
k. Outdoor-air damper position.
l. Return-air damper position.
m. Vortex damper position.

F. Apparatus-Coil Test Reports:

1. Coil Data:

    a. System identification.
    b. Location.
    c. Coil type.
    d. Number of rows.
    e. Fin spacing in fins per inch o.c.
    f. Make and model number.
    g. Face area in sq. ft..
    h. Tube size in NPS.
    i. Tube and fin materials.
    j. Circuiting arrangement.

2. Test Data (Indicated and Actual Values):

    a. Air flow rate in cfm.
    b. Average face velocity in fpm.
    c. Air pressure drop in inches wg.
    d. Outdoor-air, wet- and dry-bulb temperatures in deg F.
    e. Return-air, wet- and dry-bulb temperatures in deg F.
    f. Entering-air, wet- and dry-bulb temperatures in deg F.
    g. Leaving-air, wet- and dry-bulb temperatures in deg F.
    h. Water flow rate in gpm.
    i. Water pressure differential in feet of head or psig.
    j. Entering-water temperature in deg F.
    k. Leaving-water temperature in deg F.
    l. Refrigerant expansion valve and refrigerant types.
    m. Refrigerant suction pressure in psig.
    n. Refrigerant suction temperature in deg F.
    o. Inlet steam pressure in psig.

G. Electric-Coil Test Reports: For electric furnaces, duct coils, and electric coils installed in central-station air-handling units, include the following:

1. Unit Data:

    a. System identification.
    b. Location.
    c. Coil identification.
    d. Capacity in Btu/h.
    e. Number of stages.
    f. Connected volts, phase, and hertz.
    g. Rated amperage.
    h. Air flow rate in cfm.
    i. Face area in sq. ft..
    j. Minimum face velocity in fpm.

2. Test Data (Indicated and Actual Values):

    a. Heat output in Btu/h.
    b. Air flow rate in cfm.
    c. Air velocity in fpm.
    d. Entering-air temperature in deg F.

e. Leaving-air temperature in deg F.
f. Voltage at each connection.
g. Amperage for each phase.

H. Fan Test Reports: For supply, return, and exhaust fans, include the following:

1. Fan Data:

a. System identification.
b. Location.
c. Make and type.
d. Model number and size.
e. Manufacturer's serial number.
f. Arrangement and class.
g. Sheave make, size in inches, and bore.
h. Center-to-center dimensions of sheave, and amount of adjustments in inches.

2. Motor Data:

a. Motor make, and frame type and size.
b. Horsepower and rpm.
c. Volts, phase, and hertz.
d. Full-load amperage and service factor.
e. Sheave make, size in inches, and bore.
f. Center-to-center dimensions of sheave, and amount of adjustments in inches.
g. Number, make, and size of belts.

3. Test Data (Indicated and Actual Values):

a. Total airflow rate in cfm.
b. Total system static pressure in inches wg.
c. Fan rpm.
d. Discharge static pressure in inches wg.
e. Suction static pressure in inches wg.

I. Round, Flat-Oval, and Rectangular Duct Traverse Reports: Include a diagram with a grid representing the duct cross-section and record the following:

1. Report Data:

a. System and air-handling-unit number.
b. Location and zone.
c. Traverse air temperature in deg F.
d. Duct static pressure in inches wg.
e. Duct size in inches.
f. Duct area in sq. ft..
g. Indicated air flow rate in cfm.
h. Indicated velocity in fpm.
i. Actual air flow rate in cfm.
j. Actual average velocity in fpm.
k. Barometric pressure in psig.

J. Air-Terminal-Device Reports:

1. Unit Data:

    a. System and air-handling unit identification.
    b. Location and zone.
    c. Apparatus used for test.
    d. Area served.
    e. Make.
    f. Number from system diagram.
    g. Type and model number.
    h. Size.
    i. Effective area in sq. ft..

2. Test Data (Indicated and Actual Values):

    a. Air flow rate in cfm.
    b. Air velocity in fpm.
    c. Preliminary air flow rate as needed in cfm.
    d. Preliminary velocity as needed in fpm.
    e. Final air flow rate in cfm.
    f. Final velocity in fpm.
    g. Space temperature in deg F.

K. System-Coil Reports: For reheat coils and water coils of terminal units, include the following:

1. Unit Data:

    a. System and air-handling-unit identification.
    b. Location and zone.
    c. Room or riser served.
    d. Coil make and size.
    e. Flowmeter type.

2. Test Data (Indicated and Actual Values):

    a. Air flow rate in cfm.
    b. Entering-water temperature in deg F.
    c. Leaving-water temperature in deg F.
    d. Water pressure drop in feet of head or psig.
    e. Entering-air temperature in deg F.
    f. Leaving-air temperature in deg F.

L. Pump Test Reports: Calculate impeller size by plotting the shutoff head on pump curves and include the following:

1. Unit Data:

    a. Unit identification.
    b. Location.
    c. Service.
    d. Make and size.
    e. Model number and serial number.
    f. Water flow rate in gpm.
    g. Water pressure differential in feet of head or psig.

h. Required net positive suction head in feet of head or psig.
i. Pump rpm.
j. Impeller diameter in inches.
k. Motor make and frame size.
l. Motor horsepower and rpm.
m. Voltage at each connection.
n. Amperage for each phase.
o. Full-load amperage and service factor.
p. Seal type.

2. Test Data (Indicated and Actual Values):

a. Static head in feet of head or psig.
b. Pump shutoff pressure in feet of head or psig.
c. Actual impeller size in inches.
d. Full-open flow rate in gpm.
e. Full-open pressure in feet of head or psig.
f. Final discharge pressure in feet of head or psig.
g. Final suction pressure in feet of head or psig.
h. Final total pressure in feet of head or psig.
i. Final water flow rate in gpm.
j. Voltage at each connection.
k. Amperage for each phase.

M. Instrument Calibration Reports:

1. Report Data:

a. Instrument type and make.
b. Serial number.
c. Application.
d. Dates of use.
e. Dates of calibration.

3.18 INSPECTIONS

A. Initial Inspection:

1. After testing and balancing are complete, operate each system and randomly check measurements to verify that the system is operating according to the final test and balance readings documented in the final report.
2. Check the following for each system:

a. Measure airflow of at least 25 percent of air outlets.
b. Measure water flow of at least 10 percent of terminals.
c. Measure room temperature at each thermostat/temperature sensor. Compare the reading to the set point.
d. Verify that balancing devices are marked with final balance position.
e. Note deviations from the Contract Documents in the final report.

B. Final Inspection:

1. After initial inspection is complete and documentation by random checks verifies that testing and balancing are complete and accurately documented in the final report, request that a final inspection be made by Architect Construction Manager and or .
2. The TAB contractor's test and balance engineer shall conduct the inspection in the presence of Architect , Construction Manager, and or Commissioning Authority.
3. Architect or Commissioning Authority shall randomly select measurements, documented in the final report, to be rechecked. Rechecking shall be limited to either 10 percent of the total measurements recorded or the extent of measurements that can be accomplished in a normal 8-hour business day.
4. If rechecks yield measurements that differ from the measurements documented in the final report by more than the tolerances allowed, the measurements shall be noted as "FAILED."
5. If the number of "FAILED" measurements is greater than 10 percent of the total measurements checked during the final inspection, the testing and balancing shall be considered incomplete and shall be rejected.

C. TAB Work will be considered defective if it does not pass final inspections. If TAB Work fails, proceed as follows:

1. Recheck all measurements and make adjustments. Revise the final report and balancing device settings to include all changes; resubmit the final report and request a second final inspection.
2. If the second final inspection also fails, Owner may contract the services of another TAB contractor to complete TAB Work according to the Contract Documents and deduct the cost of the services from the original TAB contractor's final payment.

D. Prepare test and inspection reports.

3.19 ADDITIONAL TESTS

A. Within 90 days of completing TAB, perform additional TAB to verify that balanced conditions are being maintained throughout and to correct unusual conditions.

B. Seasonal Periods: If initial TAB procedures were not performed during near-peak summer and winter conditions, perform additional TAB during near-peak summer and winter conditions.

C. The TAB shall provide a technician to support the commissioning of the project with rechecks of air and or water flow, pressure tests of duct high pressure limits, smoke detectors, coil and filter pressure drop signals, terminal air flow and space temperature, humidity and CO2 sensor verification of calibration on up to not less than 25% (or higher if the Cx A sampling is specified to be higher) of the VAV terminal, temperature control zones.

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SECTION 23 07 13
DUCT INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Owner's General Conditions of the Contract, and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes insulating the following duct services:

1. Indoor, concealed supply and outdoor air.
2. Indoor, exposed supply and outdoor air.
3. Indoor, concealed return located in unconditioned space.
4. Indoor, exposed return located in unconditioned space.
5. Indoor, concealed, Type I, commercial, kitchen hood exhaust.
6. Indoor, exposed, Type I, commercial, kitchen hood exhaust.
7. Indoor, concealed oven and warewash exhaust.
8. Indoor, exposed oven and warewash exhaust.
9. Indoor, concealed exhaust between isolation damper and penetration of building exterior.
10. Indoor, exposed exhaust between isolation damper and penetration of building exterior.

B. Related Sections:

1. Section 23 07 16 "HVAC Equipment Insulation."
2. Section 23 07 19 "HVAC Piping Insulation."
3. Section 23 31 13 "Metal Ducts" for duct liners.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory- and field-applied if any).

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
2. Detail insulation application at elbows, fittings, dampers, specialties and flanges for each type of insulation.
3. Detail application of field-applied jackets.
4. Detail application at linkages of control devices.

C. Samples: For each type of insulation and jacket indicated. Identify each Sample, describing product and intended use. Sample sizes are as follows:

1. Sheet Form Insulation Materials: 12 inches square.

2. Sheet Jacket Materials: 12 inches square.
3. Manufacturer's Color Charts: For products where color is specified, show the full range of colors available for each type of finish material.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.

C. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84, by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

C. Mockups: Before installing insulation, build mockups for each type of insulation and finish listed below to demonstrate quality of insulation application and finishes. Build mockups in the location indicated or, if not indicated, as directed by Architect. Use materials indicated for the completed Work.

1. Ductwork Mockups:

a. One 10-foot section each of rectangular and round straight duct.
b. One each of a 90-degree mitered round and rectangular elbow, and one each of a 90-degree radius round and rectangular elbow.
c. One rectangular branch takeoff and one round branch takeoff from a rectangular duct. One round tee fitting.
d. One rectangular and round transition fitting.
e. Four support hangers for round and rectangular ductwork.
f. Each type of damper and specialty.

2. For each mockup, fabricate cutaway sections to allow observation of application details for insulation materials, adhesives, mastics, attachments, and jackets.
3. Notify Architect seven days in advance of dates and times when mockups will be constructed.
4. Obtain Architect's approval of mockups before starting insulation application.

5. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
7. Demolish and remove mockups when directed.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.7 COORDINATION

A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 23 05 29 "Hangers and Supports for HVAC Piping and Equipment."

B. Coordinate clearance requirements with duct Installer for duct insulation application. Before preparing ductwork Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

C. Coordinate installation and testing of heat tracing.

1.8 SCHEDULING

A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.

B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Comply with requirements in "Duct Insulation Schedule, General," "Indoor Duct and Plenum Insulation Schedule," and "Aboveground, Outdoor Duct and Plenum Insulation Schedule" articles for where insulating materials shall be applied.

B. Products shall not contain asbestos, lead, mercury, or mercury compounds.

C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

F. Mineral-Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II and ASTM C 1290. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Products: Subject to compliance with requirements, provide one of the following:

a. CertainTeed Corp.; SoftTouch Duct Wrap.
b. Johns Manville; Microlite.
c. Knauf Insulation; Friendly Feel Duct Wrap.
d. Manson Insulation Inc.; Alley Wrap.
e. Owens Corning; SOFTR All-Service Duct Wrap.

G. Mineral-Fiber Board Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 612, Type IA or Type IB. For duct and plenum applications, provide insulation with factory-applied FSK jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Products: Subject to compliance with requirements, provide one of the following:

a. CertainTeed Corp.; Commercial Board.
b. Fibrex Insulations Inc.; FBX.
c. Johns Manville; 800 Series Spin-Glas.
d. Knauf Insulation; Insulation Board.
e. Manson Insulation Inc.; AK Board.
f. Owens Corning; Fiberglas 700 Series.

H. Mineral-Fiber, Pipe and Tank Insulation: Mineral or glass fibers bonded with a thermosetting resin. Semirigid board material with factory-applied FSK jacket complying with ASTM C 1393, Type II or Type IIIA Category 2, or with properties similar to ASTM C 612, Type IB. Nominal density is 2.5 lb/cu. ft. or more. Thermal conductivity (k-value) at 100 deg F is 0.29 Btu x in./h x sq. ft. x deg F or less. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Products: Subject to compliance with requirements, provide one of the following:

a. CertainTeed Corp.; CrimpWrap.
b. Johns Manville; MicroFlex.
c. Knauf Insulation; Pipe and Tank Insulation.
d. Manson Insulation Inc.; AK Flex.
e. Owens Corning; Fiberglas Pipe and Tank Insulation.

2.2 FIRE-RATED INSULATION SYSTEMS

A. Fire-Rated Board: Structural-grade, press-molded, xonolite calcium silicate, fireproofing board suitable for operating temperatures up to 1700 deg F. Comply with ASTM C 656, Type II, Grade 6. Tested and certified to provide a 2-hour fire rating by an NRTL acceptable to authorities having jurisdiction.

1. Products: Subject to compliance with requirements, provide the following:

a. Johns Manville; Super Firetemp M.

B. Fire-Rated Blanket: High-temperature, flexible, blanket insulation with FSK jacket that is tested and certified to provide a 2-hour fire rating by an NRTL acceptable to authorities having jurisdiction.

1. Products: Subject to compliance with requirements, provide one of the following:

a. CertainTeed Corp.; FlameChek.
b. Johns Manville; Firetemp Wrap.
c. Nelson Fire Stop Products; Nelson FSB Flameshield Blanket.
d. Thermal Ceramics; FireMaster Duct Wrap.
e. 3M; Fire Barrier Wrap Products.
f. Unifrax Corporation; FyreWrap.

2.3 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.

B. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-127.Eagle Bridges - Marathon Industries; 225.
b. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-60/85-70.Mon-Eco Industries, Inc.; 22-25.

2. For indoor applications, adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. ASJ Adhesive, and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-82.
b. Eagle Bridges - Marathon Industries; 225.
c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-50.Mon-Eco Industries, Inc.; 22-25.

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.4 MASTICS

A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.

1. For indoor applications, use mastics that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Vapor-Barrier Mastic: Water based; suitable for indoor use on below ambient services.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 30-80/30-90.
   b. Vimasco Corporation; 749.

2. Water-Vapor Permeance: ASTM E 96/E 96M, Procedure B, 0.013 perm at 43-mil dry film thickness.
3. Service Temperature Range: Minus 20 to plus 180 deg F.
4. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
5. Color: White.

2.5 LAGGING ADHESIVES

A. Description: Comply with MIL-A-3316C, Class I, Grade A and shall be compatible with insulation materials, jackets, and substrates.

1. For indoor applications, use lagging adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Products: Subject to compliance with requirements, provide one of the following:

   a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-50 AHV2.Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 30-36.
   b. Vimasco Corporation; 713 and 714.

3. Fire-resistant, water-based lagging adhesive and coating for use indoors to adhere fire-resistant lagging cloths over duct insulation.
4. Service Temperature Range: 0 to plus 180 deg F.
5. Color: White.

2.6 SEALANTS

A. FSK and Metal Jacket Flashing Sealants:

1. Products: Subject to compliance with requirements, provide one of the following:

   a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-76.Eagle Bridges - Marathon Industries; 405.
   b. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 95-44.
   c. Mon-Eco Industries, Inc.; 44-05.

2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: Aluminum.
6. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
7. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. ASJ Flashing Sealants, and Vinyl and PVC Jacket Flashing Sealants:

1. Products: Subject to compliance with requirements, provide one of the following:

a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-76.

2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: White.
6. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
7. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.7 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.
3. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.
4. FSP Jacket: Aluminum-foil, fiberglass-reinforced scrim with polyethylene backing; complying with ASTM C 1136, Type II.
5. Vinyl Jacket: White vinyl with a permeance of 1.3 perms when tested according to ASTM E 96/E 96M, Procedure A, and complying with NFPA 90A and NFPA 90B.

2.8 FIELD-APPLIED FABRIC-REINFORCING MESH

A. Woven Glass-Fiber Fabric: Approximately 6 oz./sq. yd. with a thread count of 5 strands by 5 strands/sq. in. for covering ducts.

1. Products: Subject to compliance with requirements, provide the following:

a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; Chil-Glas No. 5.

B. Woven Polyester Fabric: Approximately 1 oz./sq. yd. with a thread count of 10 strands by 10 strands/sq. in., in a Leno weave, for ducts.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; Mast-A-Fab.
b. Vimasco Corporation; Elastafab 894.

2.9 FIELD-APPLIED JACKETS

A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.

B. FSK Jacket: Aluminum-foil-face, fiberglass-reinforced scrim with kraft-paper backing.

C. Metal Jacket:

1. Products: Subject to compliance with requirements, provide one of the following:

a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; Metal Jacketing Systems.
b. ITW Insulation Systems; Aluminum and Stainless Steel Jacketing.
c. RPR Products, Inc.; Insul-Mate.

2. Aluminum Jacket: Comply with ASTM B 209, Alloy 3003, 3005, 3105, or 5005, Temper H-14.

a. Sheet and roll stock ready for shop or field sizing.
b. Finish and thickness are indicated in field-applied jacket schedules.
c. Moisture Barrier for Indoor Applications: 3-mil-thick, heat-bonded polyethylene and kraft paper.
d. Moisture Barrier for Outdoor Applications: 3-mil-thick, heat-bonded polyethylene and kraft paper.

3. Stainless-Steel Jacket: ASTM A 167 or ASTM A 240/A 240M.

a. Sheet and roll stock ready for shop or field sizing.
b. Material, finish, and thickness are indicated in field-applied jacket schedules.
c. Moisture Barrier for Indoor Applications: 3-mil-thick, heat-bonded polyethylene and kraft paper.
d. Moisture Barrier for Outdoor Applications: 3-mil-thick, heat-bonded polyethylene and kraft paper.

D. Self-Adhesive Outdoor Jacket: 60-mil-thick, laminated vapor barrier and waterproofing membrane for installation over insulation located aboveground outdoors; consisting of a rubberized bituminous resin on a crosslaminated polyethylene film covered with stucco-embossed aluminum-foil facing.

1. Products: Subject to compliance with requirements, provide the following:

a. Polyguard Products, Inc.; Alumaguard 60.

2.10 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.

1. Products: Subject to compliance with requirements, provide one of the following:

a. ABI, Ideal Tape Division; 428 AWF ASJ.
b. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0836.
c. Compac Corporation; 104 and 105.
d. Venture Tape; 1540 CW Plus, 1542 CW Plus, and 1542 CW Plus/SQ.

2. Width: 3 inches.
3. Thickness: 11.5 mils.
4. Adhesion: 90 ounces force/inch in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.

1. Products: Subject to compliance with requirements, provide one of the following:

a. ABI, Ideal Tape Division; 491 AWF FSK.
b. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0827.
c. Compac Corporation; 110 and 111.
d. Venture Tape; 1525 CW NT, 1528 CW, and 1528 CW/SQ.

2. Width: 3 inches.
3. Thickness: 6.5 mils.
4. Adhesion: 90 ounces force/inch in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.

C. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.

1. Products: Subject to compliance with requirements, provide one of the following:

a. ABI, Ideal Tape Division; 488 AWF.
b. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0800.
c. Compac Corporation; 120.
d. Venture Tape; 3520 CW.

2. Width: 2 inches.
3. Thickness: 3.7 mils.
4. Adhesion: 100 ounces force/inch in width.
5. Elongation: 5 percent.
6. Tensile Strength: 34 lbf/inch in width.

2.11 SECUREMENTS

A. Bands:

1. Products: Subject to compliance with requirements, provide one of the following:

a. ITW Insulation Systems; Gerrard Strapping and Seals.
b. RPR Products, Inc.; Insul-Mate Strapping, Seals, and Springs.

2. Stainless Steel: ASTM A 167 or ASTM A 240/A 240M, Type 304; 0.015 inch thick, 1/2 inch wide with wing seal or closed seal.
3. Aluminum: ASTM B 209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 1/2 inch wide with wing seal or closed seal.
4. Springs: Twin spring set constructed of stainless steel with ends flat and slotted to accept metal bands. Spring size determined by manufacturer for application.

B. Insulation Pins and Hangers:

1. Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.106-inch-diameter shank, length to suit depth of insulation indicated.

a. Products: Subject to compliance with requirements, provide one of the following:

1) AGM Industries, Inc.; CWP-1.
2) GEMCO; CD.
3) Midwest Fasteners, Inc.; CD.
4) Nelson Stud Welding; TPA, TPC, and TPS.

2. Cupped-Head, Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.106-inch-diameter shank, length to suit depth of insulation indicated with integral 1-1/2-inch galvanized carbon-steel washer.

a. Products: Subject to compliance with requirements, provide one of the following:

1) AGM Industries, Inc.; CHP-1.
2) GEMCO; Cupped Head Weld Pin.
3) Midwest Fasteners, Inc.; Cupped Head.
4) Nelson Stud Welding; CHP.

3. Metal, Adhesively Attached, Perforated-Base Insulation Hangers: Baseplate welded to projecting spindle that is capable of holding insulation, of thickness indicated, securely in position indicated when self-locking washer is in place. Comply with the following requirements:

a. Products: Subject to compliance with requirements, provide one of the following:

1) AGM Industries, Inc.; Tactoo Perforated Base Insul-Hangers.
2) GEMCO; Perforated Base.
3) Midwest Fasteners, Inc.; Spindle.

b. Baseplate: Perforated, galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.

c. Spindle: Copper- or zinc-coated, low-carbon steel, fully annealed, 0.106-inch-diameter shank, length to suit depth of insulation indicated.
d. Adhesive: Recommended by hanger manufacturer. Product with demonstrated capability to bond insulation hanger securely to substrates indicated without damaging insulation, hangers, and substrates.

2.12 CORNER ANGLES

A. Aluminum Corner Angles: 0.040 inch thick, minimum 1 by 1 inch, aluminum according to ASTM B 209, Alloy 3003, 3005, 3105, or 5005; Temper H-14.

B. Stainless-Steel Corner Angles: 0.024 inch thick, minimum 1 by 1 inch, stainless steel according to ASTM A 167 or ASTM A 240/A 240M, Type 304 or Type 316.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.

1. Verify that systems to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of ducts and fittings.

B. Install insulation materials, vapor barriers or retarders, jackets, and thicknesses required for each item of duct system as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Install multiple layers of insulation with longitudinal and end seams staggered.

F. Keep insulation materials dry during application and finishing.

G. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

H. Install insulation with least number of joints practical.

I. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.

1. Install insulation continuously through hangers and around anchor attachments.
2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.

J. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

K. Install insulation with factory-applied jackets as follows:

1. Draw jacket tight and smooth.
2. Cover circumferential joints with 3-inch-wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
3. Overlap jacket longitudinal seams at least 1-1/2 inches. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches o.c.

    a. For below ambient services, apply vapor-barrier mastic over staples.

4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to duct flanges and fittings.

L. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

M. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

N. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

3.4 PENETRATIONS

A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install

insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.

3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
4. Seal jacket to roof flashing with flashing sealant.

B. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
4. Seal jacket to wall flashing with flashing sealant.

C. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

D. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Terminate insulation at fire damper sleeves for fire-rated wall and partition penetrations. Externally insulate damper sleeves to match adjacent insulation and overlap duct insulation at least 2 inches.

1. Comply with requirements in Section 07 84 13 "Penetration Firestopping"irestopping and fire-resistive joint sealers.

E. Insulation Installation at Floor Penetrations:

1. Duct: For penetrations through fire-rated assemblies, terminate insulation at fire damper sleeves and externally insulate damper sleeve beyond floor to match adjacent duct insulation. Overlap damper sleeve and duct insulation at least 2 inches.
2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 07 84 13 "Penetration Firestopping."

3.5 INSTALLATION OF MINERAL-FIBER INSULATION

A. Blanket Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.

1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 100 percent coverage of duct and plenum surfaces.
2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:

a. On duct sides with dimensions 18 inches and smaller, place pins along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.

b. On duct sides with dimensions larger than 18 inches, place pins 16 inches o.c. each way, and 3 inches maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.
c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
d. Do not overcompress insulation during installation.
e. Impale insulation over pins and attach speed washers.
f. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.

4. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from one edge and one end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching staples, 1 inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.

   a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.
   b. Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to two times the insulation thickness, but not less than 3 inches.

5. Overlap unfaced blankets a minimum of 2 inches on longitudinal seams and end joints. At end joints, secure with steel bands spaced a maximum of 18 inches o.c.
6. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
7. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch-wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches o.c.

B. Board Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.

1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 100 percent coverage of duct and plenum surfaces.
2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:

   a. On duct sides with dimensions 18 inches and smaller, place pins along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.
   b. On duct sides with dimensions larger than 18 inches, space pins 16 inches o.c. each way, and 3 inches maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.
   c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
   d. Do not overcompress insulation during installation.

e. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.

4. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from one edge and one end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching staples, 1 inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.

   a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.
   b. Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to two times the insulation thickness, but not less than 3 inches.

5. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Groove and score insulation to fit as closely as possible to outside and inside radius of elbows. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
6. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch-wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches o.c.

3.6 FIELD-APPLIED JACKET INSTALLATION

A. Where glass-cloth jackets are indicated, install directly over bare insulation or insulation with factory-applied jackets.

   1. Draw jacket smooth and tight to surface with 2-inch overlap at seams and joints.
   2. Embed glass cloth between two 0.062-inch-thick coats of lagging adhesive.
   3. Completely encapsulate insulation with coating, leaving no exposed insulation.

B. Where FSK jackets are indicated, install as follows:

   1. Draw jacket material smooth and tight.
   2. Install lap or joint strips with same material as jacket.
   3. Secure jacket to insulation with manufacturer's recommended adhesive.
   4. Install jacket with 1-1/2-inch laps at longitudinal seams and 3-inch-wide joint strips at end joints.
   5. Seal openings, punctures, and breaks in vapor-retarder jackets and exposed insulation with vapor-barrier mastic.

C. Where metal jackets are indicated, install with 2-inch overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless-steel bands 12 inches o.c. and at end joints.

3.7 FIRE-RATED INSULATION SYSTEM INSTALLATION

A. Where fire-rated insulation system is indicated, secure system to ducts and duct hangers and supports to maintain a continuous fire rating.

B. Insulate duct access panels and doors to achieve same fire rating as duct.

C. Install firestopping at penetrations through fire-rated assemblies. Fire-stop systems are specified in Section 07 84 13 "Penetration Firestopping."

3.8 FINISHES

A. Insulation with ASJ, Glass-Cloth, or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Section 09 91 13 "Exterior Painting" and Section 09 91 23 "Interior Painting."

1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.

a. Finish Coat Material: Interior, flat, latex-emulsion size.

B. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.

C. Do not field paint aluminum or stainless-steel jackets.

3.9 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Perform tests and inspections.

C. Tests and Inspections:

1. Inspect ductwork, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to one location(s) for each duct system defined in the "Duct Insulation Schedule, General" Article.

D. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.10 DUCT INSULATION SCHEDULE, GENERAL

A. Plenums and Ducts Requiring Insulation:

1. Indoor, concealed supply and outdoor air.
2. Indoor, exposed supply and outdoor air.
3. Indoor, concealed return located in unconditioned space.
4. Indoor, exposed return located in unconditioned space.
5. Indoor, concealed, Type I, commercial, kitchen hood exhaust.

6. Indoor, exposed, Type I, commercial, kitchen hood exhaust.
7. Indoor, concealed oven and warewash exhaust.
8. Indoor, exposed oven and warewash exhaust.
9. Indoor, concealed exhaust between isolation damper and penetration of building exterior.
10. Indoor, exposed exhaust between isolation damper and penetration of building exterior.

B. Items Not Insulated:

1. Fibrous-glass ducts.
2. Metal ducts with duct liner of sufficient thickness to comply with energy code and ASHRAE/IESNA 90.1.
3. Factory-insulated flexible ducts.
4. Factory-insulated plenums and casings.
5. Flexible connectors.
6. Vibration-control devices.
7. Factory-insulated access panels and doors.

3.11 INDOOR DUCT AND PLENUM INSULATION SCHEDULE

A. Concealed, round and flat-oval, supply-air duct insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.

B. Concealed, round and flat-oval, return-air duct insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.

C. Concealed, round and flat-oval, outdoor-air duct insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.

D. Concealed, round and flat-oval, exhaust-air duct insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.

E. Concealed, rectangular, supply-air duct insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.

F. Concealed, rectangular, return-air duct insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.

G. Concealed, rectangular, outdoor-air duct insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.

H. Concealed, rectangular, exhaust-air duct insulation between isolation damper and penetration of building exterior shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.

I. Concealed, Type I, Commercial, Kitchen Hood Exhaust Duct and Plenum Insulation: Fire-rated blanket or board; thickness as required to achieve 2-hour fire rating.

J. Concealed, supply-air plenum insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.

K. Concealed, return-air plenum insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.

L. Concealed, outdoor-air plenum insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.

M. Concealed, exhaust-air plenum insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.

N. Exposed, round and flat-oval, supply-air duct insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.
3. Mineral-Fiber Pipe and Tank: 2 inches thick.

O. Exposed, round and flat-oval, return-air duct insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.
3. Mineral-Fiber Pipe and Tank: 2 inches thick.

P. Exposed, round and flat-oval, outdoor-air duct insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.
3. Mineral-Fiber Pipe and Tank: 2 inches thick.

Q. Exposed, round and flat-oval, exhaust-air duct insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.
3. Mineral-Fiber Pipe and Tank: 2 inches thick.

R. Exposed, rectangular, supply-air duct insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.

S. Exposed, rectangular, return-air duct insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.

T. Exposed, rectangular, outdoor-air duct insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.

U. Exposed, rectangular, exhaust-air duct insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.

V. Exposed, Type I, Commercial, Kitchen Hood Exhaust Duct and Plenum Insulation: Fire-rated blanket or board; thickness as required to achieve 2-hour fire rating.

W. Exposed, supply-air plenum insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.

X. Exposed, return-air plenum insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.

Y. Exposed, outdoor-air plenum insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.

Z. Exposed, exhaust-air plenum insulation shall be the following:

1. Mineral-Fiber Blanket: 2 inches thick and 1.5-lb/cu. ft. nominal density.
2. Mineral-Fiber Board: 2 inches thick and 2-lb/cu. ft. nominal density.

3.12 INDOOR, FIELD-APPLIED JACKET SCHEDULE

A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.

B. If more than one material is listed, selection from materials listed is Contractor's option.

C. Ducts and Plenums, Concealed:

1. None.

D. Ducts and Plenums, Exposed:

1. Aluminum, Stucco Embossed: 0.032 inch thick.
2. Painted Aluminum, Smooth: 0.032 inch thick.

END OF SECTION 23 07 13

SECTION 23 07 19
HVAC PIPING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Owner's General Conditions of the Contract, and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes insulating the following HVAC piping systems:

1. Condensate drain piping, indoors.
2. Chilled-water, indoors and outdoors.
3. Refrigerant suction and hot-gas piping, indoors and outdoors.

B. Related Sections:

1. Division 23 Section "HVAC Equipment Insulation."
2. Division 23 Section "Duct Insulation."

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory and field applied if any).

1.4 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.

2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.7 COORDINATION

A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Division 23 Section "Hangers and Supports for HVAC Piping and Equipment."

B. Coordinate clearance requirements with piping Installer for piping insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

C. Coordinate installation and testing of heat tracing.

1.8 SCHEDULING

A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.

B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Comply with requirements in "Piping Insulation Schedule, General," "Indoor Piping Insulation Schedule," and "Outdoor, Aboveground Piping Insulation Schedule" articles for where insulating materials shall be applied.

B. Products shall not contain asbestos, lead, mercury, or mercury compounds.

C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

F. Cellular Glass: Inorganic, incombustible, foamed or cellulated glass with annealed, rigid, hermetically sealed cells. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Products: Subject to compliance with requirements, provide the following :

a. Pittsburgh Corning Corporation; Foamglas.

2. Block Insulation: ASTM C 552, Type I.
3. Special-Shaped Insulation: ASTM C 552, Type III.
4. Board Insulation: ASTM C 552, Type IV.
5. Preformed Pipe Insulation with Factory-Applied ASJ-SSL: Comply with ASTM C 552, Type II, Class 2.
6. Factory fabricate shapes according to ASTM C 450 and ASTM C 585.

G. Flexible Elastomeric Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials.

1. Products: Subject to compliance with requirements, provide the following :

a. Aeroflex USA, Inc.; Aerocel.
b. Armacell LLC; AP Armaflex.
c. K-Flex USA; Insul-Lock, Insul-Tube, and K-FLEX LS.

H. Mineral-Fiber, Pipe and Tank Insulation: Mineral or glass fibers bonded with a thermosetting resin. Semirigid board material with factory-applied ASJ complying with ASTM C 1393, Type II or Type IIIA Category 2, or with properties similar to ASTM C 612, Type IB. Nominal density is 2.5 lb/cu. ft. or more. Thermal conductivity (k-value) at 100 deg F is 0.29 Btu x in./h x sq. ft. x deg F or less. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Products: Subject to compliance with requirements, provide the following:

a. CertainTeed Corp.; CrimpWrap.
b. Johns Manville; MicroFlex.
c. Knauf Insulation; Pipe and Tank Insulation.
d. Owens Corning; Fiberglas Pipe and Tank Insulation.

2.2 INSULATING CEMENTS

A. Mineral-Fiber Insulating Cement: Comply with ASTM C 195.

1. Products: Subject to compliance with requirements, provide the following :

a. Ramco Insulation, Inc.; Super-Stik.

B. Mineral-Fiber, Hydraulic-Setting Insulating and Finishing Cement: Comply with ASTM C 449.

1. Products: Subject to compliance with requirements, provide the following :

a. Ramco Insulation, Inc.; Ramcote 1200 and Quik-Cote.

2.3 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.

B. Cellular-Glass Adhesive: Two-component, thermosetting urethane adhesive containing no flammable solvents, with a service temperature range of minus 100 to plus 200 deg F.

1. Products: Subject to compliance with requirements, provide the following :

a. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 81-84.

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Flexible Elastomeric Adhesive: Comply with MIL-A-24179A, Type II, Class I.

1. Products: Subject to compliance with requirements, provide the following :

a. Aeroflex USA, Inc.; Aeroseal.
b. Armacell LLC; Armaflex 520 Adhesive.
c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-75.
d. K-Flex USA; R-373 Contact Adhesive.

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

D. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.

1. Products: Subject to compliance with requirements, provide the following :

a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-127.
b. Eagle Bridges - Marathon Industries; 225.
c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-60/85-70.
d. Mon-Eco Industries, Inc.; 22-25.

2. For indoor applications, adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

E. ASJ Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.

1. Products: Subject to compliance with requirements, provide the following :

   a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-82.
   b. Eagle Bridges - Marathon Industries; 225.
   c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-50.
   d. Mon-Eco Industries, Inc.; 22-25.

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

F. PVC Jacket Adhesive: Compatible with PVC jacket.

1. Products: Subject to compliance with requirements, provide the following :

   a. Dow Corning Corporation; 739, Dow Silicone.
   b. Johns Manville; Zeston Perma-Weld, CEEL-TITE Solvent Welding Adhesive.
   c. P.I.C. Plastics, Inc.; Welding Adhesive.
   d. Speedline Corporation; Polyco VP Adhesive.

2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.4 MASTICS

A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.

1. For indoor applications, use mastics that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Vapor-Barrier Mastic: Water based; suitable for indoor use on below-ambient services.

1. Products: Subject to compliance with requirements, provide the following :

   a. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 30-80/30-90.
   b. Vimasco Corporation; 749.

2. Water-Vapor Permeance**:** ASTM E 96/E 96M, Procedure B, 0.013 perm at 43-mil dry film thickness.
3. Service Temperature Range: Minus 20 to plus 180 deg F.
4. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
5. Color: White.

C. Vapor-Barrier Mastic: Solvent based; suitable for outdoor use on below-ambient services.

1. Products: Subject to compliance with requirements, provide the following :

   a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; Encacel.
   b. Eagle Bridges - Marathon Industries; 570.
   c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 60-95/60-96.

2. Water-Vapor Permeance: ASTM F 1249, 0.05 perm at 30-mil dry film thickness.
3. Service Temperature Range: Minus 50 to plus 220 deg F.
4. Solids Content: ASTM D 1644, 33 percent by volume and 46 percent by weight.
5. Color: White.

D. Breather Mastic: Water based; suitable for indoor and outdoor use on above-ambient services.

1. Products: Subject to compliance with requirements, provide the following :

   a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-10.
   b. Eagle Bridges - Marathon Industries; 550.
   c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 46-50.

2. Water-Vapor Permeance: ASTM F 1249, 1.8 perms at 0.0625-inch dry film thickness.
3. Service Temperature Range: Minus 20 to plus 180 deg F.
4. Solids Content: 60 percent by volume and 66 percent by weight.
5. Color: White.

2.5 SEALANTS

A. Joint Sealants:

1. Joint Sealants for Cellular-Glass Products: Subject to compliance with requirements, provide the following :

   a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-76.
   b. Eagle Bridges - Marathon Industries; 405.
   c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 30-45.

2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Permanently flexible, elastomeric sealant.
4. Service Temperature Range: Minus 100 to plus 300 deg F.
5. Color: White or gray.
6. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
7. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. Metal Jacket Flashing Sealants:

1. Products: Subject to compliance with requirements, provide the following :

   a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-76.
   b. Eagle Bridges - Marathon Industries; 405.
   c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 95-44.

2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: Aluminum.
6. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
7. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. ASJ Flashing Sealants and PVC Jacket Flashing Sealants:

1. Products: Subject to compliance with requirements, provide the following :

   a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-76.

2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: White.
6. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
7. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.6 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.

2.7 FIELD-APPLIED JACKETS

A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.

B. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D 1784, Class 16354-C; thickness as scheduled; roll stock ready for shop or field cutting and forming. Thickness is indicated in field-applied jacket schedules.

1. Products: Subject to compliance with requirements, provide the following :

    a. Johns Manville; Zeston.
    b. P.I.C. Plastics, Inc.; FG Series.
    c. Proto Corporation; LoSmoke.

2. Adhesive: As recommended by jacket material manufacturer.
3. Color: White.
4. Factory-fabricated fitting covers to match jacket if available; otherwise, field fabricate.

    a. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, traps, and mechanical joints.

C. Metal Jacket:

1. Products: Subject to compliance with requirements, provide the following :

    a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; Metal Jacketing Systems.
    b. ITW Insulation Systems; Aluminum and Stainless Steel Jacketing.
    c. RPR Products, Inc.; Insul-Mate..

2. Aluminum Jacket: Comply with ASTM B 209, Alloy 3003, 3005, 3105, or 5005, Temper H-14.

    a. Factory cut and rolled to size.
    b. Finish and thickness are indicated in field-applied jacket schedules.
    c. Moisture Barrier for Outdoor Applications: 3-mil- thick, heat-bonded polyethylene and kraft paper.
    d. Factory-Fabricated Fitting Covers:

        1) Same material, finish, and thickness as jacket.
        2) Preformed 2-piece or gore, 45- and 90-degree, short- and long-radius elbows.
        3) Tee covers.
        4) Flange and union covers.
        5) End caps.
        6) Beveled collars.
        7) Valve covers.
        8) Field fabricate fitting covers only if factory-fabricated fitting covers are not available.

D. Self-Adhesive Outdoor Jacket: 60-mil- thick, laminated vapor barrier and waterproofing membrane for installation over insulation located aboveground outdoors; consisting of a rubberized bituminous resin on a crosslaminated polyethylene film covered with stucco-embossed aluminum-foil facing.

1. Products: Subject to compliance with requirements, provide the following :

    a. Polyguard Products, Inc.; Alumaguard 60.

2.8 TAPES

A. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive; suitable for indoor and outdoor applications.

1. Products: Subject to compliance with requirements, provide the following :

a. ABI, Ideal Tape Division; 370 White PVC tape.
b. Compac Corporation; 130.
c. Venture Tape; 1506 CW NS.

2. Width: 2 inches.
3. Thickness: 6 mils.
4. Adhesion: 64 ounces force/inch in width.
5. Elongation: 500 percent.
6. Tensile Strength: 18 lbf/inch in width.

B. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.

1. Products: Subject to compliance with requirements, provide the following :

a. ABI, Ideal Tape Division; 488 AWF.
b. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0800.
c. Compac Corporation; 120.
d. Venture Tape; 3520 CW.

2. Width: 2 inches.
3. Thickness: 3.7 mils.
4. Adhesion: 100 ounces force/inch in width.
5. Elongation: 5 percent.
6. Tensile Strength: 34 lbf/inch in width.

2.9 SECUREMENTS

A. Bands:

1. Products: Subject to compliance with requirements, provide the following:

a. ITW Insulation Systems; Gerrard Strapping and Seals.
b. RPR Products, Inc.; Insul-Mate Strapping, Seals, and Springs.

2. Aluminum: ASTM B 209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 3/4 inch wide with wing seal .

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.

1. Verify that systems to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

B. Surface Preparation: Clean and prepare surfaces to be insulated. Before insulating, apply a corrosion coating to insulated surfaces as follows:

1. Carbon Steel: Coat carbon steel operating at a service temperature between 32 and 300 deg F with an epoxy coating. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.

C. Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that apply to insulation.

D. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water.

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping including fittings, valves, and specialties.

B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of pipe system as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Install multiple layers of insulation with longitudinal and end seams staggered.

F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.

G. Keep insulation materials dry during application and finishing.

H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

I. Install insulation with least number of joints practical.

J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.

1. Install insulation continuously through hangers and around anchor attachments.
2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.

4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.

K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

L. Install insulation with factory-applied jackets as follows:

1. Draw jacket tight and smooth.
2. Cover circumferential joints with 3-inch- wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap.
4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.

M. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

P. For above-ambient services, do not install insulation to the following:

1. Vibration-control devices.
2. Testing agency labels and stamps.
3. Nameplates and data plates.
4. Manholes.
5. Handholes.
6. Cleanouts.

3.4 PENETRATIONS

A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
4. Seal jacket to roof flashing with flashing sealant.

B. Insulation Installation at Underground Exterior Wall Penetrations: Terminate insulation flush with sleeve seal. Seal terminations with flashing sealant.

C. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
4. Seal jacket to wall flashing with flashing sealant.

D. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

E. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.

1. Comply with requirements in Division 07 Section "Penetration Firestopping" for firestopping and fire-resistive joint sealers.

F. Insulation Installation at Floor Penetrations:

1. Pipe: Install insulation continuously through floor penetrations.
2. Seal penetrations through fire-rated assemblies. Comply with requirements in Division 07 Section "Penetration Firestopping."

3.5 GENERAL PIPE INSULATION INSTALLATION

A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.

B. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:

1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
4. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets,

valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.

5. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
6. Insulate flanges and unions using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker.
7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for above-ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.
8. For services not specified to receive a field-applied jacket except for flexible, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing using PVC tape.
9. Stencil or label the outside insulation jacket of each union with the word "union." Match size and color of pipe labels.

C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.

D. Install removable insulation covers at locations indicated. Installation shall conform to the following:

1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as adjoining pipe insulation.
2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union long at least two times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless-steel or aluminum bands. Select band material compatible with insulation and jacket.
3. Construct removable valve insulation covers in same manner as for flanges, except divide the two-part section on the vertical center line of valve body.
4. When covers are made from block insulation, make two halves, each consisting of mitered blocks wired to stainless-steel fabric. Secure this wire frame, with its attached insulation, to flanges with tie wire. Extend insulation at least 2 inches over adjacent pipe insulation on each side of valve. Fill space between flange or union cover and pipe insulation with insulating cement. Finish cover assembly with insulating cement applied in two coats. After first coat is dry, apply and trowel second coat to a smooth finish.
5. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

3.6 INSTALLATION OF CELLULAR-GLASS INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as straight segments of pipe insulation when available. Secure according to manufacturer's written instructions.
2. When preformed sections of insulation are not available, install mitered sections of cellular-glass insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of cellular-glass insulation to valve body.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.

3.7 INSTALLATION OF FLEXIBLE ELASTOMERIC INSULATION

A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of sheet insulation of same thickness as pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed valve covers manufactured of same material as pipe insulation when available.
2. When preformed valve covers are not available, install cut sections of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.
4. Secure insulation to valves and specialties and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.8 INSTALLATION OF MINERAL-FIBER INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of preformed pipe insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward-clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with mineral-fiber blanket insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.
3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
4. Install insulation to flanges as specified for flange insulation application.

3.9 FIELD-APPLIED JACKET INSTALLATION

A. Where glass-cloth jackets are indicated, install directly over bare insulation or insulation with factory-applied jackets.

1. Draw jacket smooth and tight to surface with 2-inch overlap at seams and joints.
2. Embed glass cloth between two 0.062-inch- thick coats of lagging adhesive.
3. Completely encapsulate insulation with coating, leaving no exposed insulation.

B. Where PVC jackets are indicated, install with 1-inch overlap at longitudinal seams and end joints; for horizontal applications. Seal with manufacturer's recommended adhesive.

1. Apply two continuous beads of adhesive to seams and joints, one bead under lap and the finish bead along seam and joint edge.

C. Where metal jackets are indicated, install with 2-inch overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless-steel bands 12 inches o.c. and at end joints.

3.10 FINISHES

A. Pipe Insulation with ASJ, Glass-Cloth, or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Division 09 painting Sections.

1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.

a. Finish Coat Material: Interior, flat, latex-emulsion size.

B. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.

C. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.

D. Do not field paint aluminum jackets.

3.11 PIPING INSULATION SCHEDULE, GENERAL

A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.

B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:

1. Drainage piping located in crawl spaces.
2. Underground piping.
3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

3.12 INDOOR PIPING INSULATION SCHEDULE

A. Condensate and Equipment Drain Water below 60 Deg F:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Flexible Elastomeric: 3/4 inch thick.

B. Chilled Water and Brine, above 40 Deg F:

1. NPS 1 and Smaller:

a. Flexible Elastomeric: 1/2 inch thick.

2. NPS 1 to NPS 12: Insulation shall be one of the following:

a. Cellular Glass: 1-1/2 inches thick.
b. Flexible Elastomeric: 1 inch thick.

3. NPS 14 and Larger: Insulation shall be the following:

a. Cellular Glass: 2 inches thick.

3.13 OUTDOOR, ABOVEGROUND PIPING INSULATION SCHEDULE

A. Chilled Water:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Cellular Glass: 3 inches thick.
b. Flexible Elastomeric: 3 inches thick.

3.14 INDOOR, FIELD-APPLIED JACKET SCHEDULE

A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.

B. If more than one material is listed, selection from materials listed is Contractor's option.

C. Piping, Concealed:

1. None.

D. Piping, Exposed in finished spaces:

1. PVC: 20 mils thick.

E. Piping, Exposed in unfinished spaces up to six feet above floor:

1. Aluminum, Smooth: 0.020 inch thick.

3.15 OUTDOOR, FIELD-APPLIED JACKET SCHEDULE

A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.

B. If more than one material is listed, selection from materials listed is Contractor's option.

C. Piping, Concealed:

1. None.

D. Piping, Exposed:
1. Aluminum, Smooth or Stucco Embossed: 0.020 inch thick.
2. Stainless Steel, Type 304 or 316, Smooth 2B Finish: 0.016 inch thick.

END OF SECTION 23 07 19

SECTION 23 08 00
COMMISSIONING OF HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Owner's General Conditions of the Contract, and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes commissioning process requirements for HVAC&R systems, assemblies, and equipment.

B. Related Sections:

1. Refer to Division 01 Section 01 91 13 "General Commissioning Requirements for additional commissioning scope and requirements. All testing and commissioning requirements of that section shall be met.

1.3 ALLOWANCES

A. Labor, instrumentation, tools, and equipment costs for technicians for the performance of commissioning testing are covered by the "Schedule of Allowances" Article in Division 01 Section "Allowances."

1.4 UNIT PRICES

A. Commissioning testing allowance may be adjusted up or down by the "List of Unit Prices" Article in Division 01 Section "Unit Prices" when actual man-hours are computed at the end of commissioning testing.

1.5 CONTRACTOR'S RESPONSIBILITIES

A. Perform commissioning tests at the direction of the CxA.

B. Attend construction phase controls coordination meeting.

C. Attend testing, adjusting, and balancing review and coordination meeting.

D. Participate in HVAC&R systems, assemblies, equipment, and component maintenance orientation and inspection as directed by the CxA.

E. Provide information requested by the CxA for final commissioning documentation.

F. Provide measuring instruments and logging devices to record test data, and provide data acquisition equipment to record data for the complete range of testing for the required test period.

1.6 CxA'S RESPONSIBILITIES

A. Provide Project-specific construction checklists and commissioning process test procedures for actual HVAC&R systems, assemblies, equipment, and components to be furnished and installed as part of the construction contract.

B. Direct commissioning testing.

C. Verify testing, adjusting, and balancing of Work are complete.

D. Provide test data, inspection reports, and certificates in Systems Manual.

1.7 COMMISSIONING DOCUMENTATION

A. Provide the following information to the CxA for inclusion in the commissioning plan:

1. Plan for delivery and review of submittals, systems manuals, and other documents and reports.
2. Identification of installed systems, assemblies, equipment, and components including design changes that occurred during the construction phase.
3. Process and schedule for completing construction checklists and manufacturer's prestart and startup checklists for HVAC&R systems, assemblies, equipment, and components to be verified and tested.
4. Certificate of completion certifying that installation, prestart checks, and startup procedures have been completed.
5. Certificate of readiness certifying that HVAC&R systems, subsystems, equipment, and associated controls are ready for testing.
6. Test and inspection reports and certificates.
7. Corrective action documents.
8. Verification of testing, adjusting, and balancing reports.

1.8 SUBMITTALS

A. Certificates of readiness.

B. Certificates of completion of installation, prestart, and startup activities.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TESTING PREPARATION

A. Certify that HVAC&R systems, subsystems, and equipment have been installed, calibrated, and started and are operating according to the Contract Documents.

B. Certify that HVAC&R instrumentation and control systems have been completed and calibrated, that they are operating according to the Contract Documents, and that pretest set points have been recorded.

C. Certify that testing, adjusting, and balancing procedures have been completed and that testing, adjusting, and balancing reports have been submitted, discrepancies corrected, and corrective work approved.

D. Set systems, subsystems, and equipment into operating mode to be tested (e.g., normal shutdown, normal auto position, normal manual position, unoccupied cycle, emergency power, and alarm conditions).

E. Inspect and verify the position of each device and interlock identified on checklists.

F. Check safety cutouts, alarms, and interlocks with smoke control and life-safety systems during each mode of operation.

G. Testing Instrumentation: Install measuring instruments and logging devices to record test data as directed by the CxA.

3.2 TESTING AND BALANCING VERIFICATION

A. Prior to performance of testing and balancing Work, provide copies of reports, sample forms, checklists, and certificates to the CxA.

B. Notify the CxA at least 10 days in advance of testing and balancing Work, and provide access for the CxA to witness testing and balancing Work.

C. The test and balance contractor shall provide an ultrasonic flow meter for test and balance verification of water systems.

D. Provide technicians, instrumentation, and tools to verify testing and balancing of HVAC&R systems at the direction of the CxA.

1. The CxA will notify testing and balancing Subcontractor 10 days in advance of the date of field verification. Notice will not include data points to be verified.
2. The testing and balancing Subcontractor shall use the same instruments (by model and serial number) that were used when original data were collected.
3. Failure of an item includes, other than sound, a deviation of more than 10 percent. Failure of more than 10 percent of selected items shall result in rejection of final testing, adjusting, and balancing report. For sound pressure readings, a deviation of 3 dB shall result in rejection of final testing. Variations in background noise must be considered.

4. Remedy the deficiency and notify the CxA so verification of failed portions can be performed.

3.3 GENERAL TESTING REQUIREMENTS

A. Provide technicians, instrumentation, and tools to perform commissioning test at the direction of the CxA.

B. Scope of HVAC&R testing shall include entire HVAC&R installation, from central equipment for heat generation and refrigeration through distribution systems to each conditioned space. Testing shall include measuring capacities and effectiveness of operational and control functions.

1. Testing Strategies and Sampling: Refer to section 01 91 13 for testing of equipment strategies and sampling requirement functional performance test requirements.
2.

C. Test all operating modes, interlocks, control responses, and responses to abnormal or emergency conditions, and verify proper response of building automation system controllers and sensors.

D. The CxA along with the HVAC&R Contractor, testing and balancing Subcontractor, and HVAC&R Instrumentation and Control Subcontractor shall prepare detailed testing plans, procedures, and checklists for HVAC&R systems, subsystems, and equipment.

E. Tests will be performed using design conditions whenever possible.

F. Simulated conditions may need to be imposed using an artificial load when it is not practical to test under design conditions. Before simulating conditions, calibrate testing instruments. Provide equipment to simulate loads. Set simulated conditions as directed by the CxA and document simulated conditions and methods of simulation. After tests, return settings to normal operating conditions.

G. The CxA may direct that set points be altered when simulating conditions is not practical.

H. The CxA may direct that sensor values be altered with a signal generator when design or simulating conditions and altering set points are not practical.

I. If tests cannot be completed because of a deficiency outside the scope of the HVAC&R system, document the deficiency and report it to the Owner. After deficiencies are resolved, reschedule tests.

J. If the testing plan indicates specific seasonal testing, complete appropriate initial performance tests and documentation and schedule seasonal tests.

3.4 HVAC&R SYSTEMS, SUBSYSTEMS, AND EQUIPMENT TESTING PROCEDURES

A. HVAC&R Instrumentation and Control System Testing: Field testing plans and testing requirements are specified in Division 23 Section "Instrumentation and Control for HVAC" and the Sequence of Operations as shown on construction drawing. Assist the CxA with preparation of testing plans.

B. Pipe system cleaning, flushing, hydrostatic tests, and chemical treatment requirements are specified in Division 23 piping Sections. HVAC&R Contractor shall prepare a pipe system cleaning, flushing, and hydrostatic testing plan. Provide cleaning, flushing, testing, and treating plan and final reports to the CxA. Plan shall include the following:

1. Sequence of testing and testing procedures for each section of pipe to be tested, identified by pipe zone or sector identification marker. Markers shall be keyed to Drawings for each pipe sector, showing the physical location of each designated pipe test section. Drawings keyed to pipe zones or sectors shall be formatted to allow each section of piping to be physically located and identified when referred to in pipe system cleaning, flushing, hydrostatic testing, and chemical treatment plan.
2. Description of equipment for flushing operations.
3. Minimum flushing water velocity.
4. Tracking checklist for managing and ensuring that all pipe sections have been cleaned, flushed, hydrostatically tested, and chemically treated.

C. Refrigeration System Testing: Provide technicians, instrumentation, tools, and equipment to test performance of chillers, cooling towers, refrigerant compressors and condensers, heat pumps, and other refrigeration systems. The CxA shall determine the sequence of testing and testing procedures for each equipment item and pipe section to be tested.

D. HVAC&R Distribution System Testing: Provide technicians, instrumentation, tools, and equipment to test performance of air, steam, and hydronic distribution systems; special exhaust; and other distribution systems, including HVAC&R terminal equipment and unitary equipment.

E. Vibration and Sound Tests: Provide technicians, instrumentation, tools, and equipment to test performance of vibration isolation and seismic controls.

3.5 NON-CONFORMANCE

A. The CxA will record the results of the Functional Performance Tests. All deficiencies, non-conformance issues, or test failures will be noted and reported to the Contractors in a deficiency list or in a punch-list format.

B. Corrections of minor deficiencies identified may be made during the tests at the discretion of the CxA. In such cases the deficiency and resolution will be documented on the procedure form.

C. Every effort will be made to expedite the testing process and minimize unnecessary delays, while not compromising the integrity of the procedures. However, the CxA will not be pressured into overlooking deficient work or loosening acceptance criteria to satisfy scheduling or cost issues, unless there is an overriding reason to do so at the request of the Owners Representative.

D. Re-testing.

1. If a Functional Performance Test fails, corrections shall be made to the deficient equipment or systems by the Contractors. The systems will be re-tested until they pass the Tests.
2. The time/cost for the CxA to perform any re-testing required because of improper set up of the systems by the contractors or failed functional or performance tests will be back-charged to the Contractor (who may choose to recover costs from the party responsible for executing faulty equipment start-up/checkout and associated checklists). This includes instances where a specific item was overlooked in the equipment start-up and

checkout procedures, reported to have been successfully completed, but determined during Functional Performance testing to be faulty.

3. Any required re-testing by any contractor, sub-contractor, or vendor shall not be considered a justified reason for a claim of delay or for a time extension by the Contractor.

3.6 Deficiencies and retesting

A. The CxA documents the results of each test. (Corrections of minor installation or sequence of operation deficiencies are made during tests at the discretion of CxA.)

B. Deficiencies/non-conformance issues not corrected during testing are reported to the Contractors for corrective action. Upon completion, a request is made by the Contractors to CxA for retest.

END OF SECTION 23 08 00

SECTION 23 09 00
INSTRUMENTATION AND CONTROL FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Owner's General Conditions of the Contract, and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes control equipment for HVAC systems and components, including control components for terminal heating and cooling units not supplied with factory-wired controls.

B. Related Sections include the following:

1. Section 23 05 19 "Meters and Gages for HVAC Piping" for measuring equipment that relates to this Section.

1.3 DEFINITIONS

A. DDC: Direct digital control.

B. I/O: Input/output.

C. LonWorks: A control network technology platform for designing and implementing interoperable control devices and networks.

D. MS/TP: Master slave/token passing.

E. PC: Personal computer.

F. PID: Proportional plus integral plus derivative.

G. RTD: Resistance temperature detector.

1.4 SYSTEM PERFORMANCE

A. Comply with the following performance requirements:

1. Graphic Display: Display graphic with minimum 20 dynamic points with current data within 10 seconds.
2. Graphic Refresh: Update graphic with minimum 20 dynamic points with current data within 8 seconds.
3. Object Command: Reaction time of less than two seconds between operator command of a binary object and device reaction.
4. Object Scan: Transmit change of state and change of analog values to control units or workstation within six seconds.

5. Alarm Response Time: Annunciate alarm at workstation within 45 seconds. Multiple workstations must receive alarms within five seconds of each other.
6. Program Execution Frequency: Run capability of applications as often as five seconds, but selected consistent with mechanical process under control.
7. Performance: Programmable controllers shall execute DDC PID control loops, and scan and update process values and outputs at least once per second.
8. Reporting Accuracy and Stability of Control: Report values and maintain measured variables within tolerances as follows:

    a. Water Temperature: Plus or minus 1 deg F.
    b. Water Flow: Plus or minus 5 percent of full scale.
    c. Water Pressure: Plus or minus 2 percent of full scale.
    d. Space Temperature: Plus or minus 1 deg F.
    e. Ducted Air Temperature: Plus or minus 1 deg F.
    f. Outside Air Temperature: Plus or minus 2 deg F.
    g. Dew Point Temperature: Plus or minus 3 deg F.
    h. Temperature Differential: Plus or minus 0.25 deg F.
    i. Relative Humidity: Plus or minus 5 percent.
    j. Airflow (Pressurized Spaces): Plus or minus 3 percent of full scale.
    k. Airflow (Measuring Stations): Plus or minus 5 percent of full scale.
    l. Airflow (Terminal): Plus or minus 10 percent of full scale.
    m. Air Pressure (Space): Plus or minus 0.01-inch wg.
    n. Air Pressure (Ducts): Plus or minus 0.1-inch wg.
    o. Carbon Monoxide: Plus or minus 5 percent of reading.
    p. Carbon Dioxide: Plus or minus 50 ppm.
    q. Electrical: Plus or minus 5 percent of reading.

1.5 ACTION SUBMITTALS

A. Product Data: Include manufacturer's technical literature for each control device. Indicate dimensions, capacities, performance characteristics, electrical characteristics, finishes for materials, and installation and startup instructions for each type of product indicated.

1. DDC System Hardware: Bill of materials of equipment indicating quantity, manufacturer, and model number. Include technical data for operator workstation equipment, interface equipment, control units, transducers/transmitters, sensors, actuators, valves, relays/switches, control panels, and operator interface equipment.
2. Control System Software: Include technical data for operating system software, operator interface, color graphics, and other third-party applications.
3. Controlled Systems: Instrumentation list with element name, type of device, manufacturer, model number, and product data. Include written description of sequence of operation including schematic diagram.

B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

1. Bill of materials of equipment indicating quantity, manufacturer, and model number.
2. Schematic flow diagrams showing fans, pumps, coils, dampers, valves, and control devices.
3. Wiring Diagrams: Power, signal, and control wiring.
4. Details of control panel faces, including controls, instruments, and labeling.
5. Written description of sequence of operation.
6. Schedule of dampers including size, leakage, and flow characteristics.

7. Schedule of valves including flow characteristics.
8. DDC System Hardware:

    a. Wiring diagrams for control units with termination numbers.
    b. Schematic diagrams and floor plans for field sensors and control hardware.
    c. Schematic diagrams for control, communication, and power wiring, showing trunk data conductors and wiring between operator workstation and control unit locations.

9. Control System Software: List of color graphics indicating monitored systems, data (connected and calculated) point addresses, output schedule, and operator notations.
10. Controlled Systems:

    a. Schematic diagrams of each controlled system with control points labeled and control elements graphically shown, with wiring.
    b. Scaled drawings showing mounting, routing, and wiring of elements including bases and special construction.
    c. Written description of sequence of operation including schematic diagram.
    d. Points list.

C. Samples for Initial Selection: For each color required, of each type of thermostat or sensor cover with factory-applied color finishes.

D. Samples for Verification: For each color required, of each type of thermostat or sensor cover.

1.6 INFORMATIONAL SUBMITTALS

A. Data Communications Protocol Certificates: Certify that each proposed DDC system component complies with ASHRAE 135.

B. Data Communications Protocol Certificates: Certify that each proposed DDC system component complies with LonWorks.

C. Qualification Data: For Installer and manufacturer.

D. Software Upgrade Kit: For Owner to use in modifying software to suit future systems revisions or monitoring and control revisions.

E. Field quality-control test reports.

1.7 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For HVAC instrumentation and control system to include in emergency, operation, and maintenance manuals. In addition to items specified in Section 01 78 23 "Operation and Maintenance Data," include the following:

1. Maintenance instructions and lists of spare parts for each type of control device and compressed-air station.
2. Interconnection wiring diagrams with identified and numbered system components and devices.
3. Keyboard illustrations and step-by-step procedures indexed for each operator function.

4. Inspection period, cleaning methods, cleaning materials recommended, and calibration tolerances.
5. Calibration records and list of set points.

B. Software and Firmware Operational Documentation: Include the following:

1. Software operating and upgrade manuals.
2. Program Software Backup: On a magnetic media or compact disc, complete with data files.
3. Device address list.
4. Printout of software application and graphic screens.
5. Software license required by and installed for DDC workstations and control systems.

1.8 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Replacement Materials: One replacement diaphragm or relay mechanism for each unique valve motor controller thermostat positioning relay.
2. Maintenance Materials: One thermostat adjusting key(s).
3. Maintenance Materials: One pneumatic thermostat test kit.

1.9 QUALITY ASSURANCE

A. Installer Qualifications: Automatic control system manufacturer's authorized representative who is trained and approved for installation of system components required for this Project.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with ASHRAE 135 for DDC system components.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Factory-Mounted Components: Where control devices specified in this Section are indicated to be factory mounted on equipment, arrange for shipping of control devices to equipment manufacturer.

B. System Software: Update to latest version of software at Project completion.

1.11 COORDINATION

A. Coordinate location of thermostats, humidistats, and other exposed control sensors with plans and room details before installation.

B. Coordinate equipment with Lighting Controls specifications to achieve compatibility with equipment that interfaces with that system.

C. Coordinate supply of conditioned electrical branch circuits for control units and operator workstation.

D. Coordinate equipment with Section 26 09 13 "Electrical Power Monitoring and Control" to achieve compatibility of communication interfaces.

E. Coordinate equipment with Section 26 24 16 "Panelboards" to achieve compatibility with starter coils and annunciation devices.

F. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Section 03 30 00 "Cast-in-Place Concrete."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
2. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 CONTROL SYSTEM

A. Manufacturers:

1. Automated Logic Corporation.
2. Johnson Controls, Inc.; Controls Group.
3. Siemens Building Technologies, Inc.
4. Trane

B. Control system shall consist of sensors, indicators, actuators, final control elements, interface equipment, other apparatus, and accessories to control mechanical systems.

C. Control system shall consist of sensors, indicators, actuators, final control elements, interface equipment, other apparatus, accessories, and software connected to distributed controllers operating in multiuser, multitasking environment on token-passing network and programmed to control mechanical systems. An operator workstation permits interface with the network via dynamic color graphics with each mechanical system, building floor plan, and control device depicted by point-and-click graphics.

2.3 DDC EQUIPMENT

A. Operator Workstation: One PC-based microcomputer(s) with minimum configuration as follows:

1. Motherboard: With 8 integrated USB 3.0 ports, integrated Intel Pro 10/100 (Ethernet), integrated audio, bios, and hardware monitoring.
2. Processor: Dual-core 2.06 Hz minimum.
3. Random-Access Memory: 16 GB.
4. Graphics: Video adapter, minimum 16 GB pixels, with TV out.
5. Monitor: 24 inches, LED color.
6. Keyboard: QWERTY, 105 keys in ergonomic shape.
7. Hard-Disk Drive: 4 TB.
8. DVD-ROM Read/Write Drive: 48x24x48.
9. Mouse: Three button, optical.
10. Uninterruptible Power Supply: 5 kVa.
11. Operating System: Windows 10 with high-speed Internet access.

    a. ASHRAE 135 Compliance: Workstation shall use ASHRAE 135 protocol and communicate using ISO 8802-3 (Ethernet) datalink/physical layer protocol.

12. Printer: Color, ink-jet type as follows:

    a. Print Head: 4800 x 1200 dpi optimized color resolution.
    b. Paper Handling: Minimum of 100 sheets.
    c. Print Speed: Minimum of 17 ppm in black and 12 ppm in color.

13. Application Software:

    a. I/O capability from operator station.
    b. System security for each operator via software password and access levels.
    c. Automatic system diagnostics; monitor system and report failures.
    d. Database creation and support.
    e. Automatic and manual database save and restore.
    f. Dynamic color graphic displays with up to 10 screen displays at once.
    g. Custom graphics generation and graphics library of HVAC equipment and symbols.
    h. Alarm processing, messages, and reactions.
    i. Trend logs retrievable in spreadsheets and database programs.
    j. Alarm and event processing.
    k. Object and property status and control.
    l. Automatic restart of field equipment on restoration of power.
    m. Data collection, reports, and logs. Include standard reports for the following:

        1) Current values of all objects.
        2) Current alarm summary.
        3) Disabled objects.
        4) Alarm lockout objects.
        5) Logs.

    n. Custom report development.
    o. Utility and weather reports.
    p. Workstation application editors for controllers and schedules.
    q. Maintenance management.

14. Custom Application Software:

    a. English language oriented.
    b. Full-screen character editor/programming environment.

c. Allow development of independently executing program modules with debugging/simulation capability.
d. Support conditional statements.
e. Support floating-point arithmetic with mathematic functions.
f. Contains predefined time variables.

B. Diagnostic Terminal Unit: Portable notebook-style, PC-based microcomputer terminal capable of accessing system data by connecting to system.

C. Control Units: Modular, comprising processor board with programmable, nonvolatile, random-access memory; local operator access and display panel; integral interface equipment; and backup power source.

1. Units monitor or control each I/O point; process information; execute commands from other control units, devices, and operator stations; and download from or upload to operator workstation or diagnostic terminal unit.
2. Stand-alone mode control functions operate regardless of network status. Functions include the following:

a. Global communications.
b. Discrete/digital, analog, and pulse I/O.
c. Monitoring, controlling, or addressing data points.
d. Software applications, scheduling, and alarm processing.
e. Testing and developing control algorithms without disrupting field hardware and controlled environment.

3. Standard Application Programs:

a. Electric Control Programs: Demand limiting, duty cycling, automatic time scheduling, start/stop time optimization, night setback/setup, on-off control with differential sequencing, staggered start, antishort cycling, PID control, DDC with fine tuning, and trend logging.
b. HVAC Control Programs: Optimal run time, supply-air reset, and enthalpy switchover.
c. Chiller Control Programs: Control function of condenser-water reset, chilled-water reset, and equipment sequencing.
d. Programming Application Features: Include trend point; alarm processing and messaging; weekly, monthly, and annual scheduling; energy calculations; run-time totalization; and security access.
e. Remote communications.
f. Maintenance management.
g. Units of Measure: Inch-pound and SI (metric).

4. Local operator interface provides for download from or upload to operator workstation or diagnostic terminal unit.
5. ASHRAE 135 Compliance: Control units shall use ASHRAE 135 protocol and communicate using ISO 8802-3 (Ethernet) datalink/physical layer protocol.
6. LonWorks Compliance: Control units shall use LonTalk protocol and communicate using EIA/CEA 709.1 datalink/physical layer protocol.

D. Local Control Units: Modular, comprising processor board with electronically programmable, nonvolatile, read-only memory; and backup power source.

1. Units monitor or control each I/O point, process information, and download from or upload to operator workstation or diagnostic terminal unit.
2. Stand-alone mode control functions operate regardless of network status. Functions include the following:

    a. Global communications.
    b. Discrete/digital, analog, and pulse I/O.
    c. Monitoring, controlling, or addressing data points.

3. Local operator interface provides for download from or upload to operator workstation or diagnostic terminal unit.
4. ASHRAE 135 Compliance: Control units shall use ASHRAE 135 protocol and communicate using ISO 8802-3 (Ethernet) datalink/physical layer protocol.
5. LonWorks Compliance: Control units shall use LonTalk protocol and communicate using EIA/CEA 709.1 datalink/physical layer protocol.

E. I/O Interface: Hardwired inputs and outputs may tie into system through controllers. Protect points so that shorting will cause no damage to controllers.

1. Binary Inputs: Allow monitoring of on-off signals without external power.
2. Pulse Accumulation Inputs: Accept up to 10 pulses per second.
3. Analog Inputs: Allow monitoring of low-voltage (0- to 10-V dc), current (4 to 20 mA), or resistance signals.
4. Binary Outputs: Provide on-off or pulsed low-voltage signal, selectable for normally open or normally closed operation with three-position (on-off-auto) override switches and status lights.
5. Analog Outputs: Provide modulating signal, either low voltage (0- to 10-V dc) or current (4 to 20 mA) with status lights, two-position (auto-manual) switch, and manually adjustable potentiometer.
6. Tri-State Outputs: Provide two coordinated binary outputs for control of three-point, floating-type electronic actuators.
7. Universal I/Os: Provide software selectable binary or analog outputs.

F. Power Supplies: Transformers with Class 2 current-limiting type or overcurrent protection; limit connected loads to 80 percent of rated capacity. DC power supply shall match output current and voltage requirements and be full-wave rectifier type with the following:

1. Output ripple of 5.0 mV maximum peak to peak.
2. Combined 1 percent line and load regulation with 100-mic.sec. response time for 50 percent load changes.
3. Built-in overvoltage and overcurrent protection and be able to withstand 150 percent overload for at least 3 seconds without failure.

G. Power Line Filtering: Internal or external transient voltage and surge suppression for workstations or controllers with the following:

1. Minimum dielectric strength of 1000 V.
2. Maximum response time of 10 nanoseconds.
3. Minimum transverse-mode noise attenuation of 65 dB.
4. Minimum common-mode noise attenuation of 150 dB at 40 to 100 Hz.

2.4 UNITARY CONTROLLERS

A. Unitized, capable of stand-alone operation with sufficient memory to support its operating system, database, and programming requirements, and with sufficient I/O capacity for the application.

1. Configuration: Local keypad and display; diagnostic LEDs for power, communication, and processor; wiring termination to terminal strip or card connected with ribbon cable; memory with bios; and 72-hour battery backup.
2. Operating System: Manage I/O communication to allow distributed controllers to share real and virtual object information and allow central monitoring and alarms. Perform scheduling with real-time clock. Perform automatic system diagnostics; monitor system and report failures.
3. ASHRAE 135 Compliance: Communicate using read (execute and initiate) and write (execute and initiate) property services defined in ASHRAE 135. Reside on network using MS/TP datalink/physical layer protocol and have service communication port for connection to diagnostic terminal unit.
4. LonWorks Compliance: Communicate using EIA/CEA 709.1 datalink/physical layer protocol using LonTalk protocol.
5. Enclosure: Dustproof rated for operation at 32 to 120 deg F.
6. Enclosure: Waterproof rated for operation at 40 to 150 deg F.

2.5 ALARM PANELS

A. Unitized cabinet with suitable brackets for wall or floor mounting. Fabricate of 0.06-inch-thick, furniture-quality steel or extruded-aluminum alloy, totally enclosed, with hinged doors and keyed lock and with manufacturer's standard shop-painted finish. Provide common keying for all panels.

B. Indicating light for each alarm point, single horn, acknowledge switch, and test switch, mounted on hinged cover.

1. Alarm Condition: Indicating light flashes and horn sounds.
2. Acknowledge Switch: Horn is silent and indicating light is steady.
3. Second Alarm: Horn sounds and indicating light is steady.
4. Alarm Condition Cleared: System is reset and indicating light is extinguished.
5. Contacts in alarm panel allow remote monitoring by independent alarm company.

2.6 ANALOG CONTROLLERS

A. Step Controllers: 6- or 10-stage type, with heavy-duty switching rated to handle loads and operated by electric motor.

B. Electric, Outdoor-Reset Controllers: Remote-bulb or bimetal rod-and-tube type, proportioning action with adjustable throttling range, adjustable set point, scale range minus 10 to plus 70 deg F, and single- or double-pole contacts.

C. Electronic Controllers: Wheatstone-bridge-amplifier type, in steel enclosure with provision for remote-resistance readjustment. Identify adjustments on controllers, including proportional band and authority.

1. Single controllers can be integral with control motor if provided with accessible control readjustment potentiometer.

D. Fan-Speed Controllers: Solid-state model providing field-adjustable proportional control of motor speed from maximum to minimum of 55 percent and on-off action below minimum fan speed. Controller shall briefly apply full voltage, when motor is started, to rapidly bring motor up to minimum speed. Equip with filtered circuit to eliminate radio interference.

E. Receiver Controllers: Single- or multiple-input models with control-point adjustment, direct or reverse acting with mechanical set-point adjustment with locking device, proportional band adjustment, authority adjustment, and proportional control mode.

1. Remote-control-point adjustment shall be plus or minus 20 percent of sensor span, input signal of 3 to 13 psig.
2. Proportional band shall extend from 2 to 20 percent for 5 psig.
3. Authority shall be 20 to 200 percent.
4. Air-supply pressure of 18 psig, input signal of 3 to 15 psig, and output signal of zero to supply pressure.
5. Gages: 3-1/2 inches in diameter, 2.5 percent wide-scale accuracy, and range to match transmitter input or output pressure.

2.7 TIME CLOCKS

A. Manufacturers:

1. ATC-Diversified Electronics.
2. Grasslin Controls Corporation.
3. Paragon Electric Co., Inc.
4. Precision Multiple Controls, Inc.
5. SSAC Inc.; ABB USA.
6. TCS/Basys Controls.
7. Theben AG - Lumilite Control Technology, Inc.
8. Time Mark Corporation.

B. Seven-day, programming-switch timer with synchronous-timing motor and seven-day dial; continuously charged, nickel-cadmium-battery-driven, eight-hour, power-failure carryover; multiple-switch trippers; minimum of two and maximum of eight signals per day with two normally open and two normally closed output contacts.

C. Solid-state, programmable time control with 8 separate programs each with up to 100 on-off operations; 1-second resolution; lithium battery backup; keyboard interface and manual override; individual on-off-auto switches for each program; 365-day calendar with 20 programmable holidays; choice of fail-safe operation for each program; system fault alarm; and communications package allowing networking of time controls and programming from PC.

2.8 ELECTRONIC SENSORS

A. Description: Vibration and corrosion resistant; for wall, immersion, or duct mounting as required.

B. Thermistor Temperature Sensors and Transmitters:

1. Manufacturers:

    a. BEC Controls Corporation.
    b. Ebtron, Inc.
    c. Heat-Timer Corporation.
    d. I.T.M. Instruments Inc.
    e. MAMAC Systems, Inc.
    f. RDF Corporation.

2. Accuracy: Plus or minus 0.5 deg F at calibration point.
3. Wire: Twisted, shielded-pair cable.
4. Insertion Elements in Ducts: Single point, 8 inches long; use where not affected by temperature stratification or where ducts are smaller than 9 sq. ft.
5. Averaging Elements in Ducts: 18 inches long, rigid; use where prone to temperature stratification or where ducts are larger than 10 sq. ft.
6. Insertion Elements for Liquids: Brass or stainless-steel socket with minimum insertion length of 2-1/2 inches.
7. Room Sensor Cover Construction: Manufacturer's standard locking covers.

    a. Set-Point Adjustment: Concealed.
    b. Set-Point Indication: Concealed.
    c. Thermometer: Concealed.
    d. Color: White.
    e. Orientation: Vertical.

8. Outside-Air Sensors: Watertight inlet fitting, shielded from direct sunlight.
9. Room Security Sensors: Stainless-steel cover plate with insulated back and security screws.

C. RTDs and Transmitters:

1. Manufacturers:

    a. BEC Controls Corporation.
    b. MAMAC Systems, Inc.
    c. RDF Corporation.

2. Accuracy: Plus or minus 0.2 percent at calibration point.
3. Wire: Twisted, shielded-pair cable.
4. Insertion Elements in Ducts: Single point, 8 inches long; use where not affected by temperature stratification or where ducts are smaller than 9 sq. ft.
5. Averaging Elements in Ducts: 18 inches long, rigid; use where prone to temperature stratification or where ducts are larger than 9 sq. ft.; length as required.
6. Insertion Elements for Liquids: Brass socket with minimum insertion length of 2-1/2 inches.
7. Room Sensor Cover Construction: Manufacturer's standard locking covers.

    a. Set-Point Adjustment: Concealed.
    b. Set-Point Indication: Concealed.
    c. Thermometer: Concealed.
    d. Color: White.
    e. Orientation: Vertical.

8. Outside-Air Sensors: Watertight inlet fitting, shielded from direct sunlight.
9. Room Security Sensors: Stainless-steel cover plate with insulated back and security screws.

D. Humidity Sensors: Bulk polymer sensor element.

1. Manufacturers:

   a. BEC Controls Corporation.
   b. General Eastern Instruments.
   c. MAMAC Systems, Inc.
   d. ROTRONIC Instrument Corp.
   e. TCS/Basys Controls.
   f. Vaisala.

2. Accuracy: 2 percent full range with linear output.
3. Room Sensor Range: 20 to 80 percent relative humidity.
4. Room Sensor Cover Construction: Manufacturer's standard locking covers.

   a. Set-Point Adjustment: Concealed.
   b. Set-Point Indication: Concealed.
   c. Thermometer: Concealed.
   d. Color: White.
   e. Orientation: Vertical.

5. Duct Sensor: 20 to 80 percent relative humidity range with element guard and mounting plate.
6. Outside-Air Sensor: 20 to 80 percent relative humidity range with mounting enclosure, suitable for operation at outdoor temperatures of 32 to 120 deg F.
7. Duct and Sensors: With element guard and mounting plate, range of 0 to 100 percent relative humidity.

E. Pressure Transmitters/Transducers:

1. Manufacturers:

   a. BEC Controls Corporation.
   b. General Eastern Instruments.
   c. MAMAC Systems, Inc.
   d. ROTRONIC Instrument Corp.
   e. TCS/Basys Controls.
   f. Vaisala.

2. Static-Pressure Transmitter: Nondirectional sensor with suitable range for expected input, and temperature compensated.

   a. Accuracy: 2 percent of full scale with repeatability of 0.5 percent.
   b. Output: 4 to 20 mA.
   c. Building Static-Pressure Range: 0- to 0.25-inch wg.
   d. Duct Static-Pressure Range: 0- to 5-inch wg.

3. Water Pressure Transducers: Stainless-steel diaphragm construction, suitable for service; minimum 150-psig operating pressure; linear output 4 to 20 mA.
4. Water Differential-Pressure Transducers: Stainless-steel diaphragm construction, suitable for service; minimum 150-psig operating pressure and tested to 300-psig; linear output 4 to 20 mA.
5. Differential-Pressure Switch (Air or Water): Snap acting, with pilot-duty rating and with suitable scale range and differential.

6. Pressure Transmitters: Direct acting for gas, liquid, or steam service; range suitable for system; linear output 4 to 20 mA.

F. Room Sensor Cover Construction: Manufacturer's standard locking covers.

1. Set-Point Adjustment: Concealed.
2. Set-Point Indication: Concealed.
3. Thermometer: Concealed.
4. Orientation: Vertical.

2.9 STATUS SENSORS

A. Status Inputs for Fans: Differential-pressure switch with pilot-duty rating and with adjustable range of 0- to 5-inch wg.

B. Status Inputs for Pumps: Differential-pressure switch with pilot-duty rating and with adjustable pressure-differential range of 8 to 60 psig, piped across pump.

C. Status Inputs for Electric Motors: Comply with ISA 50.00.01, current-sensing fixed- or split-core transformers with self-powered transmitter, adjustable and suitable for 175 percent of rated motor current.

D. Voltage Transmitter (100- to 600-V ac): Comply with ISA 50.00.01, single-loop, self-powered transmitter, adjustable, with suitable range and 1 percent full-scale accuracy.

E. Power Monitor: 3-phase type with disconnect/shorting switch assembly, listed voltage and current transformers, with pulse kilowatt hour output and 4- to 20-mA kW output, with maximum 2 percent error at 1.0 power factor and 2.5 percent error at 0.5 power factor.

F. Current Switches: Self-powered, solid-state with adjustable trip current, selected to match current and system output requirements.

G. Electronic Valve/Damper Position Indicator: Visual scale indicating percent of travel and 2- to 10-V dc, feedback signal.

H. Water-Flow Switches: Bellows-actuated mercury or snap-acting type with pilot-duty rating, stainless-steel or bronze paddle, with appropriate range and differential adjustment, in NEMA 250, Type 1 enclosure.

1. Manufacturers:

a. BEC Controls Corporation.
b. I.T.M. Instruments Inc.

2.10 GAS DETECTION EQUIPMENT

A. Manufacturers:

1. B. W. Technologies.
2. CEA Instruments, Inc.
3. Ebtron, Inc.
4. Gems Sensors Inc.
5. Greystone Energy Systems Inc.
6. Honeywell International Inc.; Home & Building Control.

7. INTEC Controls, Inc.
8. I.T.M. Instruments Inc.
9. MSA Canada Inc.
10. QEL/Quatrosense Environmental Limited.
11. Sauter Controls Corporation.
12. Sensidyne, Inc.
13. TSI Incorporated.
14. Vaisala.
15. Vulcain Inc.

B. Carbon Monoxide Detectors: Single or multichannel, dual-level detectors using solid-state plug-in sensors with a 3-year minimum life; suitable over a temperature range of 32 to 104 deg F; with 2 factory-calibrated alarm levels at 50 and 100 ppm.

C. Carbon Dioxide Sensor and Transmitter: Single detectors using solid-state infrared sensors; suitable over a temperature range of 23 to 130 deg F and calibrated for 0 to 2 percent, with continuous or averaged reading, 4- to 20-mA output;, for wall mounting.

D. Oxygen Sensor and Transmitter: Single detectors using solid-state zircon cell sensing; suitable over a temperature range of minus 32 to plus 1100 deg F and calibrated for 0 to 5 percent, with continuous or averaged reading, 4- to 20-mA output; for wall mounting.

E. Occupancy Sensor: Passive infrared, with time delay, daylight sensor lockout, sensitivity control, and 180-degree field of view with vertical sensing adjustment; for flush mounting.

2.11 FLOW MEASURING STATIONS

A. Duct Airflow Station: Combination of air straightener and multiport, self-averaging pitot tube station.

1. Manufacturers:

    a. Air Monitor Corporation.
    b. Wetmaster Co., Ltd.

2. Casing: Galvanized-steel frame.
3. Flow Straightener: Aluminum honeycomb, 3/4-inch parallel cell, 3 inches deep.
4. Sensing Manifold: Copper manifold with bullet-nosed static pressure sensors positioned on equal area basis.

2.12 ACTUATORS

A. Electric Motors: Size to operate with sufficient reserve power to provide smooth modulating action or two-position action.

1. Comply with requirements in Section 23 05 13 "Common Motor Requirements for HVAC Equipment."
2. Permanent Split-Capacitor or Shaded-Pole Type: Gear trains completely oil immersed and sealed. Equip spring-return motors with integral spiral-spring mechanism in housings

designed for easy removal for service or adjustment of limit switches, auxiliary switches, or feedback potentiometer.

3. Nonspring-Return Motors for Valves Larger than NPS 2-1/2: Size for running torque of 150 in. x lbf and breakaway torque of 300 in. x lbf.
4. Spring-Return Motors for Valves Larger than NPS 2-1/2: Size for running and breakaway torque of 150 in. x lbf.
5. Nonspring-Return Motors for Dampers Larger than 25 Sq. Ft.: Size for running torque of 150 in. x lbf and breakaway torque of 300 in. x lbf.
6. Spring-Return Motors for Dampers Larger Than 25 Sq. Ft.: Size for running and breakaway torque of 150 in. x lbf.

B. Electronic Actuators: Direct-coupled type designed for minimum 60,000 full-stroke cycles at rated torque.

1. Manufacturers:

   a. Belimo Aircontrols (USA), Inc.

2. Valves: Size for torque required for valve close off at maximum pump differential pressure.
3. Dampers: Size for running torque calculated as follows:

   a. Parallel-Blade Damper with Edge Seals: 7 inch-lb/sq. ft. of damper.
   b. Opposed-Blade Damper with Edge Seals: 5 inch-lb/sq. ft. of damper.
   c. Parallel-Blade Damper without Edge Seals: 4 inch-lb/sq. ft of damper.
   d. Opposed-Blade Damper without Edge Seals: 3 inch-lb/sq. ft. of damper.
   e. Dampers with 2- to 3-Inch wg of Pressure Drop or Face Velocities of 1000 to 2500 fpm: Increase running torque by 1.5.
   f. Dampers with 3- to 4-Inch wg of Pressure Drop or Face Velocities of 2500 to 3000 fpm: Increase running torque by 2.0.

4. Coupling: V-bolt and V-shaped, toothed cradle.
5. Overload Protection: Electronic overload or digital rotation-sensing circuitry.
6. Fail-Safe Operation: Mechanical, spring-return mechanism. Provide external, manual gear release on nonspring-return actuators.
7. Power Requirements (Two-Position Spring Return): 24-V ac.
8. Power Requirements (Modulating): Maximum 10 VA at 24-V ac or 8 W at 24-V dc.
9. Proportional Signal: 2- to 10-V dc or 4 to 20 mA, and 2- to 10-V dc position feedback signal.
10. Temperature Rating: Minus 22 to plus 122 deg F.
11. Temperature Rating (Smoke Dampers): Minus 22 to plus 250 deg F.
12. Run Time: 30 seconds.

2.13 CONTROL VALVES

A. Manufacturers:

1. Danfoss Inc.; Air Conditioning & Refrigeration Div.
2. Erie Controls.
3. Hayward Industrial Products, Inc.
4. Magnatrol Valve Corporation.
5. Neles-Jamesbury.
6. Parker Hannifin Corporation; Skinner Valve Division.
7. Pneuline Controls.
8. Sauter Controls Corporation.

B. Control Valves: Factory fabricated, of type, body material, and pressure class based on maximum pressure and temperature rating of piping system, unless otherwise indicated.

C. Hydronic system globe valves shall have the following characteristics:

1. NPS 2 and Smaller: Class 125 bronze body, bronze trim, rising stem, renewable composition disc, and screwed ends with backseating capacity repackable under pressure.
2. NPS 2-1/2 and Larger: Class 125 iron body, bronze trim, rising stem, plug-type disc, flanged ends, and renewable seat and disc.
3. Internal Construction: Replaceable plugs and stainless-steel or brass seats.

    a. Single-Seated Valves: Cage trim provides seating and guiding surfaces for plug on top and bottom.
    b. Double-Seated Valves: Balanced plug; cage trim provides seating and guiding surfaces for plugs on top and bottom.

4. Sizing: 3-psig maximum pressure drop at design flow rate or the following:

    a. Two Position: Line size.
    b. Two-Way Modulating: Either the value specified above or twice the load pressure drop, whichever is more.
    c. Three-Way Modulating: Twice the load pressure drop, but not more than value specified above.

5. Flow Characteristics: Two-way valves shall have equal percentage characteristics; three-way valves shall have linear characteristics.
6. Close-Off (Differential) Pressure Rating: Combination of actuator and trim shall provide minimum close-off pressure rating of 150 percent of total system (pump) head for two-way valves and 100 percent of pressure differential across valve or 100 percent of total system (pump) head.

D. Butterfly Valves: 200-psig, 150-psig maximum pressure differential, ASTM A 126 cast-iron or ASTM A 536 ductile-iron body and bonnet, extended neck, stainless-steel stem, field-replaceable EPDM or Buna N sleeve and stem seals.

1. Body Style: Lug.
2. Disc Type: Nickel-plated ductile iron.
3. Sizing: 1-psig maximum pressure drop at design flow rate.

E. Terminal Unit Control Valves: Bronze body, bronze trim, two or three ports as indicated, replaceable plugs and seats, and union and threaded ends.

1. Rating: Class 125 for service at 125 psig and 250 deg F operating conditions.
2. Sizing: 3-psig maximum pressure drop at design flow rate, to close against pump shutoff head.
3. Flow Characteristics: Two-way valves shall have equal percentage characteristics; three-way valves shall have linear characteristics.

F. Self-Contained Control Valves: Bronze body, bronze trim, two or three ports as indicated, replaceable plugs and seats, and union and threaded ends.

1. Rating: Class 125 for service at 125 psig and 250 deg F operating conditions.
2. Thermostatic Operator: Liquid-filled integral sensor with integral adjustable dial.

2.14 DAMPERS

A. Manufacturers:

1. Air Balance Inc.
2. Don Park Inc.; Autodamp Div.
3. TAMCO (T. A. Morrison & Co. Inc.).
4. United Enertech Corp.
5. Vent Products Company, Inc.

B. Dampers: AMCA-rated, opposed-blade design; 0.108-inch-minimum thick, galvanized-steel or 0.125-inch-minimum thick, extruded-aluminum frames with holes for duct mounting; damper blades shall not be less than 0.064-inch-thick galvanized steel with maximum blade width of 8 inches and length of 48 inches.

1. Secure blades to 1/2-inch-diameter, zinc-plated axles using zinc-plated hardware, with oil-impregnated sintered bronze blade bearings, blade-linkage hardware of zinc-plated steel and brass, ends sealed against spring-stainless-steel blade bearings, and thrust bearings at each end of every blade.
2. Operating Temperature Range: From minus 40 to plus 200 deg F.
3. Edge Seals, Standard Pressure Applications: Closed-cell neoprene.
4. Edge Seals, Low-Leakage Applications: Use inflatable blade edging or replaceable rubber blade seals and spring-loaded stainless-steel side seals, rated for leakage at less than 10 cfm per sq. ft. of damper area, at differential pressure of 4-inch wg when damper is held by torque of 50 in. x lbf; when tested according to AMCA 500D.

2.15 CONTROL CABLE

A. Electronic and fiber-optic cables for control wiring are specified in Section 27 15 00 "Communications Horizontal Cabling."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that conditioned power supply is available to control units and operator workstation.

B. Verify that pneumatic piping and duct-, pipe-, and equipment-mounted devices are installed before proceeding with installation.

3.2 INSTALLATION

A. Install software in control units and operator workstation(s). Implement all features of programs to specified requirements and as appropriate to sequence of operation.

B. Connect and configure equipment and software to achieve sequence of operation specified.

C. Mount compressor and tank unit on elastomeric mounts. Vibration isolators are specified in Section 23 05 48 "Vibration and Seismic Controls for HVAC." Isolate air supply with wire-braid-reinforced rubber hose. Secure and anchor according to manufacturer's written instructions and seismic-control requirements.

1. Pipe manual and automatic drains to nearest floor drain.
2. Supply instrument air from compressor units through filter, pressure-reducing valve, and pressure relief valve, with pressure gages and shutoff and bypass valves.

D. Verify location of thermostats, humidistats, and other exposed control sensors with Drawings and room details before installation. Install devices 48 inches above the floor.

1. Install averaging elements in ducts and plenums in crossing or zigzag pattern.

E. Install guards on thermostats in the following locations:

1. Entrances.
2. Public areas.
3. Where indicated.

F. Install automatic dampers according to Section 23 33 00 "Air Duct Accessories."

G. Install damper motors on outside of duct in warm areas, not in locations exposed to outdoor temperatures.

H. Install labels and nameplates to identify control components according to Section 23 05 53 "Identification for HVAC Piping and Equipment."

I. Install hydronic instrument wells, valves, and other accessories according to Section 23 21 16 Hydronic Piping Specialties."

J. Install steam and condensate instrument wells, valves, and other accessories according toSection 23 22 16 Steam and Condensate Piping Specialties."

K. Install refrigerant instrument wells, valves, and other accessories according to Section 23 23 00 "Refrigerant Piping."

L. Install duct volume-control dampers according to Section 23 31 13 "Metal Ducts" and Section 23 31 16 "Nonmetal Ducts."

M. Install electronic and fiber-optic cables according to Section 27 15 00 "Communications Horizontal Cabling."

3.3 ELECTRICAL WIRING AND CONNECTION INSTALLATION

A. Install raceways, boxes, and cabinets according to Section 26 05 33 "Raceways and Boxes for Electrical Systems."

B. Install building wire and cable according to Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables."

C. Install signal and communication cable according to Section 27 15 00 "Communications Horizontal Cabling."

1. Conceal cable, except in mechanical rooms and areas where other conduit and piping are exposed.
2. Install exposed cable in raceway.
3. Install concealed cable in raceway.
4. Bundle and harness multiconductor instrument cable in place of single cables where several cables follow a common path.
5. Fasten flexible conductors, bridging cabinets and doors, along hinge side; protect against abrasion. Tie and support conductors.
6. Number-code or color-code conductors for future identification and service of control system, except local individual room control cables.
7. Install wire and cable with sufficient slack and flexible connections to allow for vibration of piping and equipment.

D. Connect manual-reset limit controls independent of manual-control switch positions. Automatic duct heater resets may be connected in interlock circuit of power controllers.

E. Connect hand-off-auto selector switches to override automatic interlock controls when switch is in hand position.

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.

B. Perform the following field tests and inspections and prepare test reports:

1. Operational Test: After electrical circuitry has been energized, start units to confirm proper unit operation. Remove and replace malfunctioning units and retest.
2. Test and adjust controls and safeties.
3. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
4. Pressure test control air piping at 30 psig or 1.5 times the operating pressure for 24 hours, with maximum 5-psig loss.
5. Pressure test high-pressure control air piping at 150 psig and low-pressure control air piping at 30 psig for 2 hours, with maximum 1-psig loss.
6. Test calibration of electronic controllers by disconnecting input sensors and stimulating operation with compatible signal generator.
7. Test each point through its full operating range to verify that safety and operating control set points are as required.
8. Test each control loop to verify stable mode of operation and compliance with sequence of operation. Adjust PID actions.
9. Test each system for compliance with sequence of operation.
10. Test software and hardware interlocks.

C. DDC Verification:

1. Verify that instruments are installed before calibration, testing, and loop or leak checks.
2. Check instruments for proper location and accessibility.
3. Check instrument installation for direction of flow, elevation, orientation, insertion depth, and other applicable considerations.
4. Check instrument tubing for proper fittings, slope, material, and support.
5. Check installation of air supply for each instrument.

6. Check flow instruments. Inspect tag number and line and bore size, and verify that inlet side is identified and that meters are installed correctly.
7. Check pressure instruments, piping slope, installation of valve manifold, and self-contained pressure regulators.
8. Check temperature instruments and material and length of sensing elements.
9. Check control valves. Verify that they are in correct direction.
10. Check air-operated dampers. Verify that pressure gages are provided and that proper blade alignment, either parallel or opposed, has been provided.
11. Check DDC system as follows:

    a. Verify that DDC controller power supply is from emergency power supply, if applicable.
    b. Verify that wires at control panels are tagged with their service designation and approved tagging system.
    c. Verify that spare I/O capacity has been provided.
    d. Verify that DDC controllers are protected from power supply surges.

D. Replace damaged or malfunctioning controls and equipment and repeat testing procedures.

3.5 ADJUSTING

A. Calibrating and Adjusting:

1. Calibrate instruments.
2. Make three-point calibration test for both linearity and accuracy for each analog instrument.
3. Calibrate equipment and procedures using manufacturer's written recommendations and instruction manuals. Use test equipment with accuracy at least double that of instrument being calibrated.
4. Control System Inputs and Outputs:

    a. Check analog inputs at 0, 50, and 100 percent of span.
    b. Check analog outputs using milliampere meter at 0, 50, and 100 percent output.
    c. Check digital inputs using jumper wire.
    d. Check digital outputs using ohmmeter to test for contact making or breaking.
    e. Check resistance temperature inputs at 0, 50, and 100 percent of span using a precision-resistant source.

5. Flow:

    a. Set differential pressure flow transmitters for 0 and 100 percent values with 3-point calibration accomplished at 50, 90, and 100 percent of span.
    b. Manually operate flow switches to verify that they make or break contact.

6. Pressure:

    a. Calibrate pressure transmitters at 0, 50, and 100 percent of span.
    b. Calibrate pressure switches to make or break contacts, with adjustable differential set at minimum.

7. Temperature:

a. Calibrate resistance temperature transmitters at 0, 50, and 100 percent of span using a precision-resistance source.
b. Calibrate temperature switches to make or break contacts.

8. Stroke and adjust control valves and dampers without positioners, following the manufacturer's recommended procedure, so that valve or damper is 100 percent open and closed.
9. Stroke and adjust control valves and dampers with positioners, following manufacturer's recommended procedure, so that valve and damper is 0, 50, and 100 percent closed.
10. Provide diagnostic and test instruments for calibration and adjustment of system.
11. Provide written description of procedures and equipment for calibrating each type of instrument. Submit procedures review and approval before initiating startup procedures.

B. Adjust initial temperature and humidity set points.

C. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to three visits to Project during other than normal occupancy hours for this purpose.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain HVAC instrumentation and controls. Refer to Section 01 79 00 "Demonstration and Training."

END OF SECTION 23 09 00

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SECTION 23 31 13
METAL DUCTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Owner's General Conditions of the Contract, and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Single-wall rectangular ducts and fittings.
2. Single-wall round ducts and fittings.
3. Sheet metal materials.
4. Sealants and gaskets.
5. Hangers and supports.

B. Related Sections:

1. Division 23 Section "Testing, Adjusting, and Balancing for HVAC" for testing, adjusting, and balancing requirements for metal ducts.
2. Division 23 Section "Nonmetal Ducts" for fibrous-glass ducts, thermoset fiber-reinforced plastic ducts, thermoplastic ducts, PVC ducts, and concrete ducts.
3. Division 23 Section "HVAC Casings" for factory- and field-fabricated casings for mechanical equipment.
4. Division 23 Section "Air Duct Accessories" for dampers, sound-control devices, duct-mounting access doors and panels, turning vanes, and flexible ducts.

1.3 PERFORMANCE REQUIREMENTS

A. Delegated Duct Design: Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, and hangers and supports, shall comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and performance requirements and design criteria indicated in "Duct Schedule" Article.

B. Structural Performance: Duct hangers and supports shall withstand the effects of gravity loads and stresses within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and ASCE/SEI 7.

C. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of the following products:

1. Sealants and gaskets.

B. Shop Drawings:

1. Fabrication, assembly, and installation, including plans, elevations, sections, components, and attachments to other work.
2. Factory- and shop-fabricated ducts and fittings.
3. Duct layout indicating sizes, configuration, liner material, and static-pressure classes.
4. Elevation of top of ducts.
5. Dimensions of main duct runs from building grid lines.
6. Fittings.
7. Reinforcement and spacing.
8. Seam and joint construction.
9. Penetrations through fire-rated and other partitions.
10. Equipment installation based on equipment being used on Project.
11. Locations for duct accessories, including dampers, turning vanes, and access doors and panels.
12. Hangers and supports, including methods for duct and building attachment and vibration isolation.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Duct installation in congested spaces, indicating coordination with general construction, building components, and other building services. Indicate proposed changes to duct layout.
2. Suspended ceiling components.
3. Structural members to which duct will be attached.
4. Size and location of initial access modules for acoustical tile.
5. Penetrations of smoke barriers and fire-rated construction.
6. Items penetrating finished ceiling including the following:

    a. Lighting fixtures.
    b. Air outlets and inlets.
    c. Speakers.
    d. Sprinklers.
    e. Access panels.
    f. Perimeter moldings.

B. Welding certificates.

C. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D9.1M/D9.1, "Sheet Metal Welding Code," for duct joint and seam welding.

B. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel," for hangers and supports.
2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum," for aluminum supports.
3. AWS D9.1M/D9.1, "Sheet Metal Welding Code," for duct joint and seam welding.

C. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and System Start-up."

D. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1, Section 6.4.4 - "HVAC System Construction and Insulation."

PART 2 - PRODUCTS

2.1 SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS

A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.

B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-1, "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-2, "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 4, "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.2 SINGLE-WALL ROUND DUCTS AND FITTINGS

A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 3, "Round, Oval, and Flexible Duct," based on indicated static-pressure class unless otherwise indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Lindab Inc.
    b. McGill AirFlow LLC.
    c. SEMCO Incorporated.
    d. Sheet Metal Connectors, Inc.
    e. Spiral Manufacturing Co., Inc.

B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-1, "Round Duct Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

1. Transverse Joints in Ducts Larger Than 60 Inches in Diameter: Flanged.

C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-2, "Round Duct Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

1. Fabricate round ducts larger than 90 inches in diameter with butt-welded longitudinal seams.
2. Fabricate flat-oval ducts larger than 72 inches in width (major dimension) with butt-welded longitudinal seams.

D. Tees and Laterals: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.3 SHEET METAL MATERIALS

A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.

1. Galvanized Coating Designation: G90.
2. Finishes for Surfaces Exposed to View: Mill phosphatized.

C. PVC-Coated, Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.

1. Galvanized Coating Designation: G90.
2. Minimum Thickness for Factory-Applied PVC Coating: 4 mils thick on sheet metal surface of ducts and fittings exposed to corrosive conditions, and minimum 1 mil thick on opposite surface.
3. Coating Materials: Acceptable to authorities having jurisdiction for use on ducts listed and labeled by an NRTL for compliance with UL 181, Class 1.

D. Carbon-Steel Sheets: Comply with ASTM A 1008/A 1008M, with oiled, matte finish for exposed ducts.

E. Stainless-Steel Sheets: Comply with ASTM A 480/A 480M, Type 304 or 316, as indicated in the "Duct Schedule" Article; cold rolled, annealed, sheet. Exposed surface finish shall be No. 2B, No. 2D, No. 3, or No. 4 as indicated in the "Duct Schedule" Article.

F. Aluminum Sheets: Comply with ASTM B 209 Alloy 3003, H14 temper; with mill finish for concealed ducts, and standard, one-side bright finish for duct surfaces exposed to view.

G. Factory- or Shop-Applied Antimicrobial Coating:

1. Apply to the surface of sheet metal that will form the interior surface of the duct. An untreated clear coating shall be applied to the exterior surface.
2. Antimicrobial compound shall be tested for efficacy by an NRTL and registered by the EPA for use in HVAC systems.
3. Coating containing the antimicrobial compound shall have a hardness of 2H, minimum, when tested according to ASTM D 3363.
4. Surface-Burning Characteristics: Maximum flame-spread index of 25 and maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.
5. Shop-Applied Coating Color: White.
6. Antimicrobial coating on sheet metal is not required for duct containing liner treated with antimicrobial coating.

H. Reinforcement Shapes and Plates: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

1. Where black- and galvanized-steel shapes and plates are used to reinforce aluminum ducts, isolate the different metals with butyl rubber, neoprene, or EPDM gasket materials.

I. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.4 SEALANT AND GASKETS

A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.

B. Two-Part Tape Sealing System:

1. Tape: Woven cotton fiber impregnated with mineral gypsum and modified acrylic/silicone activator to react exothermically with tape to form hard, durable, airtight seal.
2. Tape Width: 4 inches.
3. Sealant: Modified styrene acrylic.
4. Water resistant.
5. Mold and mildew resistant.
6. Maximum Static-Pressure Class: 10-inch wg, positive and negative.
7. Service: Indoor and outdoor.
8. Service Temperature: Minus 40 to plus 200 deg F.
9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum.
10. For indoor applications, sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
11. Sealant shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Water-Based Joint and Seam Sealant:

1. Application Method: Brush on.
2. Solids Content: Minimum 65 percent.
3. Shore A Hardness: Minimum 20.
4. Water resistant.
5. Mold and mildew resistant.
6. VOC: Maximum 75 g/L (less water).
7. Maximum Static-Pressure Class: 10-inch wg, positive and negative.
8. Service: Indoor or outdoor.
9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.
10. Products: Foster 32-19 (VOC: 24 g/l), Childers CP-146 (VOC: 24 g/l), or approved equal.

D. Flanged Joint Sealant: Comply with ASTM C 920.

1. General: Single-component, acid-curing, silicone, elastomeric.
2. Type: S.
3. Grade: NS.
4. Class: 25.
5. Use: O.
6. For indoor applications, sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
7. Sealant shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

E. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

F. Round Duct Joint O-Ring Seals:

1. Seal shall provide maximum leakage class of 3 cfm/100 sq. ft. at 1-inch wg and shall be rated for 10-inch wg static-pressure class, positive or negative.
2. EPDM O-ring to seal in concave bead in coupling or fitting spigot.
3. Double-lipped, EPDM O-ring seal, mechanically fastened to factory-fabricated couplings and fitting spigots.

2.5 HANGERS AND SUPPORTS

A. Hanger Rods for Noncorrosive Environments: Cadmium-plated steel rods and nuts.

B. Hanger Rods for Corrosive Environments: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.

C. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct."

D. Steel Cables for Galvanized-Steel Ducts: Galvanized steel complying with ASTM A 603.

E. Steel Cables for Stainless-Steel Ducts: Stainless steel complying with ASTM A 492.

F. Steel Cable End Connections: Cadmium-plated steel assemblies with brackets, swivel, and bolts designed for duct hanger service; with an automatic-locking and clamping device.

G. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.

H. Trapeze and Riser Supports:

1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.
2. Supports for Stainless-Steel Ducts: Stainless-steel shapes and plates.
3. Supports for Aluminum Ducts: Aluminum or galvanized steel coated with zinc chromate.

PART 3 - EXECUTION

3.1 DUCT INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and Coordination Drawings.

B. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.

C. Install round ducts in maximum practical lengths.

D. Install ducts with fewest possible joints.

E. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.

F. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.

G. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.

H. Install ducts with a clearance of 1 inch, plus allowance for insulation thickness.

I. Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures.

J. Where ducts pass through non-fire-rated interior partitions and exterior walls and are exposed to view, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches.

K. Where ducts pass through fire-rated interior partitions and exterior walls, install fire dampers. Comply with requirements in Division 23 Section "Air Duct Accessories" for fire and smoke dampers.

L. Protect duct interiors from moisture, construction debris and dust, and other foreign materials.

3.2 INSTALLATION OF EXPOSED DUCTWORK

A. Protect ducts exposed in finished spaces from being dented, scratched, or damaged.

B. Trim duct sealants flush with metal. Create a smooth and uniform exposed bead. Do not use two-part tape sealing system.

C. Grind welds to provide smooth surface free of burrs, sharp edges, and weld splatter. When welding stainless steel with a No. 3 or 4 finish, grind the welds flush, polish the exposed welds, and treat the welds to remove discoloration caused by welding.

D. Maintain consistency, symmetry, and uniformity in the arrangement and fabrication of fittings, hangers and supports, duct accessories, and air outlets.

E. Repair or replace damaged sections and finished work that does not comply with these requirements.

3.3 DUCT SEALING

A. Seal ducts for duct static-pressure, seal classes, and leakage classes specified in "Duct Schedule" Article according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

B. Seal ducts to the following seal classes according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible":

1. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
2. Outdoor, Supply-Air Ducts: Seal Class A.
3. Outdoor, Exhaust Ducts: Seal Class C.
4. Outdoor, Return-Air Ducts: Seal Class C.
5. Unconditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 2-Inch wg: Seal Class A.
6. Unconditioned Space, Exhaust Ducts: Seal Class C.
7. Unconditioned Space, Return-Air Ducts: Seal Class B.
8. Conditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 2-Inch wg: Seal Class B.
9. Conditioned Space, Exhaust Ducts: Seal Class B.
10. Conditioned Space, Return-Air Ducts: Seal Class C.

3.4 HANGER AND SUPPORT INSTALLATION

A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 5, "Hangers and Supports."

B. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.

1. Where practical, install concrete inserts before placing concrete.
2. Install powder-actuated concrete fasteners after concrete is placed and completely cured.
3. Use powder-actuated concrete fasteners for standard-weight aggregate concretes or for slabs more than 4 inches thick.

4. Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches thick.
5. Do not use powder-actuated concrete fasteners for seismic restraints.

C. Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports within 24 inches of each elbow and within 48 inches of each branch intersection.

D. Hangers Exposed to View: Threaded rod and angle or channel supports.

E. Support vertical ducts with steel angles or channel secured to the sides of the duct with welds, bolts, sheet metal screws, or blind rivets; support at each floor and at a maximum intervals of 16 feet.

F. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

3.5 CONNECTIONS

A. Make connections to equipment with flexible connectors complying with Division 23 Section "Air Duct Accessories."

B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

3.6 PAINTING

A. Paint interior of metal ducts that are visible through registers and grilles and that do not have duct liner. Apply one coat of flat, black, latex paint over a compatible galvanized-steel primer. Paint materials and application requirements are specified in Division 09 painting Sections.

3.7 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Leakage Tests:

1. Comply with SMACNA's "HVAC Air Duct Leakage Test Manual." Submit a test report for each test.
2. Test the following systems:

    a. Ducts with a Pressure Class Higher Than 3-Inch wg: Test representative duct sections totaling no less than 25 percent of total installed duct area for each designated pressure class.
    b. Supply Ducts with a Pressure Class of 3-Inch wg or Higher: Test representative duct sections totaling no less than 50 percent of total installed duct area for each designated pressure class.

c. Return Ducts with a Pressure Class of 3-Inch wg or Higher: Test representative duct sections totaling no less than 50 percent of total installed duct area for each designated pressure class.
d. Exhaust Ducts with a Pressure Class of 3-Inch wg or Higher: Test representative duct sections totaling no less than 50 percent of total installed duct area for each designated pressure class.
e. Outdoor Air Ducts with a Pressure Class of 3-Inch wg or Higher: Test representative duct sections totaling no less than 50 percent of total installed duct area for each designated pressure class.

3. Disassemble, reassemble, and seal segments of systems to accommodate leakage testing and for compliance with test requirements.
4. Test for leaks before applying external insulation.
5. Conduct tests at static pressures equal to maximum design pressure of system or section being tested. If static-pressure classes are not indicated, test system at maximum system design pressure. Do not pressurize systems above maximum design operating pressure.
6. Give seven days' advance notice for testing.

C. Duct System Cleanliness Tests:

1. Visually inspect duct system to ensure that no visible contaminants are present.
2. Test sections of metal duct system, chosen randomly by Owner, for cleanliness according to "Vacuum Test" in NADCA ACR, "Assessment, Cleaning and Restoration of HVAC Systems."

a. Acceptable Cleanliness Level: Net weight of debris collected on the filter media shall not exceed 0.75 mg/100 sq. cm.

D. Duct system will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

3.8 DUCT CLEANING

A. Clean new duct system(s) before testing, adjusting, and balancing.

B. Use service openings for entry and inspection.

1. Create new openings and install access panels appropriate for duct static-pressure class if required for cleaning access. Provide insulated panels for insulated or lined duct. Patch insulation and liner as recommended by duct liner manufacturer. Comply with Division 23 Section "Air Duct Accessories" for access panels and doors.
2. Disconnect and reconnect flexible ducts as needed for cleaning and inspection.
3. Remove and reinstall ceiling to gain access during the cleaning process.

C. Particulate Collection and Odor Control:

1. When venting vacuuming system inside the building, use HEPA filtration with 99.97 percent collection efficiency for 0.3-micron-size (or larger) particles.
2. When venting vacuuming system to outdoors, use filter to collect debris removed from HVAC system, and locate exhaust downwind and away from air intakes and other points of entry into building.

D. Clean the following components by removing surface contaminants and deposits:

1. Air outlets and inlets (registers, grilles, and diffusers).
2. Supply, return, and exhaust fans including fan housings, plenums (except ceiling supply and return plenums), scrolls, blades or vanes, shafts, baffles, dampers, and drive assemblies.
3. Air-handling unit internal surfaces and components including mixing box, coil section, air wash systems, spray eliminators, condensate drain pans, humidifiers and dehumidifiers, filters and filter sections, and condensate collectors and drains.
4. Coils and related components.
5. Return-air ducts, dampers, actuators, and turning vanes except in ceiling plenums and mechanical equipment rooms.
6. Supply-air ducts, dampers, actuators, and turning vanes.
7. Dedicated exhaust and ventilation components and makeup air systems.

E. Mechanical Cleaning Methodology:

1. Clean metal duct systems using mechanical cleaning methods that extract contaminants from within duct systems and remove contaminants from building.
2. Use vacuum-collection devices that are operated continuously during cleaning. Connect vacuum device to downstream end of duct sections so areas being cleaned are under negative pressure.
3. Use mechanical agitation to dislodge debris adhered to interior duct surfaces without damaging integrity of metal ducts, duct liner, or duct accessories.
4. Clean fibrous-glass duct liner with HEPA vacuuming equipment; do not permit duct liner to get wet. Replace fibrous-glass duct liner that is damaged, deteriorated, or delaminated or that has friable material, mold, or fungus growth.
5. Clean coils and coil drain pans according to NADCA 1992. Keep drain pan operational. Rinse coils with clean water to remove latent residues and cleaning materials; comb and straighten fins.
6. Provide drainage and cleanup for wash-down procedures.
7. Antimicrobial Agents and Coatings: Apply EPA-registered antimicrobial agents if fungus is present. Apply antimicrobial agents according to manufacturer's written instructions after removal of surface deposits and debris.

3.9 START UP

A. Air Balance: Comply with requirements in Division 23 Section "Testing, Adjusting, and Balancing for HVAC."

3.10 DUCT SCHEDULE

A. Supply Ducts:

1. Ducts Connected to Fan Coil Units, Furnaces, Heat Pumps, and Terminal Units:

a. Pressure Class: Positive 2-inch wg.
b. Minimum SMACNA Seal Class: B.
c. SMACNA Leakage Class for Rectangular: 12.
d. SMACNA Leakage Class for Round and Flat Oval: 12.

2. Ducts Connected to Constant-Volume Air-Handling Units:

a. Pressure Class: Positive 3-inch wg.
b. Minimum SMACNA Seal Class: A.
c. SMACNA Leakage Class for Rectangular: 6.
d. SMACNA Leakage Class for Round and Flat Oval: 6.

3. Ducts Connected to Variable-Air-Volume Air-Handling Units:

a. Pressure Class: Positive 4-inch wg.
b. Minimum SMACNA Seal Class: A.
c. SMACNA Leakage Class for Rectangular: 6.
d. SMACNA Leakage Class for Round and Flat Oval: 6.

B. Return Ducts:

1. Ducts Connected to Air-Handling Units:

a. Pressure Class: Positive or negative 3-inch wg.
b. Minimum SMACNA Seal Class: A.
c. SMACNA Leakage Class for Rectangular: 6.
d. SMACNA Leakage Class for Round and Flat Oval: 6.

C. Exhaust Ducts:

1. Ducts Connected to Fans Exhausting (ASHRAE 62.1, Class 1 and 2) Air:

a. Pressure Class: Negative 2-inch wg.
b. Minimum SMACNA Seal Class: C if negative pressure, and A if positive pressure.
c. SMACNA Leakage Class for Rectangular: 12.
d. SMACNA Leakage Class for Round and Flat Oval: 6.

2. Ducts Connected to Fans Exhausting Laboratory and Process (ASHRAE 62.1, Class 3 and 4) Air:

a. Type 316, stainless-steel sheet.

1) Exposed to View: No. 4 finish.
2) Concealed: No. 2B finish.

b. PVC-coated, galvanized sheet steel with thicker coating on duct interior.
c. Pressure Class: Positive or negative 4-inch wg.
d. Minimum SMACNA Seal Class: Welded seams, joints, and penetrations.
e. SMACNA Leakage Class: 3.

D. Outdoor-Air (Not Filtered, Heated, or Cooled) Ducts:

1. Ducts Connected to Air-Handling Units:

a. Pressure Class: Positive or negative 2-inch wg.
b. Minimum SMACNA Seal Class: B.
c. SMACNA Leakage Class for Rectangular: 6.
d. SMACNA Leakage Class for Round and Flat Oval: 3.

E. Intermediate Reinforcement:

1. Galvanized-Steel Ducts: Galvanized steel.
2. PVC-Coated Ducts:

    a. Exposed to Airstream: Match duct material.
    b. Not Exposed to Airstream: Galvanized.

3. Stainless-Steel Ducts:

    a. Exposed to Airstream: Match duct material.
    b. Not Exposed to Airstream: Galvanized.

4. Aluminum Ducts: Aluminum.

F. Elbow Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "Rectangular Elbows."

    a. Velocity 1000 fpm or Lower:

        1) Radius Type RE 1 with minimum 0.5 radius-to-diameter ratio.
        2) Mitered Type RE 4 without vanes.

    b. Velocity 1000 to 1500 fpm:

        1) Radius Type RE 1 with minimum 1.0 radius-to-diameter ratio.
        2) Radius Type RE 3 with minimum 0.5 radius-to-diameter ratio and two vanes.
        3) Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."

    c. Velocity 1500 fpm or Higher:

        1) Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.
        2) Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.
        3) Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."

2. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "Rectangular Elbows."

    a. Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.
    b. Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.
    c. Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."

3. Round Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-4, "Round Duct Elbows."

    a. Minimum Radius-to-Diameter Ratio and Elbow Segments: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 3-1,

"Mitered Elbows." Elbows with less than 90-degree change of direction have proportionately fewer segments.

1) Velocity 1000 fpm or Lower: 0.5 radius-to-diameter ratio and three segments for 90-degree elbow.
2) Velocity 1000 to 1500 fpm: 1.0 radius-to-diameter ratio and four segments for 90-degree elbow.
3) Velocity 1500 fpm or Higher: 1.5 radius-to-diameter ratio and five segments for 90-degree elbow.
4) Radius-to Diameter Ratio: 1.5.

b. Round Elbows, 12 Inches and Smaller in Diameter: Stamped or pleated.
c. Round Elbows, 14 Inches and Larger in Diameter: Standing seam.

G. Branch Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-6, "Branch Connection."

a. Rectangular Main to Rectangular Branch: 45-degree entry.
b. Rectangular Main to Round Branch: Spin in.

2. Round and Flat Oval: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees." Saddle taps are permitted in existing duct.

a. Velocity 1000 fpm or Lower: 90-degree tap.
b. Velocity 1000 to 1500 fpm: Conical tap.
c. Velocity 1500 fpm or Higher: 45-degree lateral.

END OF SECTION 23 31 13

SECTION 23 33 00
AIR DUCT ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Owner's General Conditions of the Contract, and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Backdraft and pressure relief dampers.
2. Barometric relief dampers.
3. Manual volume dampers.
4. Control dampers.
5. Fire dampers.
6. Smoke dampers.
7. Combination fire and smoke dampers.
8. Corridor dampers.
9. Flange connectors.
10. Turning vanes.
11. Remote damper operators.
12. Duct-mounted access doors.
13. Flexible connectors.
14. Flexible ducts.

B. Related Requirements:

1. Section 23 37 23 "HVAC Gravity Ventilators" for roof-mounted ventilator caps.
2. Section 28 31 11 "Digital, Addressable Fire-Alarm System" for duct-mounted fire and smoke detectors.
3. Section 28 31 12 "Zoned (DC-Loop) Fire-Alarm System" for duct-mounted fire and smoke detectors.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. For duct silencers, include pressure drop and dynamic insertion loss data. Include breakout noise calculations for high transmission loss casings.

B. Shop Drawings: For duct accessories. Include plans, elevations, sections, details and attachments to other work.

1. Detail duct accessories fabrication and installation in ducts and other construction. Include dimensions, weights, loads, and required clearances; and method of field assembly into duct systems and other construction. Include the following:

    a. Special fittings.
    b. Manual volume damper installations.
    c. Control-damper installations.
    d. Fire-damper, smoke-damper, combination fire- and smoke-damper, ceiling, and corridor damper installations, including sleeves; and duct-mounted access doors and remote damper operators.
    e. Wiring Diagrams: For power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which ceiling-mounted access panels and access doors required for access to duct accessories are shown and coordinated with each other, using input from Installers of the items involved.

B. Source quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For air duct accessories to include in operation and maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fusible Links: Furnish quantity equal to 10 percent of amount installed.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTION

A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and with NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."

B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

2.2 MATERIALS

A. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.

1. Galvanized Coating Designation: G90.
2. Exposed-Surface Finish: Mill phosphatized.

B. Stainless-Steel Sheets: Comply with ASTM A 480/A 480M, Type 304, and having a No. 2 finish for concealed ducts and finish for exposed ducts.

C. Aluminum Sheets: Comply with ASTM B 209, Alloy 3003, Temper H14; with mill finish for concealed ducts and standard, 1-side bright finish for exposed ducts.

D. Extruded Aluminum: Comply with ASTM B 221, Alloy 6063, Temper T6.

E. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.

F. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.3 BACKDRAFT AND PRESSURE RELIEF DAMPERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Air Balance Inc.; a division of Mestek, Inc.
2. Cesco Products; a division of Mestek, Inc.
3. Greenheck Fan Corporation.
4. Nailor Industries Inc.
5. NCA Manufacturing, Inc.
6. Pottorff.
7. Ruskin Company.

B. Description: Gravity balanced.

C. Maximum Air Velocity: 1000 fpm.

D. Maximum System Pressure: 1-inch wg.

E. Frame: Hat-shaped, 0.05-inch- thick, galvanized sheet steel 0.094-inch- thick, galvanized sheet steel, with welded corners or mechanically attached and mounting flange.

F. Blades: Multiple single-piece blades, center pivoted, maximum 6-inch width, 0.025-inch- thick, roll-formed aluminum with sealed edges.

G. Blade Action: Parallel.

H. Blade Seals: Vinyl foam.

I. Blade Axles:

1. Material: Galvanized steel.
2. Diameter: 0.20 inch.

J. Tie Bars and Brackets: Aluminum.

K. Return Spring: Adjustable tension.

L. Bearings: Steel ball or synthetic pivot bushings.

M. Accessories:

1. Adjustment device to permit setting for varying differential static pressure.
2. Counterweights and spring-assist kits for vertical airflow installations.
3. Electric actuators.
4. Chain pulls.
5. Screen Mounting: Front mounted in sleeve.
    a. Sleeve Thickness: 20 gage minimum.
    b. Sleeve Length: 6 inches minimum.
6. Screen Mounting: Rear mounted.
7. Screen Material: Galvanized steel.
8. Screen Type: Insect.
9. 90-degree stops.

2.4 BAROMETRIC RELIEF DAMPERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Air Balance Inc.; a division of Mestek, Inc.
2. Cesco Products; a division of Mestek, Inc.
3. Greenheck Fan Corporation.
4. Nailor Industries Inc.
5. NCA Manufacturing, Inc.
6. Pottorff.
7. Ruskin Company.

B. Suitable for horizontal or vertical mounting.

C. Maximum Air Velocity: 1000 fpm.

D. Maximum System Pressure: 2-inch wg.

E. Frame: Hat-shaped, 0.05-inch- thick, galvanized sheet steel 0.094-inch- thick, galvanized sheet steel, with welded corners or mechanically attached and mounting flange.

F. Blades:

1. Multiple, 0.025-inch- thick, roll-formed aluminum.
2. Maximum Width: 6 inches.
3. Action: Parallel.
4. Balance: Gravity.
5. Eccentrically pivoted.

G. Blade Seals: Neoprene.

H. Blade Axles: Galvanized steel.

I. Tie Bars and Brackets:

1. Material: Aluminum.
2. Rattle free with 90-degree stop.

J. Return Spring: Adjustable tension.

K. Bearings: Stainless steel.

L. Accessories:

1. Flange on intake.
2. Adjustment device to permit setting for varying differential static pressures.

2.5 MANUAL VOLUME DAMPERS

A. Standard, Steel, Manual Volume Dampers:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Flexmaster U.S.A., Inc.
b. McGill AirFlow LLC.
c. Nailor Industries Inc.
d. Pottorff.
e. Ruskin Company.
f. Trox USA Inc.

2. Standard leakage rating, with linkage outside airstream.
3. Suitable for horizontal or vertical applications.
4. Frames:

a. Frame: Hat-shaped, 0.094-inch- thick, galvanized sheet steel.
b. Mitered and welded corners.
c. Flanges for attaching to walls and flangeless frames for installing in ducts.

5. Blades:

a. Multiple or single blade.
b. Parallel- or opposed-blade design.
c. Stiffen damper blades for stability.
d. Galvanized-steel, 0.064 inch thick.

6. Blade Axles: Galvanized steel.
7. Bearings:

a. Oil-impregnated bronze.
b. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.

8. Tie Bars and Brackets: Galvanized steel.

B. Standard, Aluminum, Manual Volume Dampers:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. McGill AirFlow LLC.
    b. Nailor Industries Inc.
    c. Pottorff.
    d. Ruskin Company.
    e. Trox USA Inc.

2. Standard leakage rating, with linkage outside airstream.
3. Suitable for horizontal or vertical applications.
4. Frames: Hat-shaped, 0.10-inch- thick, aluminum sheet channels; frames with flanges for attaching to walls and flangeless frames for installing in ducts.
5. Blades:

    a. Multiple or single blade.
    b. Parallel- or opposed-blade design.
    c. Stiffen damper blades for stability.
    d. Roll-Formed Aluminum Blades: 0.10-inch- thick aluminum sheet.
    e. Extruded-Aluminum Blades: 0.050-inch- thick extruded aluminum.

6. Blade Axles: Galvanized steel.
7. Bearings:

    a. Oil-impregnated bronze.
    b. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.

8. Tie Bars and Brackets: Aluminum.

C. Low-Leakage, Steel, Manual Volume Dampers:

1. Manufacturers: Subject to compliance with requirements, provide products by the following provide products by one of the following:

    a. McGill AirFlow LLC.
    b. Nailor Industries Inc.
    c. Pottorff.
    d. Ruskin Company.
    e. Trox USA Inc.

2. Comply with AMCA 500-D testing for damper rating.
3. Low-leakage rating, with linkage outside airstream, and bearing AMCA's Certified Ratings Seal for both air performance and air leakage.
4. Suitable for horizontal or vertical applications.
5. Frames:

    a. Hat shaped.
    b. 0.094-inch- thick, galvanized sheet steel.
    c. Mitered and welded corners.
    d. Flanges for attaching to walls and flangeless frames for installing in ducts.

6. Blades:

a. Multiple or single blade.
b. Parallel- or opposed-blade design.
c. Stiffen damper blades for stability.
d. Galvanized, roll-formed steel, 0.064 inch thick.

7. Blade Axles: Galvanized steel.
8. Bearings:

a. Oil-impregnated bronze.
b. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.

9. Blade Seals: Felt.
10. Jamb Seals: Cambered stainless steel.
11. Tie Bars and Brackets: Galvanized steel.
12. Accessories:

a. Include locking device to hold single-blade dampers in a fixed position without vibration.

D. Low-Leakage, Aluminum, Manual Volume Dampers:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. McGill AirFlow LLC.
b. Nailor Industries Inc.
c. Pottorff.
d. Ruskin Company.
e. Trox USA Inc.

2. Comply with AMCA 500-D testing for damper rating.
3. Low-leakage rating, with linkage outside airstream, and bearing AMCA's Certified Ratings Seal for both air performance and air leakage.
4. Suitable for horizontal or vertical applications.
5. Frames: Hat-shaped, 0.10-inch- thick, aluminum sheet channels; frames with flanges for attaching to walls and flangeless frames for installing in ducts.
6. Blades:

a. Multiple or single blade.
b. Parallel- or opposed-blade design.
c. Roll-Formed Aluminum Blades: 0.10-inch- thick aluminum sheet.
d. Extruded-Aluminum Blades: 0.050-inch- thick extruded aluminum.

7. Blade Axles: Galvanized steel.
8. Bearings:

a. Oil-impregnated bronze.
b. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.

9. Blade Seals: Felt.
10. Jamb Seals: Cambered stainless steel.
11. Tie Bars and Brackets: Galvanized steel.

12. Accessories:

    a. Include locking device to hold single-blade dampers in a fixed position without vibration.

E. Jackshaft:

1. Size: 0.5-inch diameter.
2. Material: Galvanized-steel pipe rotating within pipe-bearing assembly mounted on supports at each mullion and at each end of multiple-damper assemblies.
3. Length and Number of Mountings: As required to connect linkage of each damper in multiple-damper assembly.

F. Damper Hardware:

1. Zinc-plated, die-cast core with dial and handle made of 3/32-inch- thick zinc-plated steel, and a 3/4-inch hexagon locking nut.
2. Include center hole to suit damper operating-rod size.
3. Include elevated platform for insulated duct mounting.

2.6 CONTROL DAMPERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Arrow United Industries; a division of Mestek, Inc.
2. Cesco Products; a division of Mestek, Inc.
3. Greenheck Fan Corporation.
4. Lloyd Industries, Inc.
5. McGill AirFlow LLC.
6. Metal Form Manufacturing, Inc.
7. Nailor Industries Inc.
8. NCA Manufacturing, Inc.
9. Pottorff.
10. Ruskin Company.
11. Vent Products Company, Inc.

B. Low-leakage rating, with linkage outside airstream, and bearing AMCA's Certified Ratings Seal for both air performance and air leakage.

C. Frames:

1. Hat shaped.
2. 0.094-inch- thick, galvanized sheet steel.
3. Mitered and welded corners.

D. Blades:

1. Multiple blade with maximum blade width of 6 inches.
2. Parallel-blade design.
3. Galvanized-steel.
4. 0.064 inch thick single skin.
5. Blade Edging: Closed-cell neoprene.

6. Blade Edging: Inflatable seal blade edging, or replaceable rubber seals.

E. Blade Axles: 1/2-inch- diameter; galvanized steel; blade-linkage hardware of zinc-plated steel and brass; ends sealed against blade bearings.

1. Operating Temperature Range: From minus 40 to plus 200 deg F.

F. Bearings:

1. Oil-impregnated bronze.
2. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.
3. Thrust bearings at each end of every blade.

2.7 FIRE DAMPERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Arrow United Industries; a division of Mestek, Inc.
2. Cesco Products; a division of Mestek, Inc.
3. Greenheck Fan Corporation.
4. Nailor Industries Inc.
5. NCA Manufacturing, Inc.
6. Pottorff.
7. Prefco; Perfect Air Control, Inc.
8. Ruskin Company.
9. Vent Products Company, Inc.

B. Type: Static and dynamic; rated and labeled according to UL 555 by an NRTL.

C. Closing rating in ducts up to 4-inch wg static pressure class and minimum 2000-fpm velocity.

D. Fire Rating: 1-1/2 and 3 hours.

E. Frame: Curtain type with blades outside airstream; fabricated with roll-formed, 0.034-inch- thick galvanized steel; with mitered and interlocking corners.

F. Mounting Sleeve: Factory- or field-installed, galvanized sheet steel.

1. Minimum Thickness: 0.05 thick, as indicated, and of length to suit application.
2. Exception: Omit sleeve where damper-frame width permits direct attachment of perimeter mounting angles on each side of wall or floor; thickness of damper frame must comply with sleeve requirements.

G. Mounting Orientation: Vertical or horizontal as indicated.

H. Blades: Roll-formed, interlocking, 0.024-inch- thick, galvanized sheet steel. In place of interlocking blades, use full-length, 0.034-inch- thick, galvanized-steel blade connectors.

I. Horizontal Dampers: Include blade lock and stainless-steel closure spring.

J. Heat-Responsive Device: Replaceable, 165 deg F rated, fusible links.

K. Heat-Responsive Device: Resettable link and switch package, factory installed, 165 deg F and 212 deg F rated.

2.8 SMOKE DAMPERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cesco Products; a division of Mestek, Inc.
2. Greenheck Fan Corporation.
3. Nailor Industries Inc.
4. Pottorff.
5. Ruskin Company.

B. General Requirements: Label according to UL 555S by an NRTL.

C. Smoke Detector: Integral, factory wired for single-point connection.

D. Frame: Hat-shaped, 0.094-inch- thick, galvanized sheet steel, with welded or mechanically attached corners and mounting flange.

E. Blades: Roll-formed, horizontal, interlocking, 0.034-inch- thick, galvanized sheet steel.

F. Leakage: Class I.

G. Rated pressure and velocity to exceed design airflow conditions.

H. Mounting Sleeve: Factory-installed, 0.039-inch- thick, galvanized sheet steel; length to suit wall or floor application with factory-furnished silicone calking.

I. Damper Motors: two-position action.

J. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Section 23 05 13 "Common Motor Requirements for HVAC Equipment."

1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
2. Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections specified in Section 23 09 00 "Instrumentation and Control for HVAC."
3. Permanent-Split-Capacitor or Shaded-Pole Motors: With oil-immersed and sealed gear trains.
4. Spring-Return Motors: Equip with an integral spiral-spring mechanism where indicated. Enclose entire spring mechanism in a removable housing designed for service or adjustments. Size for running torque rating of 150 in. x lbf and breakaway torque rating of 150 in. x lbf.
5. Outdoor Motors and Motors in Outdoor-Air Intakes: Equip with O-ring gaskets designed to make motors weatherproof. Equip motors with internal heaters to permit normal operation at minus 40 deg F.
6. Nonspring-Return Motors: For dampers larger than 25 sq. ft., size motor for running torque rating of 150 in. x lbf and breakaway torque rating of 300 in. x lbf.
7. Electrical Connection: 115 V, single phase, 60 Hz.

K. Accessories:

1. Auxiliary switches for signaling or position indication.
2. Test and reset switches, remote mounted.

2.9 COMBINATION FIRE AND SMOKE DAMPERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cesco Products; a division of Mestek, Inc.
2. Greenheck Fan Corporation.
3. Nailor Industries Inc.
4. Pottorff.
5. Ruskin Company.

B. Type: Dynamic; rated and labeled according to UL 555 and UL 555S by an NRTL.

C. Closing rating in ducts up to 4-inch wg static pressure class and minimum 2000-fpm velocity.

D. Fire Rating: 1-1/2 and 3 hours.

E. Frame: Hat-shaped, 0.094-inch- thick, galvanized sheet steel, with welded or mechanically attached corners and mounting flange.

F. Heat-Responsive Device: Resettable, 165 deg F rated, fusible links.

G. Heat-Responsive Device: Electric resettable link and switch package, factory installed, rated.

H. Smoke Detector: Integral, factory wired for single-point connection.

I. Blades: Roll-formed, horizontal, interlocking, 0.063-inch- thick, galvanized sheet steel.

J. Leakage: Class I.

K. Rated pressure and velocity to exceed design airflow conditions.

L. Mounting Sleeve: Factory-installed, 0.039-inch- thick, galvanized sheet steel; length to suit wall or floor application with factory-furnished silicone calking.

M. Master control panel for use in dynamic smoke-management systems.

N. Damper Motors: two-position action.

O. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Section 23 05 13 "Common Motor Requirements for HVAC Equipment."

1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
2. Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections specified in Section 23 09 00 "Instrumentation and Control for HVAC."

3. Permanent-Split-Capacitor or Shaded-Pole Motors: With oil-immersed and sealed gear trains.
4. Spring-Return Motors: Equip with an integral spiral-spring mechanism where indicated. Enclose entire spring mechanism in a removable housing designed for service or adjustments. Size for running torque rating of 150 in. x lbf and breakaway torque rating of 150 in. x lbf.
5. Outdoor Motors and Motors in Outdoor-Air Intakes: Equip with O-ring gaskets designed to make motors weatherproof. Equip motors with internal heaters to permit normal operation at minus 40 deg F.
6. Nonspring-Return Motors: For dampers larger than 25 sq. ft., size motor for running torque rating of 150 in. x lbf and breakaway torque rating of 300 in. x lbf.
7. Electrical Connection: 115 V, single phase, 60 Hz.

P. Accessories:

1. Auxiliary switches for signaling or position indication.
2. Test and reset switches, remote mounted.

2.10 TURNING VANES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Ductmate Industries, Inc.
2. Duro Dyne Inc.
3. Elgen Manufacturing.
4. METALAIRE, Inc.
5. SEMCO Incorporated.
6. Ward Industries, Inc.; a division of Hart & Cooley, Inc.

B. Manufactured Turning Vanes for Metal Ducts: Curved blades of galvanized sheet steel; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.

1. Acoustic Turning Vanes: Fabricate airfoil-shaped aluminum extrusions with perforated faces and fibrous-glass fill.

C. Manufactured Turning Vanes for Nonmetal Ducts: Fabricate curved blades of resin-bonded fiberglass with acrylic polymer coating; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.

D. General Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figures 4-3, "Vanes and Vane Runners," and 4-4, "Vane Support in Elbows."

E. Vane Construction: Single wall.

F. Vane Construction: Single wall for ducts up to 48 inches wide and double wall for larger dimensions.

2.11 REMOTE DAMPER OPERATORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Pottorff.
2. Ventfabrics, Inc.
3. Young Regulator Company.

B. Description: Cable system designed for remote manual damper adjustment.

C. Tubing: Aluminum.

D. Cable: Steel.

E. Wall-Box Mounting: Recessed.

F. Wall-Box Cover-Plate Material: Steel.

2.12 DUCT-MOUNTED ACCESS DOORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Ductmate Industries, Inc.
2. Flexmaster U.S.A., Inc.
3. Greenheck Fan Corporation.
4. McGill AirFlow LLC.
5. Nailor Industries Inc.
6. Pottorff.
7. Ward Industries, Inc.; a division of Hart & Cooley, Inc.

B. Duct-Mounted Access Doors: Fabricate access panels according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figures 7-2, "Duct Access Doors and Panels," and 7-3, "Access Doors - Round Duct."

1. Door:

a. Double wall, rectangular.
b. Galvanized sheet metal with insulation fill and thickness as indicated for duct pressure class.
c. Vision panel.
d. Hinges and Latches: 1-by-1-inchbutt or piano hinge and cam latches.
e. Fabricate doors airtight and suitable for duct pressure class.

2. Frame: Galvanized sheet steel, with bend-over tabs and foam gaskets.
3. Number of Hinges and Locks:

a. Access Doors Less Than 12 Inches Square: No hinges and two sash locks.
b. Access Doors up to 18 Inches Square: Continuous and two sash locks.
c. Access Doors up to 24 by 48 Inches: Continuous and two compression latches with inside handles.

C. Pressure Relief Access Door:

1. Door and Frame Material: Galvanized sheet steel.
2. Door: Double wall with insulation fill with metal thickness applicable for duct pressure class.

3. Operation: Open outward for positive-pressure ducts and inward for negative-pressure ducts.
4. Factory set at 3.0- to 8.0-inch wg.
5. Doors close when pressures are within set-point range.
6. Hinge: Continuous piano.
7. Latches: Cam.
8. Seal: Neoprene or foam rubber.
9. Insulation Fill: 1-inch- thick, fibrous-glass or polystyrene-foam board.

2.13 FLEXIBLE CONNECTORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Ductmate Industries, Inc.
2. Duro Dyne Inc.
3. Elgen Manufacturing.
4. Ventfabrics, Inc.
5. Ward Industries, Inc.; a division of Hart & Cooley, Inc.

B. Materials: Flame-retardant or noncombustible fabrics.

C. Coatings and Adhesives: Comply with UL 181, Class 1.

D. Metal-Edged Connectors: Factory fabricated with a fabric strip 3-1/2 inches wide attached to two strips of 2-3/4-inch- wide, 0.028-inch- thick, galvanized sheet steel or 0.032-inch- thick aluminum sheets. Provide metal compatible with connected ducts.

E. Indoor System, Flexible Connector Fabric: Glass fabric double coated with neoprene.

1. Minimum Weight: 26 oz./sq. yd..
2. Tensile Strength: 480 lbf/inch in the warp and 360 lbf/inch in the filling.
3. Service Temperature: Minus 40 to plus 200 deg F.

F. Thrust Limits: Combination coil spring and elastomeric insert with spring and insert in compression, and with a load stop. Include rod and angle-iron brackets for attaching to fan discharge and duct.

1. Frame: Steel, fabricated for connection to threaded rods and to allow for a maximum of 30 degrees of angular rod misalignment without binding or reducing isolation efficiency.
2. Outdoor Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
3. Minimum Additional Travel: 50 percent of the required deflection at rated load.
4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
6. Elastomeric Element: Molded, oil-resistant rubber or neoprene.
7. Coil Spring: Factory set and field adjustable for a maximum of 1/4-inch movement at start and stop.

2.14 FLEXIBLE DUCTS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Flexmaster U.S.A., Inc.
2. McGill AirFlow LLC.
3. Ward Industries, Inc.; a division of Hart & Cooley, Inc.

B. Insulated, Flexible Duct: UL 181, Class 1, aluminum laminate and polyester film with latex adhesive supported by helically wound, spring-steel wire; fibrous-glass insulation; aluminized vapor-barrier film.

1. Pressure Rating: 10-inch wg positive and 1.0-inch wg negative.
2. Maximum Air Velocity: 4000 fpm.
3. Temperature Range: Minus 20 to plus 210 deg F.
4. Insulation R-value: Comply with ASHRAE/IESNA 90.1.

C. Insulated, Flexible Duct: UL 181, Class 0, interlocking spiral of aluminum foil; fibrous-glass insulation; aluminized vapor-barrier film.

1. Pressure Rating: 8-inch wg positive or negative.
2. Maximum Air Velocity: 5000 fpm.
3. Temperature Range: Minus 20 to plus 250 deg F.
4. Insulation R-value: Comply with ASHRAE/IESNA 90.1.

D. Flexible Duct Connectors:

1. Clamps: Nylon strap in sizes 3 through 18 inches, to suit duct size.
2. Non-Clamp Connectors: Liquid adhesive plus tape.

2.15 DUCT ACCESSORY HARDWARE

A. Instrument Test Holes: Cast iron or cast aluminum to suit duct material, including screw cap and gasket. Size to allow insertion of pitot tube and other testing instruments and of length to suit duct-insulation thickness.

B. Adhesives: High strength, quick setting, neoprene based, waterproof, and resistant to gasoline and grease.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install duct accessories according to applicable details in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for metal ducts and in NAIMA AH116, "Fibrous Glass Duct Construction Standards," for fibrous-glass ducts.

B. Install duct accessories of materials suited to duct materials; use galvanized-steel accessories in galvanized-steel and fibrous-glass ducts, stainless-steel accessories in stainless-steel ducts, and aluminum accessories in aluminum ducts.

C. Install backdraft dampers at inlet of exhaust fans or exhaust ducts as close as possible to exhaust fan unless otherwise indicated.

D. Install volume dampers at points on supply, return, and exhaust systems where branches extend from larger ducts. Where dampers are installed in ducts having duct liner, install dampers with hat channels of same depth as liner, and terminate liner with nosing at hat channel.

1. Install steel volume dampers in steel ducts.
2. Install aluminum volume dampers in aluminum ducts.

E. Set dampers to fully open position before testing, adjusting, and balancing.

F. Install test holes at fan inlets and outlets and elsewhere as indicated.

G. Install fire and smoke dampers according to UL listing.

H. Install duct security bars. Construct duct security bars from 0.164-inchsteel sleeve, continuously welded at all joints and 1/2-inch- diameter steel bars, 6 inches o.c. in each direction in center of sleeve. Weld each bar to steel sleeve and each crossing bar. Weld 2-1/2-by-2-1/2-by-1/4-inch steel angle to 4 sides and both ends of sleeve. Connect duct security bars to ducts with flexible connections. Provide 12-by-12-inch hinged access panel with cam lock in duct in each side of sleeve.

I. Install duct access doors on sides of ducts to allow for inspecting, adjusting, and maintaining accessories and equipment at the following locations:

1. On both sides of duct coils.
2. Upstream and downstream from duct filters.
3. At outdoor-air intakes and mixed-air plenums.
4. At drain pans and seals.
5. Downstream from manual volume dampers, control dampers, backdraft dampers, and equipment.
6. Adjacent to and close enough to fire or smoke dampers, to reset or reinstall fusible links. Access doors for access to fire or smoke dampers having fusible links shall be pressure relief access doors and shall be outward operation for access doors installed upstream from dampers and inward operation for access doors installed downstream from dampers.
7. At each change in direction and at maximum 50-foot spacing.
8. Upstream and downstream from turning vanes.
9. Upstream or downstream from duct silencers.
10. Control devices requiring inspection.
11. Elsewhere as indicated.

J. Install access doors with swing against duct static pressure.

K. Access Door Sizes:

1. One-Hand or Inspection Access: 8 by 5 inches.
2. Two-Hand Access: 12 by 6 inches.
3. Head and Hand Access: 18 by 10 inches.
4. Head and Shoulders Access: 21 by 14 inches.
5. Body Access: 25 by 14 inches.
6. Body plus Ladder Access: 25 by 17 inches.

L. Label access doors according to Section 23 05 53 "Identification for HVAC Piping and Equipment" to indicate the purpose of access door.

M. Install flexible connectors to connect ducts to equipment.

N. For fans developing static pressures of 5-inch wg and more, cover flexible connectors with loaded vinyl sheet held in place with metal straps.

O. Connect flexible ducts to metal ducts with liquid adhesive plus tape.

P. Install duct test holes where required for testing and balancing purposes.

Q. Install thrust limits at centerline of thrust, symmetrical on both sides of equipment. Attach thrust limits at centerline of thrust and adjust to a maximum of 1/4-inch movement during start and stop of fans.

3.2 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Operate dampers to verify full range of movement.
2. Inspect locations of access doors and verify that purpose of access door can be performed.
3. Operate fire, smoke, and combination fire and smoke dampers to verify full range of movement and verify that proper heat-response device is installed.
4. Inspect turning vanes for proper and secure installation.
5. Operate remote damper operators to verify full range of movement of operator and damper.

END OF SECTION 23 33 00

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SECTION 23 34 23
HVAC POWER VENTILATORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Owner's General Conditions of the Contract, and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Utility set fans.
2. Centrifugal roof ventilators.
3. Axial roof ventilators.
4. Upblast propeller roof exhaust fans.
5. Centrifugal wall ventilators.
6. Ceiling-mounted ventilators.
7. In-line centrifugal fans.
8. Propeller fans.

1.3 PERFORMANCE REQUIREMENTS

A. Project Altitude: Base fan-performance ratings on sea level.

B. Operating Limits: Classify according to AMCA 99.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. Also include the following:

1. Certified fan performance curves with system operating conditions indicated.
2. Certified fan sound-power ratings.
3. Motor ratings and electrical characteristics, plus motor and electrical accessories.
4. Material thickness and finishes, including color charts.
5. Dampers, including housings, linkages, and operators.
6. Roof curbs.
7. Fan speed controllers.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Wiring Diagrams: For power, signal, and control wiring.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plans and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from Installers of the items involved:

1. Roof framing and support members relative to duct penetrations.
2. Ceiling suspension assembly members.
3. Size and location of initial access modules for acoustical tile.
4. Ceiling-mounted items including light fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.

B. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For power ventilators to include in emergency, operation, and maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Belts: One set(s) for each belt-driven unit.

1.8 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. AMCA Compliance: Fans shall have AMCA-Certified performance ratings and shall bear the AMCA-Certified Ratings Seal.

C. UL Standards: Power ventilators shall comply with UL 705. Power ventilators for use for restaurant kitchen exhaust shall also comply with UL 762.

1.9 COORDINATION

A. Coordinate size and location of structural-steel support members.

B. Coordinate sizes and locations of concrete bases with actual equipment provided.

C. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.

PART 2 - PRODUCTS

2.1 UTILITY SET FANS

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Loren Cook Company.
2. PennBarry.

B. Housing: Fabricated of galvanized steel with side sheets fastened with a deep lock seam or welded to scroll sheets.

1. Housing Discharge Arrangement: Adjustable to eight standard positions.

C. Fan Wheels: Single-width, single inlet; welded to cast-iron or cast-steel hub and spun-steel inlet cone, with hub keyed to shaft.

1. Blade Materials: Aluminum.
2. Blade Type: Forward curved.
3. Spark-Resistant Construction: AMCA 99, Type A.

D. Fan Shaft: Turned, ground, and polished steel; keyed to wheel hub.

E. Shaft Bearings: Prelubricated and sealed, self-aligning, pillow-block-type ball bearings with ABMA 9, L_{50} of 200,000 hours.

1. Extend grease fitting to accessible location outside of unit.

F. Belt Drives:

1. Factory mounted, with final alignment and belt adjustment made after installation
2. Service Factor Based on Fan Motor Size: 1.5.
3. Motor Pulleys: Adjustable pitch for use with motors through 5 hp; fixed pitch for use with larger motors. Select pulley so pitch adjustment is at the middle of adjustment range at fan design conditions.
4. Belts: Oil resistant, nonsparking, and nonstatic; matched sets for multiple belt drives.
5. Belt Guards: Fabricate of steel for motors mounted on outside of fan cabinet.

G. Accessories:

1. Inlet and Outlet: Flanged.
2. Companion Flanges: Rolled flanges for duct connections of same material as housing.
3. Backdraft Dampers: Gravity actuated with counterweight and interlocking aluminum blades with felt edges in steel frame installed on fan discharge.
4. Access Door: Gasketed door in scroll with latch-type handles.
5. Scroll Dampers: Single-blade damper installed at fan scroll top with adjustable linkage.
6. Inlet Screens: Removable wire mesh.
7. Drain Connections: NPS 3/4 threaded coupling drain connection installed at lowest point of housing.
8. Weather Hoods: Weather resistant with stamped vents over motor and drive compartment.

9. Discharge Dampers: Assembly with parallel blades constructed of two plates formed around and to shaft, channel frame, sealed ball bearings, with blades linked outside of airstream to single control lever of same material as housing.
10. Variable Inlet Vanes: With blades supported at both ends with two permanently lubricated bearings of same material as housing. Variable mechanism terminating in single control lever with control shaft for double-width fans.
11. Speed Controller: Solid-state control to reduce speed from 100 to less than 50 percent.

2.2 MOTORS

A. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Section 23 05 13 "Common Motor Requirements for HVAC Equipment."

1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.

B. Enclosure Type: Totally enclosed, fan cooled.

2.3 SOURCE QUALITY CONTROL

A. Certify sound-power level ratings according to AMCA 301, "Methods for Calculating Fan Sound Ratings from Laboratory Test Data." Factory test fans according to AMCA 300, "Reverberant Room Method for Sound Testing of Fans." Label fans with the AMCA-Certified Ratings Seal.

B. Certify fan performance ratings, including flow rate, pressure, power, air density, speed of rotation, and efficiency by factory tests according to AMCA 210, "Laboratory Methods of Testing Fans for Aerodynamic Performance Rating." Label fans with the AMCA-Certified Ratings Seal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install power ventilators level and plumb.

B. Equipment Mounting:

1. Comply with requirements for vibration isolation and seismic control devices specified in Section 23 05 48 "Vibration and Seismic Controls for HVAC."
2. Comply with requirements for vibration isolation devices specified in Section 23 05 48.13 "Vibration Controls for HVAC."

C. Secure roof-mounted fans to roof curbs with cadmium-plated hardware. See Section 07 72 00 "Roof Accessories" for installation of roof curbs.

D. Ceiling Units: Suspend units from structure; use steel wire or metal straps.

E. Install units with clearances for service and maintenance.

F. Label units according to requirements specified in Section 23 05 53 "Identification for HVAC Piping and Equipment."

3.2 CONNECTIONS

A. Drawings indicate general arrangement of ducts and duct accessories. Make final duct connections with flexible connectors. Flexible connectors are specified in Section 23 33 00 "Air Duct Accessories."

B. Install ducts adjacent to power ventilators to allow service and maintenance.

C. Ground equipment according to Section 26 05 26 "Grounding and Bonding for Electrical Systems."

D. Connect wiring according to Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables."

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

B. Tests and Inspections:

1. Verify that shipping, blocking, and bracing are removed.
2. Verify that unit is secure on mountings and supporting devices and that connections to ducts and electrical components are complete. Verify that proper thermal-overload protection is installed in motors, starters, and disconnect switches.
3. Verify that cleaning and adjusting are complete.
4. Disconnect fan drive from motor, verify proper motor rotation direction, and verify fan wheel free rotation and smooth bearing operation. Reconnect fan drive system, align and adjust belts, and install belt guards.
5. Adjust belt tension.
6. Adjust damper linkages for proper damper operation.
7. Verify lubrication for bearings and other moving parts.
8. Verify that manual and automatic volume control and fire and smoke dampers in connected ductwork systems are in fully open position.
9. Disable automatic temperature-control operators, energize motor and adjust fan to indicated rpm, and measure and record motor voltage and amperage.
10. Shut unit down and reconnect automatic temperature-control operators.
11. Remove and replace malfunctioning units and retest as specified above.

C. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Prepare test and inspection reports.

3.4 ADJUSTING

A. Adjust damper linkages for proper damper operation.

B. Adjust belt tension.

C. Comply with requirements in Section 23 05 93 "Testing, Adjusting, and Balancing for HVAC" for testing, adjusting, and balancing procedures.

D. Replace fan and motor pulleys as required to achieve design airflow.

E. Lubricate bearings.

END OF SECTION 23 34 23

SECTION 23 36 00
AIR TERMINAL UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Owner's General Conditions of the Contract, and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Bypass, single-duct air terminal units.
2. Dual-duct air terminal units.
3. Fan-powered air terminal units.
4. Induction air terminal units.
5. Diffuser-type air terminal units.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of the following products, including rated capacities, furnished specialties, sound-power ratings, and accessories.

1. Air terminal units.
2. Liners and adhesives.
3. Sealants and gaskets.

B. Shop Drawings: For air terminal units. Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Wiring Diagrams: For power, signal, and control wiring.
3. Hangers and supports, including methods for duct and building attachment and vibration isolation.

C. Delegated-Design Submittal:

1. Materials, fabrication, assembly, and spacing of hangers and supports.
2. Design Calculations: Calculations, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation for selecting hangers and supports.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from Installers of the items involved:

1. Ceiling suspension assembly members.
2. Size and location of initial access modules for acoustic tile.
3. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.

B. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For air terminal units to include in emergency, operation, and maintenance manuals. In addition to items specified in Section 01 78 23 "Operation and Maintenance Data," include the following:

1. Instructions for resetting minimum and maximum air volumes.
2. Instructions for adjusting software set points.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fan-Powered-Unit Filters: Furnish one spare filter(s) for each filter installed.

1.7 QUALITY ASSURANCE

A. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and System Start-Up."

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 SHUTOFF, SINGLE-DUCT AIR TERMINAL UNITS

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Environmental Technologies, Inc.

2. Price Industries.
3. Titus.
4. Trane; a business of American Standard Companies.

B. Configuration: Volume-damper assembly inside unit casing with control components inside a protective metal shroud.

C. Casing: 22 gauge, single wall.

1. Casing Lining: Adhesive attached, 1-inch-thick, coated, fibrous-glass duct liner complying with ASTM C 1071, and having a maximum flame-spread index of 25 and a maximum smoke-developed index of 50, for both insulation and adhesive, when tested according to ASTM E 84.

    a. Cover liner with nonporous foil.
    b. Cover liner with nonporous foil and perforated metal.

2. Air Inlet: Round stub connection or S-slip and drive connections for duct attachment.
3. Air Outlet: S-slip and drive connections, size matching inlet size.
4. Access: Removable panels for access to parts requiring service, adjustment, or maintenance; with airtight gasket.
5. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

D. Volume Damper: Galvanized steel with peripheral gasket and self-lubricating bearings.

1. Maximum Damper Leakage: ARI 880 rated, 2 percent of nominal airflow at 3-inch wg inlet static pressure.
2. Damper Position: Normally open.

E. Electric-Resistance Heating Coils: Nickel-chromium heating wire, free of expansion noise and hum, mounted in ceramic inserts in a galvanized-steel housing; with primary automatic, and secondary manual, reset thermal cutouts. Terminate elements in stainless-steel, machine-staked terminals secured with stainless-steel hardware.

1. Access door interlocked disconnect switch.
2. Downstream air temperature sensor with local connection to override discharge-air temperature to not exceed a maximum temperature set point (adjustable.)
3. Nickel chrome 80/20 heating elements.
4. Airflow switch for proof of airflow.
5. Fan interlock contacts.
6. Fuses in terminal box for overcurrent protection (for coils more than 48 A).
7. Mercury contactors.
8. Pneumatic-electric switches and relays.
9. Magnetic contactor for each step of control (for three-phase coils).

F. Direct Digital Controls: Bidirectional damper operators and microprocessor-based controller and room sensor. Control devices shall be compatible with temperature controls specified in Section 23 09 00 "Instrumentation and Control for HVAC" and shall have the following features:

1. Damper Actuator: 24 V, powered closed, spring return open.
2. Terminal Unit Controller: Pressure-independent, variable-air-volume controller with electronic airflow transducer with multipoint velocity sensor at air inlet, factory calibrated to minimum and maximum air volumes, and having the following features:

    a. Occupied and unoccupied operating mode.

b. Remote reset of airflow or temperature set points.
c. Adjusting and monitoring with portable terminal.
d. Communication with temperature-control system specified in Section 23 09 00 "Instrumentation and Control for HVAC."

3. Room Sensor: Wall mounted with temperature set-point adjustment and access for connection of portable operator terminal.

G. Control Sequence:

1. Suitable for operation with duct pressures between 0.25- and 3.0-inch wg inlet static pressure.
2. System-powered, wall-mounted thermostat.

2.3 HANGERS AND SUPPORTS

A. Hanger Rods for Noncorrosive Environments: Cadmium-plated steel rods and nuts.

B. Hanger Rods for Corrosive Environments: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.

C. Steel Cables: Galvanized steel complying with ASTM A 603.

D. Steel Cable End Connections: Cadmium-plated steel assemblies with brackets, swivel, and bolts designed for duct hanger service; with an automatic-locking and clamping device.

E. Air Terminal Unit Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.

F. Trapeze and Riser Supports: Steel shapes and plates for units with steel casings; aluminum for units with aluminum casings.

2.4 SOURCE QUALITY CONTROL

A. Factory Tests: Test assembled air terminal units according to ARI 880.

1. Label each air terminal unit with plan number, nominal airflow, maximum and minimum factory-set airflows, coil type, and ARI certification seal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install air terminal units according to NFPA 90A, "Standard for the Installation of Air Conditioning and Ventilating Systems."

B. Install air terminal units level and plumb. Maintain sufficient clearance for normal service and maintenance.

C. Install wall-mounted thermostats.

3.2 HANGER AND SUPPORT INSTALLATION

A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 5, "Hangers and Supports."

B. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.

1. Where practical, install concrete inserts before placing concrete.
2. Install powder-actuated concrete fasteners after concrete is placed and completely cured.
3. Use powder-actuated concrete fasteners for standard-weight aggregate concretes and for slabs more than 4 inches thick.
4. Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes and for slabs less than 4 inches thick.
5. Do not use powder-actuated concrete fasteners for seismic restraints.

C. Hangers Exposed to View: Threaded rod and angle or channel supports.

D. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

3.3 CONNECTIONS

A. Install piping adjacent to air terminal unit to allow service and maintenance.

B. Hot-Water Piping: In addition to requirements in Section 23 21 13 "Hydronic Piping" and Section 23 21 16 Hydronic Piping Specialties," connect heating coils to supply with shutoff valve, strainer, control valve, and union or flange; and to return with balancing valve and union or flange.

C. Connect ducts to air terminal units according to Section 23 31 13 "Metal Ducts."

D. Make connections to air terminal units with flexible connectors complying with requirements in Section 23 33 00 "Air Duct Accessories."

3.4 IDENTIFICATION

A. Label each air terminal unit with plan number, nominal airflow, and maximum and minimum factory-set airflows. Comply with requirements in Section 23 05 53 "Identification for HVAC Piping and Equipment" for equipment labels and warning signs and labels.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

C. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

D. Tests and Inspections:

1. After installing air terminal units and after electrical circuitry has been energized, test for compliance with requirements.
2. Leak Test: After installation, fill water coils and test for leaks. Repair leaks and retest until no leaks exist.
3. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Air terminal unit will be considered defective if it does not pass tests and inspections.

F. Prepare test and inspection reports.

3.6 STARTUP SERVICE

A. Perform startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.
2. Verify that inlet duct connections are as recommended by air terminal unit manufacturer to achieve proper performance.
3. Verify that controls and control enclosure are accessible.
4. Verify that control connections are complete.
5. Verify that nameplate and identification tag are visible.
6. Verify that controls respond to inputs as specified.

3.7 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain air terminal units.

END OF SECTION 23 36 00

SECTION 23 37 13
DIFFUSERS, REGISTERS, AND GRILLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Owner's General Conditions of the Contract, and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Round ceiling diffusers.
2. Rectangular and square ceiling diffusers.
3. Louver face diffusers.
4. Linear bar diffusers.
5. Linear slot diffusers.
6. Light troffer diffusers.
7. Drum louvers.

B. Related Sections:

1. Section 08 91 16 "Operable Wall Louvers" and Section 08 91 19 "Fixed Louvers" for fixed and adjustable louvers and wall vents, whether or not they are connected to ducts.
2. Section 23 33 00 "Air Duct Accessories" for fire and smoke dampers and volume-control dampers not integral to diffusers, registers, and grilles.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated, include the following:

1. Data Sheet: Indicate materials of construction, finish, and mounting details; and performance data including throw and drop, static-pressure drop, and noise ratings.
2. Diffuser, Register, and Grille Schedule: Indicate drawing designation, room location, quantity, model number, size, and accessories furnished.

PART 2 - PRODUCTS

2.1 CEILING DIFFUSERS

A. Round Ceiling Diffuser:

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. METALAIRE, Inc.
b. Nailor Industries Inc.
c. Price Industries.
d. Titus.

2. Devices shall be specifically designed for variable-air-volume flows.
3. Material: Aluminum.
4. Finish: Baked enamel, white.
5. Face Style: Three cone.
6. Mounting: Duct connection.
7. Pattern: Two-position horizontal.
8. Dampers: Radial opposed blade.
9. Accessories:

a. Equalizing grid.
b. Plaster ring.
c. Operating rod extension.

B. Rectangular and Square Ceiling Diffusers:

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Anemostat Products; a Mestek company.
b. Carnes.
c. Krueger.
d. METALAIRE, Inc.
e. Nailor Industries Inc.
f. Price Industries.
g. Titus.

2. Devices shall be specifically designed for variable-air-volume flows.
3. Material: Aluminum.
4. Finish: Baked enamel, white or color selected by Architect.
5. Face Size: 24 by 24 inches.
6. Face Style: Plaque.
7. Mounting: Surface or T-bar.
8. Pattern: Fixed.
9. Accessories:
   a. Plaster ring.
   b. Operating rod extension.

C. Louver Face Diffuser:

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. METALAIRE, Inc.
b. Nailor Industries Inc.
c. Price Industries.
d. Titus.

2. Devices shall be specifically designed for variable-air-volume flows.
3. Material: Aluminum.
4. Finish: Baked enamel, white Baked enamel, color selected by Architect.

5. Mounting: Surface.
6. Pattern: As indicated on Drawings.
7. Accessories:

    a. Square to round neck adaptor.
    b. Adjustable pattern vanes.
    c. Throw reducing vanes.
    d. Operating rod extension.

2.2 CEILING LINEAR SLOT OUTLETS

A. Linear Bar Diffuser:

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

    a. Krueger.
    b. METALAIRE, Inc.
    c. Nailor Industries Inc.
    d. Price Industries.
    e. Titus.

2. Devices shall be specifically designed for variable-air-volume flows.
3. Material: Aluminum.
4. Finish: Baked enamel, white Baked enamel, or color selected by Architect.
5. Narrow Core Spacing Arrangement: 1/8-inch-thick blades spaced 1/4 inch apart, 15-degree deflection.
6. Wide Core Spacing Arrangement: 1/8-inch-thick blades spaced 1/2 inch apart, 15-degree deflection.
7. Two-Way Deflection Vanes: Extruded construction fixed louvers with removable core.
8. Mounting: Concealed bracket.
9. Damper Type: Adjustable opposed-blade assembly.
10. Accessories: Plaster frame.

B. Linear Slot Diffuser:

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

    a. Krueger.
    b. METALAIRE, Inc.
    c. Nailor Industries Inc.
    d. Price Industries.
    e. Titus.

2. Devices shall be specifically designed for variable-air-volume flows.
3. Material - Shell: Aluminum, noninsulated.
4. Material - Pattern Controller and Tees: Aluminum.
5. Finish - Face and Shell: Baked enamel, black.
6. Finish - Pattern Controller: Baked enamel, black.
7. Finish - Tees: Baked enamel, white baked enamel, or color selected by Architect.
8. Accessories: Plaster frame.

2.3 SOURCE QUALITY CONTROL

A. Verification of Performance: Rate diffusers, registers, and grilles according to ASHRAE 70, "Method of Testing for Rating the Performance of Air Outlets and Inlets."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas where diffusers, registers, and grilles are to be installed for compliance with requirements for installation tolerances and other conditions affecting performance of equipment.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install diffusers, registers, and grilles level and plumb.

B. Ceiling-Mounted Outlets and Inlets: Drawings indicate general arrangement of ducts, fittings, and accessories. Air outlet and inlet locations have been indicated to achieve design requirements for air volume, noise criteria, airflow pattern, throw, and pressure drop. Make final locations where indicated, as much as practical. For units installed in lay-in ceiling panels, locate units in the center of panel. Where architectural features or other items conflict with installation, notify Architect for a determination of final location.

C. Install diffusers, registers, and grilles with airtight connections to ducts and to allow service and maintenance of dampers, air extractors, and fire dampers.

3.3 ADJUSTING

A. After installation, adjust diffusers, registers, and grilles to air patterns indicated, or as directed, before starting air balancing.

END OF SECTION 23 37 13

SECTION 23 73 13
MODULAR INDOOR CENTRAL-STATION AIR-HANDLING UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Owner's General Conditions of the Contract, and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Variable-air-volume, single-zone air-handling units.

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Casing panels shall be self-supporting and capable of withstanding 133 percent of internal static pressures indicated, without panel joints exceeding a deflection of L/240 where "L" is the unsupported span length within completed casings.

1.4 ACTION SUBMITTALS

A. Product Data: For each air-handling unit indicated.

1. Unit dimensions and weight.
2. Cabinet material, metal thickness, finishes, insulation, and accessories.
3. Fans:

    a. Certified fan-performance curves with system operating conditions indicated.
    b. Certified fan-sound power ratings.
    c. Fan construction and accessories.
    d. Motor ratings, electrical characteristics, and motor accessories.

4. Certified coil-performance ratings with system operating conditions indicated.
5. Dampers, including housings, linkages, and operators.
6. Filters with performance characteristics.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Floor plans and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Mechanical-room layout and relationships between components and adjacent structural and mechanical elements.
2. Support location, type, and weight.
3. Field measurements.

B. Source quality-control reports.

C. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For air-handling units to include in emergency, operation, and maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Filters: One set(s) for each air-handling unit.
2. Gaskets: One set(s) for each access door.
3. Fan Belts: One set(s) for each air-handling unit fan.

1.8 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. NFPA Compliance: Comply with NFPA 90A for design, fabrication, and installation of air-handling units and components.

C. ARI Certification: Air-handling units and their components shall be factory tested according to ARI 430, "Central-Station Air-Handling Units," and shall be listed and labeled by ARI.

D. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."

E. ASHRAE/IESNA 90.1 Compliance: Applicable requirements in ASHRAE/IESNA 90.1, Section 6 - "Heating, Ventilating, and Air-Conditioning."

F. Comply with NFPA 70.

1.9 COORDINATION

A. Coordinate sizes and locations of concrete bases with actual equipment provided.

B. Coordinate sizes and locations of structural-steel support members, if any, with actual equipment provided.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Carrier Corporation; a member of the United Technologies Corporation Family.
2. McQuay International
3. Trane; American Standard Inc.
4. York International Corporation

2.2 UNIT CASINGS

A. General Fabrication Requirements for Casings:

1. Forming: Form walls, roofs, and floors with at least two breaks at each joint.
2. Casing Joints: Sheet metal screws or pop rivets.
3. Sealing: Seal all joints with water-resistant sealant.
4. Factory Finish for Galvanized-Steel Casings: Apply manufacturer's standard primer immediately after cleaning and pretreating.
5. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

B. Casing Insulation and Adhesive:

1. R-13 foam injected double wall panels.

C. Inspection and Access Panels and Access Doors:

1. Panel and Door Fabrication: Formed and reinforced, single- or double-wall and insulated panels of same materials and thicknesses as casing.
2. Inspection and Access Panels:

a. Fasteners: Two or more camlock type for panel lift-out operation. Arrangement shall allow panels to be opened against air-pressure differential.
b. Gasket: Neoprene, applied around entire perimeters of panel frames.
c. Size: Large enough to allow inspection and maintenance of air-handling unit's internal components.

3. Access Doors:

a. Hinges: A minimum of two ball-bearing hinges or stainless-steel piano hinge and two wedge-lever-type latches, operable from inside and outside. Arrange doors to be opened against air-pressure differential.
b. Gasket: Neoprene, applied around entire perimeters of panel frames.
c. Fabricate windows in fan section doors of double-glazed, wire-reinforced safety glass with an air space between panes and sealed with interior and exterior rubber seals.

d. Size: At least 18 inches wide by full height of unit casing up to a maximum height of 72 inches.

4. Locations and Applications:

a. Fan Section: Doors and inspection and access panels.
b. Coil Section: Door.
c. Filter Section: Doors large enough to allow periodic removal and installation of filters.
d. Mixing Section: Doors.
e. Humidifier Section: Doors.

D. Condensate Drain Pans:

1. Fabricated with one percent slope in at least two planes to collect condensate from cooling coils (including coil piping connections, coil headers, and return bends) and from humidifiers and to direct water toward drain connection.

a. Length: Extend drain pan downstream from leaving face to comply with ASHRAE 62.1.
b. Depth: A minimum of 2 inches deep.

2. Integral part of floor plating.
3. Double-wall, stainless-steel sheet with space between walls filled with foam insulation and moisture-tight seal.
4. Drain Connection: Located at lowest point of pan and sized to prevent overflow. Terminate with threaded nipple on one end of pan.
5. Pan-Top Surface Coating: Asphaltic waterproofing compound.
6. Units with stacked coils shall have an intermediate drain pan to collect condensate from top coil.

2.3 FAN, DRIVE, AND MOTOR SECTION

A. Fan and Drive Assemblies: Statically and dynamically balanced and designed for continuous operation at maximum-rated fan speed and motor horsepower.

1. Shafts: Designed for continuous operation at maximum-rated fan speed and motor horsepower, and with field-adjustable alignment.

a. Turned, ground, and polished hot-rolled steel with keyway. Ship with a protective coating of lubricating oil.
b. Designed to operate at no more than 70 percent of first critical speed at top of fan's speed range.

B. Plenum Fan Housings: Steel frame and panel; fabricated without fan scroll and volute housing.

C. Backward-Inclined, Centrifugal Fan Wheels: Single-width-single-inlet and double-width-double-inlet construction with curved inlet flange, backplate, backward-inclined blades welded or riveted to flange and backplate; cast-iron or cast-steel hub riveted to backplate and fastened to shaft with set screws.

D. Fan Shaft Bearings:

1. Prelubricated and Sealed, Ball Bearings: Self-aligning, pillow-block type with a rated life of 120,000 hours according to ABMA 9.

E. Internal Vibration Isolation: Fans shall be factory mounted with manufacturer's standard vibration isolation mounting devices having a minimum static deflection of 1 inch.

1. Seismic Fabrication Requirements: Fabricate fan section, internal mounting frame and attachment to fans, fan housings, motors, casings, accessories, and other fan section components with reinforcement strong enough to withstand seismic forces defined in Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment" when fan-mounting frame and air-handling-unit mounting frame are anchored to building structure.

F. Motor: Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Division 23 Section "Common Motor Requirements for HVAC Equipment."

1. Enclosure Type: Totally enclosed, fan cooled.
2. NEMA Premium (TM) efficient motors as defined in NEMA MG 1.
3. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
4. Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections specified in Division 26 Sections.
5. Mount unit-mounted disconnect switches on exterior of unit.

G. Variable Frequency Controllers:

1. Description: NEMA ICS 2, IGBT, PWM, VFC; listed and labeled as a complete unit and arranged to provide variable speed of an NEMA MG 1, Design B, 3-phase induction motor by adjusting output voltage and frequency.
2. Output Rating: 3-phase; 6 to 60 Hz, with voltage proportional to frequency throughout voltage range.
3. Unit Operating Requirements:

    a. Input frequency tolerance of 50/60 Hz, plus or minus 6 percent.
    b. Minimum Efficiency: 96 percent at 60 Hz, full load.
    c. Minimum Displacement Primary-Side Power Factor: 96 percent.
    d. Overload Capability: 1.1 times the base load current for 60 seconds; 2.0 times the base load current for 3 seconds.
    e. Starting Torque: 100 percent of rated torque or as indicated.
    f. Speed Regulation: Plus or minus 1 percent.

4. Isolated control interface to allow controller to follow control signal over an 11:1 speed range.
5. Internal Adjustability Capabilities:

    a. Minimum Speed: 5 to 25 percent of maximum rpm.
    b. Maximum Speed: 80 to 100 percent of maximum rpm.
    c. Acceleration: 2 to a minimum of 22 seconds.
    d. Deceleration: 2 to a minimum of 22 seconds.

e. Current Limit: 50 to a minimum of 110 percent of maximum rating.

6. Automatic Reset/Restart: Attempts three restarts after controller fault or on return of power after an interruption and before shutting down for manual reset or fault correction. Bidirectional autospeed search shall be capable of starting into rotating loads spinning in either direction and returning motor to set speed in proper direction, without damage to controller, motor, or load.
7. Power-Interruption Protection: To prevent motor from re-energizing after a power interruption until motor has stopped.
8. Torque Boost: Automatically varies starting and continuous torque to at least 1.5 times the minimum torque to ensure high-starting torque and increased torque at slow speeds.
9. Motor Temperature Compensation at Slow Speeds: Adjustable current fall-back based on output frequency for temperature protection of self-cooled, fan-ventilated motors at slow speeds.
10. Door-mounted LED status lights shall indicate the following conditions:

    a. Power on.
    b. Run.
    c. Overvoltage.
    d. Line fault.
    e. Overcurrent.
    f. External fault.

11. Panel-Mounted Operator Station: Start-stop and auto-manual selector switches with manual-speed-control potentiometer and elapsed time meter.
12. Meters or digital readout devices and selector switch, mounted flush in controller door and connected to indicate the following controller parameters:

    a. Output frequency (Hertz).
    b. Motor speed (rpm).
    c. Motor status (running, stop, fault).
    d. Motor current (amperes).
    e. Motor torque (percent).
    f. Fault or alarming status (code).
    g. Proportional-integral-derivative (PID) feedback signal (percent).
    h. DC-link voltage (volts direct current).
    i. Set-point frequency (Hertz).
    j. Motor output voltage (volts).

13. Control Signal Interface:

    a. Electric Input Signal Interface: A minimum of 2 analog inputs (0 to 10 V or 0/4-20 mA) and 6 programmable digital inputs.
    b. Remote signal inputs capable of accepting any of the following speed-setting input signals from the control system:

        1) 0 to 10-V dc.
        2) 0-20 or 4-20 mA.
        3) Potentiometer using up/down digital inputs.
        4) Fixed frequencies using digital inputs.
        5) RS485.
        6) Keypad display for local hand operation.

c. Output signal interface with a minimum of 1 analog output signal (0/4-20 mA), which can be programmed to any of the following:

1) Output frequency (Hertz).
2) Output current (load).
3) DC-link voltage (volts direct current).
4) Motor torque (percent).
5) Motor speed (rpm).
6) Set-point frequency (Hertz).

d. Remote indication interface with a minimum of 2 dry circuit relay outputs (120-V ac, 1 A) for remote indication of the following:

1) Motor running.
2) Set-point speed reached.
3) Fault and warning indication (overtemperature or overcurrent).
4) High- or low-speed limits reached.

14. Communications: RS485 interface allows VFC to be used with an external system within a multidrop LAN configuration. Interface shall allow all parameter settings of VFC to be programmed via BMS control. Provide capability for VFC to retain these settings within the nonvolatile memory.
15. Integral Disconnecting Means: NEMA AB 1, instantaneous-trip circuit breaker with lockable handle.
16. Accessories:

a. Devices shall be factory installed in controller enclosure unless otherwise indicated.
b. Push-Button Stations, Pilot Lights, and Selector Switches: NEMA ICS 2, heavy-duty type.
c. Standard Displays:

1) Output frequency (Hertz).
2) Set-point frequency (Hertz).
3) Motor current (amperes).
4) DC-link voltage (volts direct current).
5) Motor torque (percent).
6) Motor speed (rpm).
7) Motor output voltage (volts).

2.4 COIL SECTION

A. General Requirements for Coil Section:

1. Comply with ARI 410.
2. Fabricate coil section to allow removal and replacement of coil for maintenance and to allow in-place access for service and maintenance of coil(s).
3. For multizone units, provide air deflectors and air baffles to balance airflow across coils.
4. Coils shall not act as structural component of unit.
5. Seismic Fabrication Requirements: Fabricate coil section, internal mounting frame and attachment to coils, and other coil section components with reinforcement strong enough to withstand seismic forces defined in Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment" when coil-mounting frame and air-handling-unit mounting frame are anchored to building structure.

2.5 AIR FILTRATION SECTION

A. General Requirements for Air Filtration Section:

1. Comply with NFPA 90A.
2. Provide minimum arrestance according to ASHRAE 52.1, and a minimum efficiency reporting value (MERV) according to ASHRAE 52.2.
3. Provide filter holding frames arranged for flat or angular orientation, with access doors on both sides of unit. Filters shall be removable from one side or lifted out from access plenum.

B. Disposable Panel Filters:

1. Factory-fabricated, viscous-coated, flat-panel type.
2. Thickness: 2 inches.
3. Merv (ASHRAE 52.2): 5.
4. Frame: Galvanized steel, with metal grid on outlet side, steel rod grid on inlet side, hinged, and with pull and retaining handles.

C. Filter Gage:

1. 2-inch-diameter, diaphragm-actuated dial in metal case.
2. Vent valves.
3. Black figures on white background.
4. Front recalibration adjustment.
5. 2 percent of full-scale accuracy.
6. Range: 0- to 2.0-inch wg.
7. Accessories: Static-pressure tips with integral compression fittings, 1/4-inch aluminum tubing, and 2- or 3-way vent valves.

2.6 DAMPERS

A. General Requirements for Dampers: Leakage rate, according to AMCA 500, "Laboratory Methods for Testing Dampers for Rating," shall not exceed 2 percent of air quantity at 2000-fpm face velocity through damper and 4-inch wg pressure differential.

B. Damper Operators: Comply with requirements in Division 23 Section "Instrumentation and Control for HVAC."

C. Electronic Damper Operators:

1. Direct-coupled type designed for minimum 60,000 full-stroke cycles at rated torque.
2. Electronic damper position indicator shall have visual scale indicating percent of travel and 2- to 10-V dc, feedback signal.
3. Operator Motors:

a. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Division 23 Section "Common Motor Requirements for HVAC."
b. Size to operate with sufficient reserve power to provide smooth modulating action or two-position action.
c. Permanent Split-Capacitor or Shaded-Pole Type: Gear trains completely oil immersed and sealed. Equip spring-return motors with integral spiral-spring mechanism in housings designed for easy removal for service or adjustment of limit switches, auxiliary switches, or feedback potentiometer.

4. Nonspring-Return Motors for Dampers Larger than 25 Sq. Ft.: Size for running torque of 150 in. x lbf and breakaway torque of 300 in. x lbf.
5. Size dampers for running torque calculated as follows:

a. Parallel-Blade Damper with Edge Seals: 7 inch-lb/sq. ft. of damper.
b. Opposed-Blade Damper with Edge Seals: 5 inch-lb/sq. ft. of damper.
c. Parallel-Blade Damper without Edge Seals: 4 inch-lb/sq. ft of damper.
d. Opposed-Blade Damper without Edge Seals: 3 inch-lb/sq. ft. of damper.
e. Dampers with 2- to 3-Inch wg of Pressure Drop or Face Velocities of 1000 to 2500 fpm: Increase running torque by 1.5.
f. Dampers with 3- to 4-Inch wg of Pressure Drop or Face Velocities of 2500 to 3000 fpm: Increase running torque by 2.0.

6. Coupling: V-bolt and V-shaped, toothed cradle.
7. Overload Protection: Electronic overload or digital rotation-sensing circuitry.
8. Fail-Safe Operation: Mechanical, spring-return mechanism with external, manual gear release on nonspring-return actuators.
9. Power Requirements (Two-Position Spring Return): 24-V ac.
10. Power Requirements (Modulating): Maximum 10 VA at 24-V ac or 8 W at 24-V dc.
11. Proportional Signal: 2- to 10-V dc or 4 to 20 mA, and 2- to 10-V dc position feedback signal.
12. Temperature Rating: 40 to 104 deg F.
13. Run Time: 30 seconds.

D. Outdoor- and Return-Air Mixing Dampers: Parallel-blade, galvanized-steel dampers mechanically fastened to cadmium-plated steel operating rod in reinforced cabinet. Connect operating rods with common linkage and interconnect linkages so dampers operate simultaneously.

E. Outdoor- and Return-Air Dampers: Low-leakage, double-skin, airfoil-blade, galvanized-steel dampers with compressible jamb seals and extruded-vinyl blade edge seals in opposed-blade arrangement with cadmium-plated steel operating rods rotating in stainless-steel sleeve bearings mounted in a single galvanized-steel frame, and with operating rods connected with a common linkage. Leakage rate shall not exceed 5 cfm/sq. ft. at 1-inch wg and 9 cfm/sq. ft. at 4-inch wg.

F. Mixing Section: Multiple-blade, air-mixer assembly located immediately downstream of mixing section.

G. Combination Filter and Mixing Section:

1. Cabinet support members shall hold 2-inch-thick, pleated, flat, permanent or throwaway filters.
2. Multiple-blade, air-mixer assembly shall mix air to prevent stratification, located immediately downstream of mixing box.

2.7 SOURCE QUALITY CONTROL

A. Fan Sound-Power Level Ratings: Comply with AMCA 301, "Methods for Calculating Fan Sound Ratings from Laboratory Test Data." Test fans according to AMCA 300, "Reverberant Room Method for Sound Testing of Fans." Fans shall bear AMCA-certified sound ratings seal.

B. Fan Performance Rating: Factory test fan performance for airflow, pressure, power, air density, rotation speed, and efficiency. Rate performance according to AMCA 210, "Laboratory Methods of Testing Fans for Aerodynamic Performance Rating."

C. Water Coils: Factory tested to 300 psig according to ARI 410 and ASHRAE 33.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine casing insulation materials and filter media before air-handling unit installation. Reject insulation materials and filter media that are wet, moisture damaged, or mold damaged.

C. Examine roughing-in for steam, hydronic, and condensate drainage piping systems and electrical services to verify actual locations of connections before installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Equipment Mounting: Install air-handling units on concrete bases using elastomeric pads. Secure units to anchor bolts installed in concrete bases. Comply with requirements for concrete bases specified in Division 03 Section "." Comply with requirements for vibration isolation devices specified in Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment."

1. Minimum Deflection: 1 inch.
2. Install galvanized-steel plate to equally distribute weight over elastomeric pad.
3. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
4. Install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.

5. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
6. Install anchor bolts to elevations required for proper attachment to supported equipment.

B. Arrange installation of units to provide access space around air-handling units for service and maintenance.

C. Do not operate fan system until filters (temporary or permanent) are in place. Replace temporary filters used during construction and testing, with new, clean filters.

D. Install filter-gage, static-pressure taps upstream and downstream of filters. Mount filter gages on outside of filter housing or filter plenum in accessible position. Provide filter gages on filter banks, installed with separate static-pressure taps upstream and downstream of filters.

3.3 CONNECTIONS

A. Comply with requirements for piping specified in other Division 23 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to air-handling unit to allow service and maintenance.

C. Connect piping to air-handling units mounted on vibration isolators with flexible connectors.

D. Connect condensate drain pans using NPS 1-1/4, ASTM B 88, Type M copper tubing. Extend to nearest equipment or floor drain. Construct deep trap at connection to drain pan and install cleanouts at changes in direction.

E. Hot- and Chilled-Water Piping: Comply with applicable requirements in Division 23 Section "Hydronic Piping." Install shutoff valve and union or flange at each coil supply connection. Install balancing valve and union or flange at each coil return connection.

F. Steam and Condensate Piping: Comply with applicable requirements in Division 23 Section "Steam and Condensate Heating Piping." Install shutoff valve at steam supply connections, float and thermostatic trap, and union or flange at each coil return connection. Install gate valve and inlet strainer at supply connection of dry steam humidifiers, and inverted bucket steam trap to condensate return connection.

G. Refrigerant Piping: Comply with applicable requirements in Division 23 Section "Refrigerant Piping." Install shutoff valve and union or flange at each supply and return connection.

H. Connect duct to air-handling units with flexible connections. Comply with requirements in Division 23 Section "Air Duct Accessories."

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

B. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

C. Tests and Inspections:

1. Leak Test: After installation, fill water and steam coils with water, and test coils and connections for leaks.
2. Charge refrigerant coils with refrigerant and test for leaks.
3. Fan Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
4. Automatic-Roll-Filter Operational Test: Operate filters to demonstrate compliance with requirements. Test for leakage of unfiltered air while system is operating.
5. HEPA-Filter Operational Test: Pressurize housing to a minimum of 3-inch wg or to designed operating pressure, whichever is higher; test housing joints, door seals, and sealing edges of filter with soapy water to check for air leaks.
6. HEPA-Filter Operational Test: Pressurize housing to a minimum of 3-inch wg or to designed operating pressure, whichever is higher; test housing joints, door seals, and sealing edges of filter for air leaks according to ASME N510, pressure-decay method.
7. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Air-handling unit or components will be considered defective if unit or components do not pass tests and inspections.

E. Prepare test and inspection reports.

3.5 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.
2. Verify that shipping, blocking, and bracing are removed.
3. Verify that unit is secure on mountings and supporting devices and that connections to piping, ducts, and electrical systems are complete. Verify that proper thermal-overload protection is installed in motors, controllers, and switches.
4. Verify proper motor rotation direction, free fan wheel rotation, and smooth bearing operations. Reconnect fan drive system, align belts, and install belt guards.
5. Verify that bearings, pulleys, belts, and other moving parts are lubricated with factory-recommended lubricants.
6. Verify that zone dampers fully open and close for each zone.
7. Verify that face-and-bypass dampers provide full face flow.
8. Verify that outdoor- and return-air mixing dampers open and close, and maintain minimum outdoor-air setting.
9. Comb coil fins for parallel orientation.
10. Verify that proper thermal-overload protection is installed for electric coils.
11. Install new, clean filters.
12. Verify that manual and automatic volume control and fire and smoke dampers in connected duct systems are in fully open position.

B. Starting procedures for air-handling units include the following:

1. Energize motor; verify proper operation of motor, drive system, and fan wheel. Adjust fan to indicated rpm.
2. Measure and record motor electrical values for voltage and amperage.
3. Manually operate dampers from fully closed to fully open position and record fan performance.

3.6 ADJUSTING

A. Adjust damper linkages for proper damper operation.

B. Comply with requirements in Division 23 Section "Testing, Adjusting, and Balancing for HVAC" for air-handling system testing, adjusting, and balancing.

3.7 CLEANING

A. After completing system installation and testing, adjusting, and balancing air-handling unit and air-distribution systems and after completing startup service, clean air-handling units internally to remove foreign material and construction dirt and dust. Clean fan wheels, cabinets, dampers, coils, and filter housings, and install new, clean filters.

3.8 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain air-handling units.

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SECTION 23 81 26
SPLIT-SYSTEM AIR-CONDITIONERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes split-system air-conditioning and heat-pump units consisting of separate evaporator-fan and compressor-condenser components.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. Include performance data in terms of capacities, outlet velocities, static pressures, sound power characteristics, motor requirements, and electrical characteristics.

B. LEED Submittals:

1. Product Data for Credit EA 4: Documentation indicating that equipment and refrigerants comply.

C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Wiring Diagrams: For power, signal, and control wiring.

D. Samples for Initial Selection: For units with factory-applied color finishes.

1.4 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

B. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For split-system air-conditioning units to include in emergency, operation, and maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Filters: One set(s) for each air-handling unit.
2. Gaskets: One set(s) for each access door.
3. Fan Belts: One set(s) for each air-handling unit fan.

1.7 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. ASHRAE Compliance:

1. Fabricate and label refrigeration system to comply with ASHRAE 15, "Safety Standard for Refrigeration Systems."
2. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 4 - "Outdoor Air Quality," Section 5 - "Systems and Equipment," Section 6 - " Procedures," and Section 7 - "Construction and System Start-up."

C. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1.

1.8 COORDINATION

A. Coordinate sizes and locations of concrete bases with actual equipment provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork are specified in Section 033000 "Cast-in-Place Concrete."

B. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of split-system air-conditioning units that fail in materials or workmanship within specified warranty period.

1. Warranty Period:

a. For Compressor: Five year(s) from date of Substantial Completion.
b. For Parts: Five year(s) from date of Substantial Completion.
c. For Labor: One year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Carrier Corporation; Home Comfort and HVAC Building & Industrial Systems.
2. Coleman Company Inc. (The).
3. First Operations LP.
4. Friedrich Air Conditioning Company.
5. Koldwave, Inc.; a Mestek company.
6. Lennox International Inc.
7. Mitsubishi Electric & Electronics USA, Inc.; HVAC Advanced Products Division.
8. Mitsubishi Electric Sales Canada Inc.
9. Mitsubishi Heavy Industries America, Inc.
10. SANYO North America Corporation; SANYO Fisher Company.
11. Trane; a business of American Standard companies.
12. YORK; a Johnson Controls company.

2.2 INDOOR UNITS (5 TONS OR LESS)

A. Concealed Evaporator-Fan Components:

1. Chassis: Galvanized steel with flanged edges, removable panels for servicing, and insulation on back of panel.
2. Insulation: Faced, glass-fiber duct liner.
3. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and thermal-expansion valve. Comply with ARI 206/110.
4. Water Coil: Copper tube, with mechanically bonded aluminum fins spaced no closer than 0.1 inch ; leak tested to 300 psig underwater; with a two-position control valve.
5. Electric Coil: Helical, nickel-chrome, resistance-wire heating elements; with refractory ceramic support bushings, automatic-reset thermal cutout, built-in magnetic contactors, manual-reset thermal cutout, airflow proving device, and one-time fuses in terminal box for overcurrent protection.
6. Fan: Forward-curved, double-width wheel of galvanized steel; directly connected to motor.
7. Fan Motors:
    a. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
    b. Multitapped, multispeed with internal thermal protection and permanent lubrication.
    c. Wiring Terminations: Connect motor to chassis wiring with plug connection.
8. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.
9. Filters: Permanent, cleanable.
10. Condensate Drain Pans:

a. Fabricated with two percent slope in at least two planes to collect condensate from cooling coils (including coil piping connections, coil headers, and return bends) and humidifiers, and to direct water toward drain connection.

1) Length: Extend drain pan downstream from leaving face to comply with ASHRAE 62.10
2) Depth: A minimum of 2 inches deep.

b. Double-wall, galvanized-steel sheet with space between walls filled with foam insulation and moisture-tight seal.
c. Drain Connection: Located at lowest point of pan and sized to prevent overflow. Terminate with threaded nipple on both ends of pan.

d. Pan-Top Surface Coating: Asphaltic waterproofing compound.
e. Units with stacked coils shall have an intermediate drain pan to collect condensate from top coil.

B. Floor-Mounted, Evaporator-Fan Components:

1. Cabinet: Enameled steel with removable panels on front and ends in color selected by Architect.

a. Discharge Grille: Steel with surface-mounted frame.
b. Insulation: Faced, glass-fiber duct liner.
c. Drain Pans: Galvanized steel, with connection for drain; insulated.

2. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and thermal-expansion valve. Comply with ARI 206/110.
3. Electric Coil: Helical, nickel-chrome, resistance-wire heating elements; with refractory ceramic support bushings, automatic-reset thermal cutout, built-in magnetic contactors, manual-reset thermal cutout, airflow proving device, and one-time fuses in terminal box for overcurrent protection.
4. Fan: Direct drive, centrifugal.
5. Fan Motors:

a. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
b. Multitapped, multispeed with internal thermal protection and permanent lubrication.

6. Air Filtration Section:

a. General Requirements for Air Filtration Section:

1) Comply with NFPA 90A.
2) Minimum Arrestance: According to ASHRAE 52.1 and MERV according to ASHRAE 52.2.
3) Filter-Holding Frames: Arranged for flat or angular orientation, with access doors on both sides of unit. Filters shall be removable from one side or lifted out from access plenum.

b. Disposable Panel Filters:

1) Factory-fabricated, viscous-coated, flat-panel type.
2) Thickness: 2 inches.

3) Merv according to ASHRAE 52.2: 13.
4) Frame: Galvanized steel, with metal grid on outlet side, steel rod grid on inlet side, and hinged; with pull and retaining handles.

2.3 INDOOR UNITS (6 TONS (21 kW) OR MORE)

A. Concealed Evaporator-Fan Components:

1. Chassis: Galvanized steel with flanged edges, removable panels for servicing, and insulation on back of panel.
2. Insulation: Faced, glass-fiber duct liner.
3. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and thermal-expansion valve. Comply with ARI 206/110.
4. Water Coil: Copper tube, with mechanically bonded aluminum fins spaced no closer than 0.1 inch (2.5 mm); leak tested to 300 psig (2070 kPa) underwater; with a two-position control valve.
5. Electric Coil: Helical, nickel-chrome, resistance-wire heating elements; with refractory ceramic support bushings, automatic-reset thermal cutout, built-in magnetic contactors, manual-reset thermal cutout, airflow proving device, and one-time fuses in terminal box for overcurrent protection.
6. Fan: Forward-curved, double-width wheel of galvanized steel; directly connected to motor.
7. Fan Motors:

    a. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
    b. Multitapped, multispeed with internal thermal protection and permanent lubrication.
    c. Three-phase, permanently lubricated, ball-bearing motors with built-in thermal-overload protection.
    d. Wiring Terminations: Connect motor to chassis wiring with plug connection.

8. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.
9. Filters: 2 inch thick.
10. Condensate Drain Pans:

    a. Fabricated with two percent slope in at least two planes to collect condensate from cooling coils (including coil piping connections, coil headers, and return bends) and humidifiers, and to direct water toward drain connection.

        1) Length: Extend drain pan downstream from leaving face to comply with ASHRAE 62.1.
        2) Depth: A minimum of 2 inches deep.

    b. Double-wall, stainless-steel sheet with space between walls filled with foam insulation and moisture-tight seal.
    c. Drain Connection: Located at lowest point of pan and sized to prevent overflow. Terminate with threaded nipple on both ends of pan.

    d. Pan-Top Surface Coating: Asphaltic waterproofing compound.
    e. Units with stacked coils shall have an intermediate drain pan to collect condensate from top coil.

B. Floor-Mounted, Evaporator-Fan Components:

1. Cabinet: Enameled steel with removable panels on front and ends in color selected by Architect.
2. Condensate Drain Pans:

    a. Fabricated with two percent slope in at least two planes to collect condensate from cooling coils (including coil piping connections, coil headers, and return bends) and humidifiers, and to direct water toward drain connection.

        1) Length: Extend drain pan downstream from leaving face to comply with ASHRAE 62.1.
        2) Depth: A minimum of 2 inches deep.

    b. Double-wall, stainless-steel sheet with space between walls filled with foam insulation and moisture-tight seal.
    c. Drain Connection: Located at lowest point of pan and sized to prevent overflow. Terminate with threaded nipple on both ends of pan.

    d. Pan-Top Surface Coating: Asphaltic waterproofing compound.
    e. Units with stacked coils shall have an intermediate drain pan to collect condensate from top coil.

3. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and thermal-expansion valve. Comply with ARI 206/110.
4. Electric Coil: Helical, nickel-chrome, resistance-wire heating elements; with refractory ceramic support bushings, automatic-reset thermal cutout, built-in magnetic contactors, manual-reset thermal cutout, airflow proving device, and one-time fuses in terminal box for overcurrent protection.
5. Fan: Direct drive, centrifugal[, with power-induced outside air].
6. Fan Motors:

    a. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
    b. Multitapped, multispeed with internal thermal protection and permanent lubrication.
    c. Enclosure Type: Totally enclosed, fan cooled.
    d. NEMA Premium (TM) efficient motors as defined in NEMA MG 1.
    e. Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections specified in electrical Sections.
    f. Mount unit-mounted disconnect switches on exterior of unit.

7. Air Filtration Section:

    a. General Requirements for Air Filtration Section:

        1) Comply with NFPA 90A.
        2) Minimum Arrestance: According to ASHRAE 52.1 and a MERV according to ASHRAE 52.2.
        3) Filter-Holding Frames: Arranged for flat or angular orientation, with access doors on both sides of unit. Filters shall be removable from one side or lifted out from access plenum.

C. Variable-Frequency Controllers:

1. Description: NEMA ICS 2, IGBT, PWM, VFC; listed and labeled as a complete unit and arranged to provide variable speed of an NEMA MG 1, Design B, three-phase induction motor by adjusting output voltage and frequency.
2. Output Rating: Three-phase; 6 to 60 Hz, with voltage proportional to frequency throughout voltage range.
3. Unit Operating Requirements:

    a. Input ac voltage tolerance of [208 V, plus or minus 5 percent.
    b. Input-frequency tolerance of 06/11 Hz, plus or minus 6 percent.
    c. Minimum Efficiency: 96 percent at 60 Hz, full load.
    d. Minimum Displacement Primary-Side Power Factor: 96 percent.
    e. Overload Capability: 1.1 times the base load current for 60 seconds; 2.0 times the base load current for 3 seconds.
    f. Starting Torque: 100 percent of rated torque or as indicated.
    g. Speed Regulation: Plus or minus 1 percent.

4. Isolated control interface to allow controller to follow control signal over an 11:1 speed range.
5. Internal Adjustability Capabilities:

    a. Minimum Speed: 5 to 25 percent of maximum rpm.
    b. Maximum Speed: 80 to 100 percent of maximum rpm.
    c. Acceleration: 2 seconds to a minimum of 22 seconds.
    d. Deceleration: 2 seconds to a minimum of 22 seconds.
    e. Current Limit: 50 percent to a minimum of 110 percent of maximum rating.

6. Self-Protection and Reliability Features:

    a. Input transient protection by means of surge suppressors.
    b. Undervoltage and overvoltage trips; inverter overtemperature, overload, and overcurrent trips.
    c. Notch filter to prevent operation of the controller-motor-load combination at a natural frequency of the combination.
    d. Instantaneous line-to-line and line-to-ground overcurrent trips.
    e. Loss-of-phase protection.
    f. Reverse-phase protection.
    g. Short-circuit protection.
    h. Motor overtemperature fault.

7. Automatic Reset/Restart: Attempts three restarts after controller fault or on return of power after an interruption and before shutting down for manual reset or fault correction. Bidirectional autospeed search shall be capable of starting into rotating loads, spinning in either direction and returning motor to set speed in proper direction, without damage to controller, motor, or load.
8. Power-Interruption Protection: Prevents motor from re-energizing after a power interruption until motor has stopped.
9. Torque Boost: Automatically varies starting and continuous torque to at least 1.5 times the minimum torque to ensure high-starting torque and increased torque at slow speeds.
10. Motor Temperature Compensation at Slow Speeds: Adjustable current fall-back, based on output frequency for temperature protection of self-cooled, fan-ventilated motors at slow speeds.
11. Door-mounted, digital status lights shall indicate the following conditions:

    a. Power on.
    b. Run.

c. Overvoltage.
d. Line fault.
e. Overcurrent.
f. External fault.

12. Panel-Mounted Operator Station: Start-stop and auto-manual selector switches with manual-speed-control potentiometer and elapsed-time meter.
13. Meters or digital readout devices and selector switch, mounted flush in controller door and connected, to indicate the following controller parameters:

a. Output frequency (Hertz).
b. Motor speed (rpm).
c. Motor status (running, stop, fault).
d. Motor current (amperes).
e. Motor torque (percent).
f. Fault or alarming status (code).
g. Proportional-integral-derivative feedback signal (percent).
h. DC-link voltage (volts dc).
i. Set-point frequency (Hertz).
j. Motor output voltage (volts).

14. Control Signal Interface:

a. Electric Input Signal Interface: A minimum of two analog inputs (0 to 10 V or 0/4-20 mA) and six programmable digital inputs.
b. Remote signal inputs capable of accepting any of the following speed-setting input signals from the control system:

1) 0 to 10-V dc.
2) 0-20 or 4-20 mA.
3) Potentiometer using up/down digital inputs.
4) Fixed frequencies using digital inputs.
5) RS485.
6) Keypad display for local hand operation.

c. Output signal interface with a minimum of one analog output signal (0/4-20 mA), which can be programmed to any of the following:

1) Output frequency (Hertz).
2) Output current (load).
3) DC-link voltage (volts dc).
4) Motor torque (percent).
5) Motor speed (rpm).
6) Set-point frequency (Hertz).

d. Remote indication interface with a minimum of two dry circuit relay outputs (120-V ac, 1 A) for remote indication of the following:

1) Motor running.
2) Set-point speed reached.
3) Fault and warning indication (overtemperature or overcurrent).
4) High- or low-speed limits reached.

15. Communications: RS485 interface allows VFC to be used with an external system within a multidrop LAN configuration. Interface shall allow all parameter settings of VFC to be programmed via BMS control. Provide capability for VFC to retain these settings within the nonvolatile memory.
16. Integral Disconnecting Means: NEMA AB 1, instantaneous-trip circuit breaker with lockable handle.
17. Accessories:

    a. Devices shall be factory installed in controller enclosure unless otherwise indicated.
    b. Push-Button Stations, Pilot Lights, and Selector Switches: NEMA ICS 2, heavy-duty type.
    c. Standard Displays:

        1) Output frequency (Hertz).
        2) Set-point frequency (Hertz).
        3) Motor current (amperes).
        4) DC-link voltage (volts dc).
        5) Motor torque (percent).
        6) Motor speed (rpm).
        7) Motor output voltage (volts).

2.4 OUTDOOR UNITS (5 TONS OR LESS)

A. Air-Cooled, Compressor-Condenser Components:

1. Casing: Steel, finished with baked enamel in color selected by Architect, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.
2. Compressor: Hermetically sealed with crankcase heater and mounted on vibration isolation device. Compressor motor shall have thermal- and current-sensitive overload devices, start capacitor, relay, and contactor.

    a. Compressor Type: Scroll.
    b. Two-speed compressor motor with manual-reset high-pressure switch and automatic-reset low-pressure switch.
    c. Refrigerant Charge: R-410A.
    d. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and liquid subcooler. Comply with ARI 206/110.

3. Heat-Pump Components: Reversing valve and low-temperature-air cutoff thermostat.
4. Fan: Aluminum-propeller type, directly connected to motor.
5. Motor: Permanently lubricated, with integral thermal-overload protection.
6. Low Ambient Kit: Permits operation down to 45 deg F.
7. Mounting Base: Polyethylene.

2.5 OUTDOOR UNITS (6 TONS OR MORE)

A. Air-Cooled, Compressor-Condenser Components:

1. Casing: Steel, finished with baked enamel in color selected by Architect, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.
2. Compressor: Hermetically sealed with crankcase heater and mounted on vibration isolation device. Compressor motor shall have thermal- and current-sensitive overload devices, start capacitor, relay, and contactor.

    a. Compressor Type: Scroll.
    b. Two-speed compressor motor with manual-reset high-pressure switch and automatic-reset low-pressure switch.
    a. Refrigerant Charge: R-410A.
    b. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and liquid subcooler. Comply with ARI 206/110.

3. Heat-Pump Components: Reversing valve and low-temperature-air cutoff thermostat.
4. Fan: Aluminum-propeller type, directly connected to motor.
5. Motor: Permanently lubricated, with integral thermal-overload protection.
6. Low Ambient Kit: Permits operation down to 45 deg F.
7. Mounting Base: Polyethylene.

2.6 ACCESSORIES

A. Control equipment and sequence of operation are specified in Section 230900 "Instrumentation and Control for HVAC" and Section 230993 "Sequence and Operations for HVAC Controls."

B. Thermostat: Low voltage with subbase to control compressor and evaporator fan.

C. Thermostat: Wireless infrared functioning to remotely control compressor and evaporator fan, with the following features:

1. Compressor time delay.
2. 24-hour time control of system stop and start.
3. Liquid-crystal display indicating temperature, set-point temperature, time setting, operating mode, and fan speed.
4. Fan-speed selection including auto setting.

D. Automatic-reset timer to prevent rapid cycling of compressor.

E. Refrigerant Line Kits: Soft-annealed copper suction and liquid lines factory cleaned, dried, pressurized, and sealed; factory-insulated suction line with flared fittings at both ends.

F. Drain Hose: For condensate.

G. Additional Monitoring:

1. Monitor constant and variable motor loads.
2. Monitor variable-frequency-drive operation.
3. Monitor economizer cycle.
4. Monitor cooling load.
5. Monitor air distribution static pressure and ventilation air volumes.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install units level and plumb.

B. Install evaporator-fan components using manufacturer's standard mounting devices securely fastened to building structure.

C. Install roof-mounted, compressor-condenser components on equipment supports specified in Section 077200 "Roof Accessories." Anchor units to supports with removable, cadmium-plated fasteners.

D. Equipment Mounting:

1. Install ground-mounted, compressor-condenser components on cast-in-place concrete equipment base(s).
2. Install ground-mounted, compressor-condenser components on polyethylene mounting base.
3. Comply with requirements for vibration isolation and seismic control devices specified in Section 230548 "Vibration and Seismic Controls for HVAC."
4. Comply with requirements for vibration isolation devices specified in Section 230548.13 "Vibration Controls for HVAC."

E. Install and connect precharged refrigerant tubing to component's quick-connect fittings. Install tubing to allow access to unit.

3.2 CONNECTIONS

A. Piping installation requirements are specified in other Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

1. Water Coil Connections: Comply with requirements specified in Section 232113 "Hydronic Piping" and Section 232116 Hydronic Piping Specialties." Connect hydronic piping to supply and return coil connections with shutoff-duty valve and union or flange on the supply connection and with throttling-duty valve and union or flange on the return connection.
2. Remote, Water-Cooled Condenser Connections: Comply with requirements specified in Section 232113 "Hydronic Piping" and Section 232116 Hydronic Piping Specialties." Connect hydronic piping to supply and return connections with shutoff-duty valve and union or flange on the supply connection and with throttling-duty valve and union or flange on the return connection.

B. Where piping is installed adjacent to unit, allow space for service and maintenance of unit.

C. Duct Connections: Duct installation requirements are specified in Section 233113 "Metal Ducts." Drawings indicate the general arrangement of ducts. Connect supply and return ducts to split-system air-conditioning units with flexible duct connectors. Flexible duct connectors are specified in Section 233300 "Air Duct Accessories."

3.3 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

B. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

C. Tests and Inspections:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Remove and replace malfunctioning units and retest as specified above.

E. Prepare test and inspection reports.

3.4 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain units.

END OF SECTION 23 81 26

Division 26

Electrical

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SECTION 26 00 10
BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.01 GENERAL

A. Basic Requirements: The Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

B. General Provisions: Provide all labor, materials, equipment, and incidentals required to make ready for use complete electrical systems as specified herein and shown on the drawings.

C. Provide and Install: The word "provide" where used on the Drawings or in the Specifications shall mean "furnish, install, mount, connect, test, complete, and make ready for operation". The word "install" where used on the Drawings or in the Specifications shall mean "mount, connect, test, complete, and make ready for operation". Perform work required by, and in accordance with, the Contract Documents.

D. Installation: Provide and place in satisfactory condition, ready for proper operation, raceways, wires, cables, and other material needed for all complete electrical systems required by the Contract Documents. Additional raceways and wiring shall be provided to complete the installation of the specific equipment provided. Include auxiliaries and accessories for complete and properly operating systems. Provide electrical systems and accessories to comply with the NEC, state and local codes and ordinances. It is the intent of these Specifications that the electrical systems be suitable in every way for the use intended. Material and work which is incidental to the work of this Contract shall be provided at no additional cost to the Contract.

E. Field Connections: Provide field connections to remote equipment and control panels provided under other Divisions of these Specifications. Provide raceway, wire, and interconnections between equipment, transmitters, local indicators, and receivers. Provide 120V and low voltage surge protection equipment in accordance with Section 26 43 13 at equipment as required. Install field connections to "packaged" equipment provided under other Divisions of these Specifications.

1.02 SCOPE OF WORK

A. General: Provide labor, materials, permits, inspections and re-inspection fees, tools, equipment, transportation, insurance, temporary protection, temporary power and lighting, supervision and incidental items essential for proper installation and operation of the Electrical systems indicated in the Contract Documents. Provide materials not specifically mentioned or indicated but which are usually provided or are essential for proper installation and operation of the Electrical systems indicated in the contract documents.

B. Notices: Give notices, file Plans, pay fees, and obtain permits and approvals from authorities having jurisdiction. Include all fees in the Bid Price.

1.03 INTERPRETATION OF DRAWINGS

A. General: The Drawings are diagrammatic and are not intended to show exact locations of Raceway runs, outlet boxes, junction boxes, pull boxes, etc. The locations of equipment, appliances, fixtures, Raceways, outlets, boxes and similar devices shown on the Drawings are

approximate only. Exact locations shall be determined and coordinated in the field. The right is reserved to change, without additional cost, the location of any outlet within the same room or general area before it is permanently installed. Obtain all information relevant to the placing of electrical work and in case of interference with other work, proceed as directed by the Architect.

B. Discrepancies: Notify the Architect of any discrepancies found during construction of the project. The Architect will provide written instructions as to how to proceed with that portion of work. If a conflict exists between the Contract Documents and an applicable code or standard, the most stringent requirement shall apply.

C. Wiring: Each three-phase circuit shall be run in a separate Raceway unless otherwise shown on the Drawings. Unless otherwise accepted by the Architect, Raceway shall not be installed exposed. Where circuits are shown as "home-runs" all necessary fittings, supports, and boxes shall be provided for a complete raceway installation.

D. Layout: Circuit layouts are not intended to show the number of fittings, or other installation details. Connections to equipment shall be made as required, and in accordance with the accepted shop and manufacturer's setting drawings.

E. Coordination: Coordinate final equipment locations with drawings or other disciplines. Layout before installation so that all trades may install equipment in available space. Provide coordination as required for installation in a neat and workmanlike manner.

1.04 EQUIPMENT SIZE AND HANDLING

A. Coordination: Investigate each space in the structure through which equipment must pass to reach its final location. If necessary, ship the equipment in sections of specific sizes to permit the passing through the necessary areas within the structure.

B. Handling: Equipment shall be kept upright at all times. When equipment has to be tilted for ease of passage through restricted areas during transportation, the manufacturer shall be required to brace the equipment suitably, to insure that the tilting does not impair the functional integrity of the equipment.

1.05 RECORD DRAWINGS

A. Production: The Contractor shall provide two (2) sets of black or blue line on white drawings to maintain and submit record "As-Built Documents". Label each sheet of the Record Document set with “Project Record Documents” with company name of the installing contractor in stamped or printed letters. One set shall be maintained at the site and at all times be accurate, clear, and complete. These drawings shall be available at all times to the Architect's field representatives.

B. Recording: Record information concurrent with construction progress. Make entries within 24 hours upon receipt of information. The "As-Built" drawings shall accurately reflect installed electrical work specified or shown on the Contract Documents.

C. Completion: At the completion of the Work, transfer changes with a colored pencil onto the second set and submit to the Architect. The "As-Built" drawings shall be made available to the Architect to make the substantial completion punch list.

D. Final: Upon Contractor's completion of the Engineer's final punch list, transfer all "As-Built" conditions and all requirements by the Engineer to a reproducible set of drawings and CAD files. Submit drawings and CAD disks for review and acceptance. The Contractor shall provide updated disks which include final As-Built conditions.

1.06 ABBREVIATIONS

A. Abbreviations: The following abbreviations or initials may be used:

A/C	Air Conditioning
AC	Alternating Current
ABV CLG	Above Ceiling
ADA	Americans with Disabilities Act
AF	Ampere Frame
AFF	Above Finished Floor
AFG	Above Finished Grade
AHU	Air Handler Unit
AIC	Amps Interrupting Capacity
AL	Aluminum
AMP	Ampere
ANSI	American National Standards Institute
ASA	American Standards Association
AT	Ampere Trip
ATS	Automatic Transfer Switch
AUX	Auxiliary
AWG	American Wire Gauge
BC	Bare Copper
BIL	Basic Impulse Level
BMS	Building Management System
BRKR or BKR	Breaker
CAB	Cabinet
C	Conduit or Raceway
CB	Circuit Breaker
CBM	Certified Ballast Manufacturers
CCTV	Closed Circuit Television
CKT	Circuit
CLEC	Clock Equipment Cabinet
CLG	Ceiling
CO	Conduit or Raceway Only
COAX	Coaxial Cable
COND	Conductor
CONN	Connection
CPU	Central Processing Unit
CRT	Cathode Ray Terminal (Video display terminal)
CT	Current Transformer
CU	Copper
CW	Cold Water
DC	Direct Current
DDC	Direct Digital Control
DEG	Degree
DISC	Disconnect
DO	Draw Out
DN	Down

DPST	Double Pole Single Throw
EMT	Electrical Metallic Tubing
EO	Electrically Operated
EOL	End of Line Resistor
EWC	Electric Water Cooler
FAAP	Fire Alarm Annunciator Panel
FACP	Fire Alarm Control Panel
FCU	Fan Coil Unit
FLA	Full Load Amperes
FM	Factory Mutual
GF	Ground Fault
GFCI	Ground Fault Circuits Interrupter
GND	Ground
HOA	Hand-Off-Automatic
HORIZ	Horizontal
HP	Horsepower
IC	Intercom
ICU	Intensive Care Unit
IEEE	Institute of Electrical and Electronic Engineers
IES	Illuminating Engineering Society
IMC	Intermediate Metallic Raceway
IN	Inches
IT	Instantaneous Trip
IPCEA	Insulated Power Cable Engineers Association
JB	Junction Box
KCMIL	Thousand Circular Mills
KV	Kilovolt
KVA	Kilo-Volt-Amps
KW	Kilowatts
LBS	Pounds
LED	Light Emitting Diode
LT	Light
LTD	Long Time Delay
LTT	Long Time Trip
LTG	Lighting
MAX	Maximum
MCB	Main Circuit Breaker
MCC	Motor Control Center
MCP	Motor Circuit Protector
MIC	Microphone
MIN	Minimum
MLO	Main Lugs Only
MTD	Mounted
MTG	Mounting
MUX	Multiplex (Transponder) Panel
MVA	Mega Volt Amps
N	Neutral
NC	Normally Closed
NEC	National Electrical Code
NECA	National Electrical Contractors Association
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NIC	Not in Contract

NF	Non Fused
NL	Non Linear
NO	Number or Normally Open
#	Number
Ø	Phase
OL	Overload
OSHA	Occupational Safety and Health Administration
P	Pole
PB	Pullbox
PIV	Post Indicator Valve
PNL	Panel
PR	Pair
PWR	Power
PF	Power Factor
PRI	Primary
PT	Potential Transformer
PVC	Polyvinylchloride
REF	Refrigerator
RGC or GRC	Rigid Galvanized Raceway
RMS	Root-Mean-Square
RPM	Revolutions Per Minute
RECPT	Receptacle
SCA	Short Circuit Amps
SD	Smoke Detector
SEC	Secondary
S/N	Solid Neutral
SPKR	Speaker
SPST	Single Pole Single Throw
SST	Solid State Trip
ST	Short Time Trip
STD	Short Time Delay
SW	Switch
SWGR	Switchgear
SWBD	Switchboard
TEL	Telephone
TTB	Telephone Terminal Board
TTC	Telephone Terminal Cabinet
TVEC	Television Equipment Cabinet
TYP	Typical
UL	Underwriters Laboratories
UON	Unless Otherwise Noted
V	Volt
VFD	Variable Frequency Drive
VSD	Variable Speed Drive
W	Wire
WP	Weatherproof
XFMR	Transformer

1.07 CODES, FEES, AND STANDARDS

A. Application: The codes, standards and practices listed herein generally apply to the entire project and specification sections. Other codes, standards or practices that are more specific will be referenced within a particular specification.

B. Requirements: All materials and types of construction covered in the specifications will be required to meet or exceed applicable standards of manufacturer, testing, performance, and installation according to the requirements of UL, ANSI, NEMA, IEEE, and NEC referenced documents where indicated and the manufacturer's recommended practices. Requirements indicated on the contract documents that exceed but are not contrary to governing codes shall be followed.

C. Compliance and Certification: The installation shall comply with the governing state and local codes or ordinances. The completed electrical installation shall be inspected and certified by applicable agencies that it is in compliance with codes.

D. Applicability: The codes and standards and practices listed herein, and their respective dates are furnished as the minimum latest requirements.

1. State of Florida.
2. Brevard County.
3. City of Melbourne.

E. Utility Company: Comply with latest utility company regulations.

F. Building Code: Florida Building Code (7th Edition, 2020).

G. Labels: Materials and equipment shall be new and free of defects, and shall be U.L. listed, bear the U.L. label or be labeled or listed with an approved, nationally recognized Electrical Testing Agency. Where no labeling or listing service is available or desired for certain types of equipment, test data shall be submitted to validate that equipment meets or exceeds available standards.

H. NFPA: National Fire Protection Association (NFPA) Standards

NFPA-1	Uniform Fire Code™
NFPA-13	Standard for the Installation of Sprinkler Systems
NFPA-54	National Fuel Gas Code
NFPA-70	National Electrical Code
NFPA-72	National Fire Alarm Code
NFPA-90A	Standard for the Installation of Air Conditioning and Ventilating Systems
NFPA-96	Standard for Ventilation Control and Fire Prevention of Commercial Cooking Operations. Subdivision 7-2.2 of NFPA 96 applies prospectively only. Existing installations are permitted to remain in place – subject to the approval of the authority having jurisdiction
NFPA-101A	Guide on Alternative Approaches to Life Safety
NFPA-101B	Standard on Means of Egress for Buildings and Structures
NFPA-110	Standard for Emergency and Standby Power Systems
NFPA-780	Installation of Lightning Protection Systems

I. AIA Guidelines, 2006 Edition

1.08 INVESTIGATION OF SITE

A. General: Before commencing work, verify existing conditions at the premises including, but not limited to, existing structural frame, existing openings; existing wall and partition locations, existing mechanical and electrical work, equipment type, and examine adjoining work on which work is in anyway dependent.

B. Responsibility: No waiver of responsibility for defective and inadequate work or additional cost as a result of existing conditions which should have been verified shall be considered unless notice of same has been filed by the Contractor and agreed to in writing by the Architect before the bid date.

C. Site Renovation: Verify and coordinate existing site raceways and pipes at any excavation on site. Provide hand-digging and required rerouting in areas of existing Raceways and pipes within bid price.

D. Renovation: Investigate site thoroughly and reroute raceway and wiring in area of new construction in order to maintain continuity of existing circuitry. Existing Raceways shown on plans show approximate locations only.

E. Special Considerations: Special attention is called to the fact that there will be piping, fixtures or other items in the existing building which must be removed or relocated in order to perform the alteration work. Include removal and relocation required for completion of the alterations and the new construction. All existing wiring that is to remain in renovated areas shall be made code compliant.

F. Power Outage: Special attention is called to the fact that work involved is in connection with existing buildings which shall remain in operation while work is being performed. Work must be done in accordance with the priority schedule. Schedule work for a minimum outage to Owner. Request written permission and receive written acceptance from the Owner no later than 72 hours in advance of power and communication shut-downs. Perform work required at other than standard working hours where outages cannot be accepted by Owner during regular working hours. Protect existing buildings and equipment during construction.

1.09 SUPERVISION OF THE WORK

A. Supervision: Provide one field superintendent who has had a minimum of four (4) years previous successful experience on projects of comparable sizes, type and complexity. The Superintendent shall be present at all times when work is being performed. At least one member of the Electrical Contracting Firm shall hold a State Master Certificate of Competency.

1.10 COORDINATION

A. General: Compare drawings and specifications with those of other trades and report any discrepancies between them to the Architect. Obtain from the Architect written instructions to make the necessary changes in any of the affected work. Work shall be installed in cooperation with other Trades installing interrelated work. Before installation, Trades shall make proper provisions to avoid interferences in a manner approved by the Architect.

B. Provide all required coordination and supervision where work connects to or is affected by work of others, and comply with all requirements affecting this Division. Work required under other divisions, specifications or drawings to be performed by this Division shall be coordinated with the Contractor and such work performed at no additional cost to Owner including but not limited to electrical work required for:

1. Door hardware
2. Roll-up doors
3. Roll-up grilles
4. Signage
5. Fire shutters
6. Sliding or automatic doors
7. Mechanical Division of the Specifications
8. Landscape Architect drawings
9. Lifts
10. Millwork design drawings and shop drawings

C. Obtain set of Contract Documents from Owner's Authorized Representative or Contractor for all areas of work noted above and include all electrical work in bid whether included in Division 26 Contract Documents or not.

D. Secure approved shop drawings from all required disciplines and verify final electrical characteristics before roughing power feeds to any equipment. When electrical data on approved shop drawings differs from that shown or called for in Construction Documents, make adjustments to the wiring, disconnects, and branch circuit protection to match that required for the equipment installed.

E. Damage from interference caused by inadequate coordination shall be corrected at no additional cost to the Owner.

F. Adjustments: Locations of raceway and equipment shall be adjusted to accommodate the work with interferences anticipated and encountered. Determine the exact routing and location of systems prior to fabrication or installation.

G. Priorities: Lines which pitch shall have the right of way over those which do not pitch. For example, plumbing drains shall normally have the right of way. Lines whose elevations cannot be changed shall have the right of way over lines whose elevations can be changed.

H. Modifications: Offsets and changes of direction in raceway systems shall be made to maintain proper headroom and pitch of sloping lines whether or not indicated on the drawings. Provide elbows, boxes, etc., as required to allow offsets and changes to suit job conditions.

I. Replacement: Work shall be installed in a way to permit removal (without damage to other parts) of other system components provided under this Contract requiring periodic replacement or maintenance. Raceway shall be arranged in a manner to clear the openings of swinging overhead access doors as well as ceiling tiles.

J. Layout: The Contract Drawings are diagrammatic only intending to show general runs and locations of raceway and equipment, and not necessarily showing required offsets, details and accessories and equipment to be connected. Work shall be accurately laid out with other Trades to avoid conflicts and to obtain a neat and workmanlike installation, which will afford maximum accessibility for operation, maintenance and headroom.

K. Contract Conflicts: Where discrepancies exist in the Scope of Work as to what Trade provides items such as starters, disconnects, flow switches, etc. such conflicts shall be coordinated between the divisions involved. It is the intent of the Contract Documents that all work shall be provided complete as one bid price.

L. Drawing Conflicts: Where drawing details, plans or specification requirements are in conflict and where sizes of the same item run are shown to be different within the contract documents, the most stringent requirement shall be included in the Contract. Systems and equipment called for in the specification or as shown on the drawings shall be provided as if it was required by both the drawings and specifications. Prior to ordering or installation of any portion of work, which appears to be in conflict, such work shall be brought to Architect's attention for direction as to what is to be provided.

M. It is the responsibility of this Contractor to coordinate the exact required location of floor outlets, floor ducts, floor stub-ups, etc. with Owner's Authorized Representative and Designer (and receive their approval) prior to rough-in. Locations indicated in Contract Documents are only approximate locations.

N. The Contract Documents describe specific sizes of switches, breakers, fuses, Raceways, conductors, motor starters and other items of wiring equipment. These sizes are based on specific items of power consuming equipment (heaters, lights, motors for fans, compressors, pumps, etc.). Coordinate the requirements of each load with each load's respective circuitry shown and with each load's requirements as noted on its nameplate data and manufacturer's published electrical criteria. Adjust circuit breaker, fuse, Raceway, and conductor sizes to meet the actual requirements of the equipment being provided and installed and change from single point to multiple points of connection (or vice versa) to meet equipment requirements. Changes shall be made at no additional cost to the Owner.

O. Working Clearances: Minimum working clearances about electrical equipment shall be as referenced in the applicable edition NEC Article 110, and shall include equipment installed in ceiling spaces.

1.11 DEMOLITION

A. General: Relocate existing equipment and reroute existing raceways in areas being renovated as required to facilitate the installation of the new systems. The Owner shall require continuous operation of the existing systems, while demolition, relocation work or new tie-ins are performed.

B. Coordination: Prior to any deactivation, relocation or demolition work, arrange a conference with the Architect and the Owner's representative in the field to inspect each of the items to be deactivated, removed or relocated. Care shall be taken to protect equipment designated as being relocated and reused or equipment remaining in operation and integrated with the new systems.

C. Provisions: Deactivation, relocation, and temporary tie-ins shall be provided by the Contractor. Demolition, removal and the legal disposal of demolished materials shall be provided by the Contractor.

D. Owner's Salvage: The Owner reserves the right to inspect the material scheduled for removal and salvage any items he deems usable as spare parts.

E. Phasing: The Contractor shall perform work in phases as directed by the Architect to suit the project progress schedule, as well as the completion date of the project.

1.12 COORDINATION STUDY

A. Specified Manufacturers: All panelboard and circuit breakers shall be of the manufacturer and type specified herein, and as indicated on the drawings or the Coordination Study. Any discrepancies or conflicts in specified equipment shall be brought to the attention of the engineer during bid, for formal clarification.

B. Substitutions: Alternate manufacturers listed will be considered under the following conditions:

1. Written approval of the Owner to consider alternate manufacturer.
2. Ability of alternate manufacturer to meet the requirements of the Construction Documents.
3. Alternate equipment selection shall provide selective overcurrent device coordination, including coordination with existing equipment.
4. Submission of coordination plots, showing proper selective coordination of proposed equipment for reference and review. Provide coordination plots for all distribution branches indicated on Construction Documents.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Specified Method: Where several brand names, make or manufacturers are listed as acceptable each shall be regarded as equally acceptable, based on the design selection but each must meet all specification requirements. Where a manufacturer's model number is listed, this model shall set the standard of quality and performance required. Where no brand name is specified, the source and quality shall be subject to Engineer's review and acceptance. Where manufacturers are listed, one of the listed manufacturers shall be submitted for acceptance. No substitutions are permitted.

B. Certification: When a product is specified to be in accordance with a trade association or government standard requested by the Engineer, Contractor shall provide a certificate that the product complies with the referenced standard. Upon request of Engineer, Contractor shall submit supporting test data to substantiate compliance.

C. Basis of Bid: Each bidder represents that his bid is based upon the manufacturer's, materials, and equipment described in the Contract Documents.

D. Space Requirements: Equipment or optional equipment shall conform to established space requirements within the project. Equipment which does not meet space requirements, shall be replaced at no additional expense to the Contract. Modifications of related systems shall be made at no additional expense to the Contract. Submit modifications to the Architect/Engineer for acceptance.

E. Samples: Samples are to be submitted for items requested within Specification Sections to determine that the item meets specifications and requirements before being accepted for use on Project. Samples shall be submitted within 30 days after the award of the contract. Each sample

shall be tagged, labeled, or marked, "Sample of ..... for (Project). Accompany samples with copy, in duplicate of manufacturer's instructions regarding installation, and maintenance.

2.02 SHOP DRAWINGS

A. General: Shop drawings shall be submitted for every item listed within the Submittals section each individual specification section. One copy shall be submitted to the engineer prior to ordering equipment. Refer to Basis of approval paragraph.

B. Responsibility: It is the Contractors responsibility to provide material in accordance with the plans and specifications. Material not provided in accordance with the plans and specifications shall be removed and replaced at the Contractors expense.

C. Official Record: The shop drawing submittal shall become the official record of the materials to be installed. If materials are installed which do not correspond to the record submittal they shall be removed from the project without any additional cost or delays in construction completion.

D. Information: The shop drawing record submittal shall include the following information to the extent applicable to the particular item;

1. Manufacturer's name and product designation or catalog number.
2. Standards or specifications of ANSI, ASTM, ICEA, IEEE, ISA, NEMA, NFPA, OSHA, UL, or other organizations, including the type, size, or other designation.
3. Dimensioned plan, sections, and elevations showing means for mounting, raceway connections, and grounding, and showing layout of components.
4. Materials and finish specifications, including paints.
5. List of components including manufacturer's names and catalog numbers.
6. Internal wiring diagram indicating connections to components and the terminals for external connections.
7. Manufacturer's instructions and recommendations for installation, operation, and maintenance.
8. Manufacturer's recommended list of spare parts.
9. Provide 1/2” = 1’-0” enlarged electrical room layout drawings for all electrical rooms. All equipment shall be indicated at actual size of equipment being provided. All dimensions and required working clearances shall be shown.

E. Coordination Study: This project has been designed and coordinated (electrical distribution system) utilizing the specified manufacturer(s).

F. Preparation: Prior to submittal, shop drawings shall be checked for accuracy and contract requirements. Shop drawings shall bear the date checked and shall be accompanied by a statement that the shop drawings have been examined for conformity to Specifications and Drawings. This statement shall also list discrepancies with the Specifications and Drawings. Shop drawings not so checked and noted shall be returned to Contractor unreviewed.

G. Basis of Review: Approval is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Contractor is responsible for quantities, dimensions, fabrication processes, and construction techniques.

H. Responsibility: The responsibility that dimensions are confirmed and correlated with proper coordination of other trades shall be included as part of the Contract Documents. The responsibility and the necessity of providing materials and workmanship required by the

Specifications and Drawings which may not be indicated on the shop drawings shall be included as part of the Contract Documents. The Contractor is responsible for any delays in job progress occurring directly or indirectly from late submissions or re-submissions of shop drawings, product data, or samples.

I. Ordering Equipment: No material shall be ordered or shop work started until the Engineer has officially received the shop drawings record submittal and has formally released the Contractor for submittal requirements.

J. Brochure Requirements: Submit Technical Information Brochures at the start of construction or no later than 30 days after Award of the Contract. Each brochure shall consist of an adequately sized, hardcover, 3-ring binder for 8-1/2" X 11" sheets. Provide correct designation on outside cover and on end of brochure. When one binder is not enough to adequately catalog all data, an additional binder shall be submitted.

K. Brochure Contents: First sheet in the brochure shall be a photocopy of the Electrical Index pages in these specifications. Second sheet shall be a list of Project Addresses for this project. Third sheet shall list Project Information. Provide reinforced separation sheets tabbed with the appropriate specification reference number and typed index for each section in the Electrical Schedule. Technical Information consisting of marked catalog sheets or shop drawings shall be inserted in the brochure in proper order on all items specified and shown on drawings. At the end of the brochure, provide and insert a copy of the specifications for this Division and all addenda applicable to this Division.

L. Contractor's Review: Review the brochures before submitting to the Engineer. No request for payment shall be considered until the brochure has been reviewed, stamped and submitted for review.

M. Cost: Submit cost breakdown on work in the Technical Information Brochures. The cost of material and labor for each item shall be indicated. The cost of fittings and incidentals are not required.

N. Title Drawings: Title drawings to include identification of project and names of Architect-Engineer, Engineer, Contractors, and/or supplier, data, number sequentially and indicate in general;

1. Fabrication and Erection dimensions.
2. Arrangements and sectional views.
3. Necessary details, including complete information for making connections with other work.
4. Kinds of materials and finishes.
5. Descriptive names of equipment.
6. Modifications and options to standard equipment required by the contract.
7. Leave blank area, size approximately 4 by 2-1/2 inches, near title block (for Engineer's stamp imprint).
8. In order to facilitate review of shop drawings, they shall be noted, indicating by cross-reference the contract drawings, notes, and specification paragraph numbers where items occur in the contract documents.
9. See specific sections of specifications for further requirements.

O. Technical Data: Submit technical data verifying that the item submitted complies with the requirements of the specifications. Technical data shall include manufacturer's name and model number, dimensions, weights, electrical characteristics, and clearances required. Indicate optional equipment and changes from the standard item as called for in the specifications.

Provide drawings, or diagrams, dimensioned and in correct scale, covering equipment, showing arrangement of components and overall coordination.

P. Same Manufacturer: In general, relays, contactors, starters, motor control centers, switchboards, panelboards, dry type transformers, disconnect switches, circuit breakers, manual motor starter switches, etc., shall be supplied and manufactured by the same manufacturer. This requirement shall apply to same type of electrical components specified in other Divisions.

2.03 EQUIPMENT, MATERIALS, AND SUPPORTS

A. General: Each item of equipment or material shall be manufactured by a company regularly engaged in the manufacturer of the type and size of equipment, shall be suitable for the environment in which it is to be installed, shall be approved for its purpose, environment, and application, and shall bear the UL label.

B. Installation Requirements: Each item of equipment or material shall be installed in accordance with instructions and recommendations of the manufacturer, however, the methods shall not be less stringent than specified herein.

C. Required Accessories: Provide all devices and materials, such as expansion bolts, foundation bolts, screws, channels, angles, and other attaching means, required to fasten enclosures, raceways, and other electrical equipment and materials to be mounted on structures which are existing or new.

D. Protection: Electrical equipment shall at all times during construction be adequately protected against mechanical injury or damage by the elements. Equipment shall be stored in dry permanent shelters. If apparatus has been damaged, such damage shall be repaired at no additional cost or time extension to the Contract. If apparatus has been subject to possible injury, it shall be thoroughly cleaned, dried out and put through tests as directed by the Manufacturer and Engineer, or shall be replaced, if directed by the Engineer, at no additional cost to the Contract.

2.04 IDENTIFICATION OF EQUIPMENT

A. General: Electrical items shall be identified as specified in the Contract Documents. Such identification shall be in addition to the manufacturer's nameplates and shall serve to identify the item's function and the equipment or system, which it serves or controls. Refer to Identification Section of the specifications for additional information.

2.05 CONCRETE PADS

A. General: Provide reinforced concrete pads for floor mounted electrical equipment. Unless otherwise noted, pads shall be nominal four (4) inches high and shall exceed dimensions of equipment being set on them, including future sections, by six (6) inches on all sides, except when equipment is flush against a wall, then the side or sides against the wall shall be flush with the equipment. Chamfer top edges 1/2". Trowel surfaces smooth. Reinforce pads with #5 reinforcing bars at 24" centers each way, unless specifically detailed on drawings.

2.06 SURFACE MOUNTED EQUIPMENT

A. General: Surface mounted fixtures, outlets, cabinets, panels, etc. shall have a factory-applied finish or shall be painted as accepted by Engineer. Raceways and fittings, where allowed to be

installed surface mounted, shall be painted to match the finish on which it was installed. Paint shall be in accordance with other applicable sections of these specifications.

2.07 CUTTING AND PATCHING

A. Core Drilling: The Contractor shall be responsible for core drilling as required for work under this section, but in no case shall the Contractor cut into or weld onto any structural element of the project without the written approval of the Architect.

B. Cutting and Patching: Cutting, rough patching and finish patching shall be provided as specified in the contract documents. Cutting and patching shall be performed in a neat and workmanlike manner. Upon completion, the patched area shall match adjacent surfaces.

C. Openings and Sleeves: Locate openings required for work performed under this section. Provide sleeves, guards or other accepted methods to allow passage of items installed under this section.

D. Roof Penetration: Provide roofer with pitch pans, fittings, etc., required for electrical items which penetrate the roof. Roof penetrations are to be waterproofed in such a manner that roofing guarantees are fully in force. Roof penetrations shall be coordinated with other Trades to ensure that roof warranty is not invalidated.

2.08 SLEEVES AND FORMS FOR OPENINGS

A. Sleeves: Provide sleeves for Raceways penetrating floors, walls, partitions, etc. Locate necessary slots for electrical work and form before concrete is poured. Watertight sleeves shall be line seal type WS. Fire rated partition sleeves shall be mild steel. Sleeves shall be Schedule 40 PVC or galvanized rigid steel unless specifically noted otherwise. Size shall be one standard diameter larger than pipe being installed or of a larger diameter to below 1/4" minimum clearance.

B. Forms: Provide boxed out forms for Raceway penetrations only where allowed by the Architect. Fill opening after Raceway installation, with equivalent material.

2.09 OPERATING AND MAINTENANCE INSTRUCTIONS

A. General: Thoroughly instruct the Owner’s Representative, to the complete satisfaction of the Architect and Engineer, in the proper operation of all systems and equipment provided. The Contractor shall make all arrangements, via the Architect, as to whom the instructions are to be given in the operation of the systems and the period of time in which they are to be given. The Architect shall be completely satisfied that the Owner’s Representative has been thoroughly and completely instructed in the proper operation of all systems and equipment before final payment is made. If the Architect determines that complete and thorough instructions have not been given by the Contractor to the Owner's Representative, then the Contractor shall be directed by the Architect to provide whatever instructions are necessary until the intent of this paragraph of the Specification has been complied with.

B. Submittals: Submit to the Architect for approval five (5) typed sets, bound neatly in loose-leaf binders, of instructions for the installation, operation, care and maintenance of equipment and systems, including instructions for the ordering and stocking of spare parts for equipment installed under this contract. The lists shall include part number and suggested suppliers. Each set shall also include an itemized list of component parts that should be kept on hand and where such parts can be purchased.

C. Information Requirements: Information shall indicate possible problems with equipment and suggested corrective action. The manuals shall be indexed for each type of equipment. Each section shall be clearly divided from the other sections. A sub index for each section shall also be provided.

D. Instructions: The instructions shall contain information deemed necessary by the Architect and include but not limited to the following:

1. Introduction:

   a. Explanation of Manual and its use.
   b. Summary description of the Electrical Systems.
   c. Purpose of systems.

2. System:

   a. Detailed description of all systems.
   b. Illustrations, schematics, block diagrams, catalog cuts and other exhibits.

3. Operations:

   a. Complete detailed, step by step, sequential description of all phases of operation for all portions of the systems, including start up, shutdown and balancing. Include posted instruction charts.

4. Maintenance:

   a. Parts list and part numbers.
   b. Maintenance and replacement charts and the Manufacturer's recommendations for preventive maintenance.
   c. Trouble shooting charts for systems and components.
   d. Instructions for testing each type of part.
   e. Recommended list of on-hand spare parts.
   f. Complete calibration instructions for all parts and entire systems.
   g. General and miscellaneous maintenance notes.

5. Manufacturer's Literature:

   a. Complete listing for all parts.
   b. Names, addresses and telephone numbers.
   c. Care and operation.
   d. All pertinent brochures, illustrations, drawings, cuts, bulletins, technical data, certified performance charts and other literature with the model actually furnished to be clearly and conspicuously identified.
   e. Internal wiring diagrams and Engineering data sheets for all items and/or equipment furnished under each Contract.
   f. Guarantee and warranty data.

2.10 SERVICE AND METERING

A. Company: The utility company serving this project is FPL will be referred to as the Utility Company herein.

B. Service: Make arrangements with the Utility Company for obtaining a complete service. Pay charges and provide labor and material for the service. Service shall be obtained at 208Y/120 volts, 3 phase, 4-wire, 60 hertz from the Utility Company. Provide underground cables and raceways for incoming services from the utility's transformer to equipment

C. Fees: Contact the Utility Company to determine if any fees, charges or costs will be due the Company, as required for temporary power, permanent power, installations, hook-ups, etc. This fee, charge or cost shall be included in the bid price.

D. Payment: Pay for required licenses, fees and inspections. Include costs in the proposed construction cost submission. These costs shall include but not be limited to applicable taxes, permits, necessary notices, certificates and costs required to obtain same.

E. Codes: Install a complete system in accordance with the latest edition of the National Electrical Code and the latest regulations of governing local, State, County and other applicable codes, including the Utility Company requirements.

F. Provide transformer pad per Utility Company requirements.

2.11 TEMPORARY LIGHT AND POWER

A. Capacity: Provide capacity from new temporary service. Make arrangements with the Owner for temporary service and pay all related expenses. Temporary light and power shall be provided constantly during the project dependent upon Owner's safety requirements.

B. Capacity: Make arrangements with the Owner for existing temporary service and pay all related expenses. Temporary light and power shall be provided constantly during the project dependent upon Owner's safety requirements.

C. Lighting: Temporary light shall be based on one 200 watt lamp covering each 1,000 square foot of floor area in the building. Each room 100 square foot and over shall have a minimum of one 100-watt lamp with guards. Provide power for motors up to 3/4 horsepower only. Provisions are to be made for electric welders, if required.

D. Outlets: Provide outlets located at convenient points so that extension cords of not over fifty (50) feet will reach work requiring artificial light or power.

E. Other Connections: Contractors of other trades shall furnish their own cords and sockets, as may be required for their work and shall also pay for cost of temporary wiring of construction offices and shanties used by them.

F. New Fixtures: Permanently installed lighting fixtures may be used for temporary lighting at the Contractor's option with the provision that cool white lamps for fluorescent, clear lamps for incandescent and marked temporary for other types shall be installed. At job completion, lamps shall be replaced with permanent lamps specified.

G. Wiring: Temporary electrical work shall be furnished and installed in conformity with the National Electrical Code and in accordance with the requirements of the local ordinances and shall be maintained in a workmanlike manner throughout their entire construction period and shall be removed after installation of the permanent electrical systems. Extension cords shall be GFCI protected or shall be fed from GFCI circuit breakers.

H. Payment: The Contractor will pay for the cost of energy consumed by all trades. Any temporary wiring of a special nature for light and power required other than mentioned above shall be paid for by the Contractor using same.

PART 3 - EXECUTION

3.01 WORKMANSHIP

A. General: The installation of materials and equipment shall be performed in a neat, workmanlike and timely manner by an adequate number of craftsmen knowledgeable of the requirements of the Contract Documents. They shall be skilled in the methods and craftsmanship needed to produce a quality level of workmanship. Personnel who install materials and equipment shall be qualified by training and experience to perform their assigned tasks.

B. Acceptable Workmanship: Acceptable workmanship is characterized by first-quality appearance and function, conforming to applicable standards of building system construction, and exhibiting a high degree of quality and proficiency which is judged by the Architect as equivalent or better than that ordinarily produced by qualified industry tradesmen.

C. Performance: Personnel shall not be used in the performance of the installation of material and equipment who, in the opinion of the Architect, are deemed to be careless or unqualified to perform the assigned tasks. Material and equipment installations not in compliance with the Contract Documents, or installed with substandard workmanship and not acceptable to the Architect, shall be removed and reinstalled by qualified craftsmen, at no change in the contract price.

3.02 PROTECTION AND CLEAN UP

A. Protection and Restoration: Suitably protect equipment provided under this Division during construction. Restore damaged surfaces and items to "like new" condition before a request for substantial completion inspection.

B. Handling: Materials shall be properly protected and Raceway openings shall be temporarily closed by the Contractor to prevent obstruction and damage. Post notice prohibiting the use of systems provided under this Contract, prior to completion of work and acceptance of systems by the Owner's representative. The Contractor shall take precautions to protect his materials from damage and theft.

C. Safeguards: The Contractor shall furnish, place and maintain proper safety guards for the prevention of accidents that might be caused by the workmanship, materials, equipment or systems provided under this contract.

D. Cleanup: Keep the job site free from debris and rubbish. Remove debris and rubbish from the site and leave premises in clean condition on a daily basis.

3.03 SYSTEMS GUARANTEE

A. General: Provide a one-year guarantee. This guarantee shall be by the Contractor to the Owner for any defective workmanship or material, which has been provided under this Contract at no cost to the Owner for a period of one year from the date of substantial completion of the System. The guarantee shall include lamps, for ninety days after date of Substantial Completion of the System. Explain the provisions of guarantee to the Owner at the "Demonstration of Completed System".

3.04 FINAL OBSERVATION

A. General: Work shall be completed, and forms and other information shall be submitted for acceptance one week prior to the request for final observation of the installation.

3.05 SPECIAL CONSIDERATIONS

A. Comply with special requirements imposed at site by Owner. This may include badging of employees, prohibition of smoking, special working hours, or special working conditions.

END OF SECTION 26 00 10

CERTIFICATE OF COMPLETED DEMONSTRATION MEMO

Note to Contractor: Do not submit this form at the time Technical Information Brochure is submitted. Submit five copies of information listed below for checking at least one week before scheduled completion of the building. After information has been accepted and inserted in each brochure, give the Owner a Demonstration of the Completed Electrical Systems and have the Owner sign five copies of this form. Provide one signed copy for each brochure. After this has been done, a written request for a final inspection of the System shall be made.

Re: _____

(Name of Project)

_____

(Division Number and Name)

This memo is for the information of all concerned that the Owner has been given a Demonstration of the Completed Electrical Systems on the work covered under this Division. This conference consisted of the system operation, a tour on which all major items of equipment were pointed out, and the following items were given to the Owner;

(a) Owner's copy of Technical Information Brochure containing approved submittal sheets on all items, including the following; (To be inserted in the Technical Information Brochure after the correct tab).

(1) Maintenance Information published by manufacturer on equipment items.

(2) Printed Warranties by manufacturers on equipment items.

(3) Performance verification information as recorded by the Contractor.

(4) Check-out Memo on equipment by manufacturer's representative.

(5) Written operating instructions on any specialized items.

(6) Explanation of the one-year guarantee on the system.

(b) "As-Built" conditions as described in the record drawing specifications.

(c) A demonstration of the System in Operation and of the maintenance procedures which shall be required.

_____

(Name of General Contractor)

By: _____

(Authorized Signature, Title & Date)

_____

(Name of SubContractor)

By: _____

(Authorized Signature, Title & Date)

Brochure, Instruction, Prints, Demonstration & Instruction in Operation Received:

_____

(Name of Owner)

By: _____

(Authorized Signature, Title, Date)

cc: Owner, Architect, Engineer, Contractor, Sub Contractor and General Contractor

(List names as stated in cc: above)

SECTION 26 05 00
COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Electrical equipment coordination and installation.
2. Sleeves for raceways and cables.
3. Sleeve seals.
4. Grout.
5. Common electrical installation requirements.

1.3 DEFINITIONS

A. EPDM: Ethylene-propylene-diene terpolymer rubber.

B. NBR: Acrylonitrile-butadiene rubber.

1.4 SUBMITTALS

A. Product Data: For sleeve seals.

1.5 COORDINATION

A. Coordinate arrangement, mounting, and support of electrical equipment:

1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.
2. To provide for ease of disconnecting the equipment with minimum interference to other installations.
3. To allow right of way for piping and conduit installed at required slope.
4. So connecting raceways, cables, wireways, cable trays, and busways will be clear of obstructions and of the working and access space of other equipment.

B. Coordinate installation of required supporting devices and set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

C. Coordinate location of access panels and doors for electrical items that are behind finished surfaces or otherwise concealed. Access doors and panels are specified in Division 08 Section "Access Doors and Frames."

D. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."

PART 2 - PRODUCTS

2.1 SLEEVES FOR RACEWAYS AND CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

C. Sleeves for Rectangular Openings: Galvanized sheet steel.

1. Minimum Metal Thickness:

a. For sleeve cross-section rectangle perimeter less than 50 inches and no side more than 16 inches, thickness shall be 0.052 inch.
b. For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches and 1 or more sides equal to, or more than, 16 inches, thickness shall be 0.138 inch.

2.2 SLEEVE SEALS

A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Advance Products & Systems, Inc.
b. Calpico, Inc.
c. Metraflex Co.
d. Pipeline Seal and Insulator, Inc.

2. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
3. Pressure Plates: Stainless steel. Include two for each sealing element.
4. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.3 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

PART 3 - EXECUTION

3.1 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

A. Comply with NECA 1.

B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.

C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.

D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.

E. Right of Way: Give to piping systems installed at a required slope.

3.2 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.

B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.

E. Cut sleeves to length for mounting flush with both surfaces of walls.

F. Extend sleeves installed in floors 2 inches above finished floor level.

G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable, unless indicated otherwise.

H. Seal space outside of sleeves with grout for penetrations of concrete and masonry

1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.

I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants.".

J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials. Comply with requirements in Division 07 Section "Penetration Firestopping."

K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.

L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using [steel] [cast-iron] pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

M. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

3.3 SLEEVE-SEAL INSTALLATION

A. Install to seal exterior wall penetrations.

B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.4 FIRESTOPPING

A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

END OF SECTION 26 05 00

SECTION 26 05 19
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Copper building wire.
2. Fire-alarm wire and cable.
3. Connectors and splices.

B. Related Requirements:

1. Section 26 00 10 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 COPPER BUILDING WIRE

A. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.

B. Standards:

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
2. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

C. Conductors: Copper, complying with ASTM B3 for bare annealed copper and with ASTM B8 for stranded conductors.

D. Conductor Insulation:

1. Type THHN and Type THWN-2: Comply with UL 83.
2. Type THW and Type THW-2: Comply with NEMA WC-70/ICEA S-95-658 and UL 83.

2.2 FIRE-ALARM WIRE AND CABLE

A. General Wire and Cable Requirements: NRTL listed and labeled as complying with NFPA 70, Article 760.

B. Signaling Line Circuits: Twisted, shielded pair, size as recommended by system manufacturer.

C. Non-Power-Limited Circuits: Solid-copper conductors with 600 V rated, 75 deg C, color-coded insulation, and complying with requirements in UL 2196 for a two-hour rating.

1. Low-Voltage Circuits: No. 16 AWG, minimum, in pathway.
2. Line-Voltage Circuits: No. 12 AWG, minimum, in pathway.

2.3 CONNECTORS AND SPLICES

A. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders:

1. Copper; solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

B. Branch Circuits:

1. Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

C. Power-Limited Fire Alarm and Control: Solid for No. 12 AWG and smaller.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Service Entrance: Type THHN/THWN-2, single conductors in raceway.

B. Exposed Feeders: Type THHN/THWN-2, single conductors in raceway.

C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: Type THHN/THWN-2, single conductors in raceway.

D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN/THWN-2, single conductors in raceway.

E. Exposed Branch Circuits, Including in Crawlspaces: Type THHN/THWN-2, single conductors in raceway.

F. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN/THWN-2, single conductors in raceway.

G. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN/THWN-2, single conductors in raceway.

H. Cord Drops and Portable Appliance Connections: Type SO, hard service cord with stainless steel, wire-mesh, strain relief device at terminations to suit application.

3.3 INSTALLATION, GENERAL

A. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.

B. Complete raceway installation between conductor and cable termination points according to Section 26 05 33 "Raceways and Boxes for Electrical Systems" prior to pulling conductors and cables.

C. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.

F. Support cables according to Section 26 05 29 "Hangers and Supports for Electrical Systems."

3.4 INSTALLATION OF FIRE-ALARM WIRE AND CABLE

A. Comply with NFPA 72.

B. Wiring Method: Install wiring in metal pathway according to Section 27 05 28.29 "Hangers and Supports for Communications Systems."

1. Install plenum cable in environmental airspaces, including plenum ceilings.
2. Fire-alarm circuits and equipment control wiring associated with fire-alarm system must be installed in a dedicated pathway system.

    a. Cables and pathways used for fire-alarm circuits, and equipment control wiring associated with fire-alarm system, may not contain any other wire or cable.

3. Fire-Rated Cables: Use of two-hour, fire-rated fire-alarm cables, NFPA 70, Types MI and CI, is not permitted.
4. Signaling Line Circuits: Power-limited fire-alarm cables may be installed in the same cable or pathway as signaling line circuits.

C. Wiring within Enclosures: Separate power-limited and non-power-limited conductors as recommended by manufacturer. Install conductors parallel with or at right angles to sides and back of the enclosure. Bundle, lace, and train conductors to terminal points with no excess. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with

fire-alarm system to terminal blocks. Mark each terminal according to system's wiring diagrams. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.

D. Cable Taps: Use numbered terminal strips in junction, pull, and outlet boxes; cabinets; or equipment enclosures where circuit connections are made.

E. Color-Coding: Color-code fire-alarm conductors differently from the normal building power wiring. Use one color-code for alarm circuit wiring and another for supervisory circuits. Color-code audible alarm-indicating circuits differently from alarm-initiating circuits. Use different colors for visible alarm-indicating devices. Paint fire-alarm system junction boxes and covers red.

3.5 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inch of slack.

D. Comply with requirements in Section 28 46 21.11 "Addressable Fire-Alarm Systems" for connecting, terminating, and identifying wires and cables.

3.6 IDENTIFICATION

A. Identify and color-code conductors and cables according to Section 26 05 53 "Identification for Electrical Systems."

B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

3.7 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 26 05 44 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

3.8 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Section 07 84 13 "Penetration Firestopping."

3.9 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors for compliance with requirements.
2. Perform each of the following visual and electrical tests:

   a. Inspect exposed sections of conductor and cable for physical damage and correct connection according to the single-line diagram.
   b. Test bolted connections for high resistance using one of the following:

      1) A low-resistance ohmmeter.
      2) Calibrated torque wrench.
      3) Thermographic survey.

   c. Inspect compression-applied connectors for correct cable match and indentation.
   d. Inspect for correct identification.
   e. Inspect cable jacket and condition.
   f. Insulation-resistance test on each conductor for ground and adjacent conductors. Apply a potential of 500 V(dc) for 300 V rated cable and 1000 V(dc) for 600 V rated cable for a one-minute duration.
   g. Continuity test on each conductor and cable.
   h. Uniform resistance of parallel conductors.

B. Cables will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports to record the following:

1. Procedures used.
2. Results that comply with requirements.
3. Results that do not comply with requirements, and corrective action taken to achieve compliance with requirements.

END OF SECTION 26 05 19

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SECTION 26 05 26
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Grounding and bonding conductors.
2. Grounding and bonding clamps.
3. Grounding and bonding bushings.
4. Grounding and bonding hubs.
5. Grounding and bonding connectors.
6. Intersystem bonding bridge grounding connector.
7. Grounding and bonding busbars.
8. Grounding (earthing) electrodes.

B. Related Requirements:

1. Section 26 00 10 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

1.2 ACTION SUBMITTALS

A. Product Data:

1. For each type of product indicated.

1.3 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data:

1. In addition to items specified in Section 26 00 10 "Supplemental Requirements for Electrical," include the following:

a. Plans showing locations of grounding features described in "Field Quality Control" Article, including the following:

1) Test wells.
2) Rod electrodes.
3) Ring electrodes.
4) Grounding arrangements and connections for separately derived systems.

b. Instructions for periodic testing and inspection of grounding features at test wells ring electrodes grounding connections for separately derived systems based on NETA MTS.

1) Tests must determine if ground-resistance or impedance values remain within specified maximums, and instructions must recommend corrective action if values do not.
2) Include recommended testing intervals.

PART 2 - PRODUCTS

2.1 GROUNDING AND BONDING CONDUCTORS

A. Equipment Grounding Conductor:

1. General Characteristics: 600 V, THHN/THWN-2, copper wire or cable, green color, in accordance with Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables."

B. ASTM - Bare Copper Grounding and Bonding Conductor:

1. Referenced Standards: Complying with one or more of the following:

a. Soft or Annealed Copper Wire: ASTM B3
b. Concentric-Lay Stranded Copper Conductor: ASTM B8.
c. Tin-Coated Soft or Annealed Copper Wire: ASTM B33.
d. 19-Wire Combination Unilay-Stranded Copper Conductor: ASTM B787/B787M.

2.2 GROUNDING AND BONDING CLAMPS

A. Description: Clamps suitable for attachment of grounding and bonding conductors to grounding electrodes, pipes, tubing, and rebar. Grounding and bonding clamps specified in this article are also suitable for use with communications applications; see Section 27 05 26 "Grounding and Bonding for Communications Systems," for selection and installation guidelines.

B. Source Limitations: Obtain products from single manufacturer.

C. Performance Criteria:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. Listing Criteria:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.
b. Grounding and Bonding Equipment for Communications: UL CCN KDSH; including UL 467.

D. UL KDER and KDSH - Hex-Fitting-Type Pipe and Rod Grounding and Bonding Clamp:

1. General Characteristics:

a. Two pieces with zinc-plated bolts.
b. Clamp Material: Die-cast zinc alloy.
c. Listed for outdoor use.

E. UL KDER and KDSH - U-Bolt-Type Pipe and Rod Grounding and Bonding Clamp:

1. General Characteristics:

a. Clamp Material: Tinned brass.
b. Listed for outdoor use.

F. UL KDER and KDSH - Strap-Type Pipe and Rod Grounding and Bonding Clamp:

1. General Characteristics:

a. Clamp Material: Tinned copper.
b. Listed for outdoor use.

G. UL KDER - Beam Grounding and Bonding Clamp:

1. General Characteristics: Mechanical-type, terminal, ground wire access from four directions; with dual, tin-plated or silicon bronze bolts.

H. UL KDER - Exothermically Welded Connection:

1. General Characteristics: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

2.3 GROUNDING AND BONDING BUSHINGS

A. Description: Bonding bushings connect conduit fittings, tubing fittings, threaded metal conduit, and unthreaded metal conduit to metal boxes and equipment enclosures, and have one or more bonding screws intended to provide electrical continuity between bushing and enclosure. Grounding bushings have provision for connection of bonding or grounding conductor and may or may not also have bonding screws.

B. Source Limitations: Obtain products from single manufacturer.

C. Performance Criteria:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. Listing Criteria:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.

D. UL KDER - Bonding Bushing:

1. General Characteristics: Threaded bushing with insulated throat.

E. UL KDER - Grounding Bushing:

1. General Characteristics: Threaded bushing with insulated throat and mechanical-type wire terminal.

2.4 GROUNDING AND BONDING HUBS

A. Description: Hubs with certified grounding or bonding locknut.

B. Source Limitations: Obtain products from single manufacturer.

C. Performance Criteria:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. Listing Criteria:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.

D. UL KDER - Grounding and Bonding Hub:

1. General Characteristics: Insulated, gasketed, watertight hub with mechanical-type wire terminal.

2.5 GROUNDING AND BONDING CONNECTORS

A. Source Limitations: Obtain products from single manufacturer.

B. Performance Criteria:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. Listing Criteria:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.
b. Grounding and Bonding Equipment for Communications: UL CCN KDSH; including UL 467.

C. UL KDER - Crimped Lug Pressure-Type Grounding and Bonding Busbar Terminal:

1. General Characteristics: Cast silicon bronze, solderless compression-type wire terminals; with long barrel and two holes spaced on 5/8 or 1 inch centers for two-bolt connection to busbar.

2.6 GROUNDING AND BONDING BUSBARS

A. Description: Miscellaneous grounding and bonding device that serves as common connection for multiple grounding and bonding conductors.

B. Source Limitations: Obtain products from single manufacturer.

C. Performance Criteria:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. Listing Criteria:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.

D. UL KDER - Equipment Room Grounding and Bonding Busbar:

1. General Characteristics:

a. Bus: Rectangular bar of annealed copper.
b. Mounting Stand-Off Insulators: Lexan or PVC.

1) Comply with UL 891 for use in 600 V switchboards, impulse tested at 5000 V.

2. Options:

a. Dimensions: 1/4 by 4 inch in cross section; length as indicated on Drawings.
b. Predrilled Hole Pattern: 9/32 inch holes spaced 1-1/8 inch apart.
c. Mounting Hardware: Stand-off brackets that provide 2 inch clearance to access rear of bus. Brackets and bolts must be stainless steel.

2.7 GROUNDING (EARTHING) ELECTRODES

A. Description: Grounding electrodes include rod electrodes, ring electrodes, metal underground water pipes, metal building frames, concrete-encased electrodes, and pipe and plate electrodes.

B. Source Limitations: Obtain products from single manufacturer.

C. Performance Criteria:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. Listing Criteria:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.

D. UL KDER - Rod Electrode:

1. General Characteristics: Copper-clad steel, sectional type; 3/4 inch by 10 ft.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine facility's grounding electrode system and equipment grounding for compliance with requirements for maximum ground-resistance level and other conditions affecting performance of grounding and bonding of electrical system.

B. Inspect test results of grounding system measured at point of electrical service equipment connection.

C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with connection of electrical service equipment only after unsatisfactory conditions have been corrected.

3.2 SELECTION OF BUSBARS

A. Grounding Bus: Install in electrical equipment rooms, in rooms housing service equipment, and elsewhere as indicated.

1. Install bus horizontally, on insulated spacers 2 inch minimum from wall, 6 inch above finished floor unless otherwise indicated.

3.3 SELECTION OF GROUNDING AND BONDING CONDUCTORS

A. Conductors: Install solid conductor for 8 AWG and smaller, and stranded conductors for 6 AWG and larger unless otherwise indicated.

B. Underground Grounding Conductors: Install bare copper conductor, 2/0 AWG minimum.

1. Bury at least 30 inch below grade.

3.4 SELECTION OF CONNECTORS

A. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Underground Connections: Welded connectors except at test wells and as otherwise indicated.
3. Connections to Ground Rods at Test Wells: Bolted connectors.
4. Connections to Structural Steel: Welded connectors.

3.5 INSTALLATION

A. Comply with manufacturer's published instructions.

B. Reference Standards:

1. Ground Bonding Common with Lightning Protection System: Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system. Bond electrical power system ground directly to lightning protection system grounding conductor at closest point to electrical service grounding electrode. Use bonding conductor sized same as system grounding electrode conductor, and install in conduit.

C. Special Techniques:

1. Conductors:

a. Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

2. Connections: Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact are galvanically compatible.

a. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.
b. Make connections with clean, bare metal at points of contact.
c. Make aluminum-to-steel connections with stainless steel separators and mechanical clamps.
d. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.
e. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
f. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.

1) Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate adjacent parts.
2) Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
3) Use exothermic-welded connectors for outdoor locations; if disconnect-type connection is required, use bolted clamp.

g. Grounding and Bonding for Piping:

1) Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes; use bolted clamp connector or bolt lug-type connector to pipe flange by using one of lug bolts of flange. Where dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.

2) Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with bolted connector.
3) Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.

h. Bonding Interior Metal Ducts: Bond metal air ducts to equipment grounding conductors of associated fans, blowers, electric heaters, and air cleaners. Installbonding jumper to bond across flexible duct connections to achieve continuity.
i. Grounding for Steel Building Structure: Install driven ground rod at base of each corner column and at intermediate exterior columns at distances not more than 60 ft apart.

3. Electrodes:

a. Ground Rods: Drive rods until tops are 2 inch below finished floor or final grade unless otherwise indicated.

1) Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.
2) Use exothermic welds for below-grade connections.

b. Test Wells: Ground rod driven through drilled hole in bottom of handhole. Handholes must be at least 12 inch deep, with cover.

1) Install at least one test well for each service unless otherwise indicated. Install at ground rod electrically closest to service entrance. Set top of test well flush with finished grade or floor.

c. Ring Electrode: Install grounding conductor, electrically connected to each building structure ground rod and to each steel column, extending around perimeter of building.

1) Install tinned-copper conductor not less than 2/0 AWG for ring electrode and for taps to building steel.
2) Bury ring electrode not less than 24 inch from building's foundation.

d. Concrete-Encased Electrode (Ufer Ground):

1) Fabricate in accordance with NFPA 70; use minimum of 20 ft of bare copper conductor not smaller than 4 AWG.

a) If concrete foundation is less than 20 ft long, coil excess conductor within base of foundation.
b) Bond grounding conductor to reinforcing steel in at least four locations and to anchor bolts. Extend grounding conductor below grade and connect to building's grounding grid or to grounding electrode external to concrete.

4. Grounding at Service:

a. Equipment grounding conductors and grounding electrode conductors must be connected to ground bus. Install main bonding jumper between neutral and ground buses.

5. Grounding Separately Derived Systems:

a. Generator: Install grounding electrode(s) at generator location. Electrode must be connected to equipment grounding conductor and to frame of generator.

6. Equipment Grounding:

a. Install insulated equipment grounding conductors with feeders and branch circuits.
b. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:

1) Feeders and branch circuits.
2) Lighting circuits.
3) Receptacle circuits.
4) Single-phase motor and appliance branch circuits.
5) Three-phase motor and appliance branch circuits.
6) Flexible raceway runs.

c. Air-Duct Equipment Circuits: Install insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.
d. Water Heater, Heat-Tracing, and Antifrost Heating Cables: Install separate insulated equipment grounding conductor to each electric water heater and heat-tracing cable. Bond conductor to heater units, piping, connected equipment, and components.
e. Poles Supporting Outdoor Lighting Fixtures: Install grounding electrode and separate insulated equipment grounding conductor in addition to grounding conductor installed with branch-circuit conductors.

3.6 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with calibrated torque wrench in accordance with manufacturer's published instructions.
3. Test completed grounding system at each location where maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, at ground test wells, and at individual ground rods. Make tests at ground rods before conductors are connected.

a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
b. Perform tests by fall-of-potential method in accordance with IEEE Std 81.

c. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

B. Nonconforming Work:

1. Grounding system will be considered defective if it does not pass tests and inspections.
2. Remove and replace defective components and retest.

C. Collect, assemble, and submit test and inspection reports.

1. Report measured ground resistances that exceed the following values:

a. Power and Lighting Equipment or System with Capacity of 500 kVA and Less: 10 Ω.
b. Power and Lighting Equipment or System with Capacity of 500 to 1000 kVA: 5 Ω.
c. Power and Lighting Equipment or System with Capacity More Than 1000 kVA: 3 Ω.
d. Power Distribution Units or Panelboards Serving Electronic Equipment: 3 Ω.

3.7 PROTECTION

A. After installation, protect grounding and bonding cables and equipment from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

END OF SECTION 26 05 26

SECTION 26 05 29
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Support, anchorage, and attachment components.

B. Related Requirements:

1. Section 26 00 10 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:

a. Slotted support systems, hardware, and accessories.
b. Clamps.
c. Hangers.
d. Sockets.
e. Eye nuts.
f. Fasteners.
g. Anchors.
h. Saddles.
i. Brackets.

2. Include rated capacities and furnished specialties and accessories.

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Preformed steel channels and angles with minimum 13/32 inch diameter holes at a maximum of 8 inch on center in at least one surface.

1. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
2. Material for Channel, Fittings, and Accessories: Galvanized steel.
3. Channel Width: Selected for applicable load criteria.
4. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.

B. Aluminum Slotted Support Systems: Extruded-aluminum channels and angles with minimum 13/32 inch diameter holes at a maximum of 8 inch on center in at least one surface.

1. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
2. Channel Material: 6063-T5 aluminum alloy.
3. Fittings and Accessories Material: 5052-H32 aluminum alloy.
4. Channel Width: Selected for applicable load criteria.

C. Nonmetallic Slotted Support Systems: Structural-grade, factory-formed, glass-fiber-resin channels and angles with minimum 13/32 inch diameter holes at a maximum of 8 inch on center, in at least one surface.

1. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
2. Channel Width: Selected for applicable load criteria.
3. Fittings and Accessories: Products provided by channel and angle manufacturer and designed for use with those items.
4. Fitting and Accessory Materials: Same as those for channels and angles.
5. Rated Strength: Selected to suit applicable load criteria.
6. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

D. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

E. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for nonarmored electrical conductors or cables in riser conduits. Plugs must have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body must be made of malleable iron.

F. Structural Steel for Fabricated Supports and Restraints: ASTM A36/A36M steel plates, shapes, and bars; black and galvanized.

G. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened portland cement concrete, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
2. Concrete Inserts: Steel or malleable-iron, slotted support system units are similar to MSS Type 18 units and comply with MFMA-4 or MSS SP-58.
3. Clamps for Attachment to Steel Structural Elements: MSS SP-58 units are suitable for attached structural element.
4. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM F3125/F3125M, Grade A325.
5. Toggle Bolts: All steel springhead type.
6. Hanger Rods: Threaded steel.

PART 3 - EXECUTION

3.1 SELECTION

A. Comply with the following standards for selection and installation of hangers and supports, except where requirements on Drawings or in this Section are stricter:

1. NECA NEIS 101
2. NECA NEIS 102.
3. NECA NEIS 105.
4. NECA NEIS 111.

B. Comply with requirements in Section 07 84 13 "Penetration Firestopping" for firestopping materials and installation for penetrations through fire-rated walls, ceilings, and assemblies.

C. Comply with requirements for raceways and boxes specified in Section 26 05 33 "Raceway and Boxes for Electrical Systems."

D. Maximum Support Spacing and Minimum Hanger Rod Size for Raceways: Space supports for EMT, IMC, and ERMC as scheduled in NECA NEIS 1, where its Table 1 lists maximum spacings that are less than those stated in NFPA 70. Minimum rod size must be 1/4 inch in diameter.

E. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

1. Secure raceways and cables to these supports with two-bolt conduit clamps.

F. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2 inch and smaller raceways serving branch circuits and communication systems above suspended ceilings, and for fastening raceways to trapeze supports.

3.2 INSTALLATION OF SUPPORTS

A. Comply with NECA NEIS 101 for installation requirements except as specified in this article.

B. Raceway Support Methods: In addition to methods described in NECA NEIS 1, EMT IMC and ERMC may be supported by openings through structure members, in accordance with NFPA 70.

C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination must be weight of supported components plus 200 lb.

D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To New Concrete: Bolt to concrete inserts.

3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
4. To Existing Concrete: Expansion anchor fasteners.
5. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts.
6. To Light Steel: Sheet metal screws.
7. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate.

E. Drill holes for expansion anchors in concrete at locations and to depths that avoid the need for reinforcing bars.

3.3 CONCRETE BASES

A. Construct concrete bases of dimensions indicated, but not less than 4 inch larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.

B. Use 3000 psi, 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Section 03 30 00 "Cast-in-Place Concrete."

C. Anchor equipment to concrete base as follows:

1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor bolts to elevations required for proper attachment to supported equipment.
3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.4 PAINTING

A. Touchup:

1. Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

    a. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.

B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A780.

END OF SECTION 26 05 29

SECTION 26 05 33
RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Type EMT-S raceways and elbows.
2. Type ENT raceways and fittings.
3. Type ERMC-S raceways, elbows, couplings, and nipples.
4. Type FMC-S and Type FMC-A raceways.
5. Type IMC raceways.
6. Type LFMC raceways.
7. Type LFNC raceways.
8. Type PVC raceways and fittings.
9. Fittings for conduit, tubing, and cable.
10. Threaded metal joint compound.
11. Solvent cements.
12. Surface metal raceways and fittings.
13. Wireways and auxiliary gutters.
14. Metallic outlet boxes, device boxes, rings, and covers.
15. Nonmetallic outlet boxes, device boxes, rings, and covers.
16. Termination boxes.
17. Cabinets, cutout boxes, junction boxes, pull boxes, and miscellaneous enclosures.
18. Cover plates for device boxes.
19. Hoods for outlet boxes.

B. Related Requirements:

1. Section 26 00 10 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

1.2 ACTION SUBMITTALS

A. Product Data: For the following:

1. Wireways and auxiliary gutters.
2. Surface metal raceways.
3. Floor boxes.
4. Cabinets, cutout boxes, and miscellaneous enclosures.

PART 2 - PRODUCTS

2.1 TYPE EMT-S RACEWAYS AND ELBOWS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics: UL 797 and UL Category Control Number FJMX.

B. Steel Electrical Metal Tubing (EMT-S) and Elbows:

1. Material: Steel.
2. Options:

a. Exterior Coating: Zinc.
b. Interior Coating: Zinc with organic top coating.
c. Minimum Trade Size: Metric designator 21 (trade size 3/4).
d. Colors: As indicated on Drawings.

2.2 TYPE ENT RACEWAYS AND FITTINGS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics: UL 1653 and UL Category Control Number FKHU.

B. Electrical Nonmetallic Tubing (ENT) and Fittings:

1. Options:

a. Minimum Trade Size: Metric designator 21 (trade size 3/4).
b. Fittings:

1) Mechanically Attached Fittings: UL 1653.
2) Solvent-Attached Fittings: UL 651.

2.3 TYPE ERMC-S RACEWAYS, ELBOWS, COUPLINGS, AND NIPPLES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics: UL 6 and UL Category Control Number DYIX.

B. Galvanized-Steel Electrical Rigid Metal Conduit (ERMC-S-G), Elbows, Couplings, and Nipples:

1. Exterior Coating: Zinc.
2. Options:

a. Interior Coating: Zinc with organic top coating.
b. Minimum Trade Size: Metric designator 21 (trade size 3/4).
c. Colors: As indicated on Drawings.

2.4 TYPE FMC-S RACEWAY

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics: UL 1 and UL Category Control Number DXUZ.

B. Steel Flexible Metal Conduit (FMC-S):

1. Material: Steel.
2. Options:

a. Minimum Trade Size: Metric designator 21 (trade size 3/4).
b. Colors: As indicated on Drawings.

2.5 TYPE IMC RACEWAYS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics: UL 1242 and UL Category Control Number DYBY.

B. Steel Electrical Intermediate Metal Conduit (IMC):

1. Options:

a. Exterior Coating: Zinc.
b. Interior Coating: Zinc with organic top coating.
c. Minimum Trade Size: Metric designator 21 (trade size 3/4).
d. Colors: As indicated on Drawings.

2.6 TYPE LFMC RACEWAYS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics: UL 360 and UL Category Control Number DXHR.

B. Steel Liquidtight Flexible Metal Conduit (LFMC-S):

1. Material: Steel.
2. Options:

a. Minimum Trade Size: Metric designator 21 (trade size 3/4).

b. Colors: As indicated on Drawings.

2.7 TYPE LFNC RACEWAYS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics: UL 1660 and UL Category Control Number DXOQ.

B. Layered (Type A) Liquidtight Flexible Nonmetallic Conduit (LFNC-A):

1. Additional Criteria: Type A conduit with smooth seamless inner core and cover bonded together with one or more reinforcement layers between core and cover.
2. Options:

a. Minimum Trade Size: Metric designator 21 (trade size 3/4).
b. Colors: As indicated on Drawings.

2.8 TYPE PVC RACEWAYS AND FITTINGS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics: UL 651 and UL Category Control Number DZYR.

B. Schedule 40 Rigid PVC Conduit (PVC-40) and Fittings:

1. Dimensional Specifications: Schedule 40.
2. Options:

a. Minimum Trade Size: Metric designator 21 (trade size 3/4).

C. Schedule 80 Rigid PVC Conduit (PVC-80) and Fittings:

1. Dimensional Specifications: Schedule 80.
2. Options:

a. Minimum Trade Size: Metric designator 21 (trade size 3/4).

2.9 FITTINGS FOR CONDUIT, TUBING, AND CABLE

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.

B. Fittings for Type ERMC, Type IMC, Type PVC, Type EPEC, and Type RTRC Raceways:

1. General Characteristics: UL 514B and UL Category Control Number DWTT.

2. Options:

a. Material: Steel.
b. Coupling Method: Compression coupling.
c. Conduit Fittings for Hazardous (Classified) Locations: UL 1203.
d. Expansion and Deflection Fittings: UL 651 with flexible external bonding jumper.

C. Fittings for Type EMT Raceways:

1. General Characteristics: UL 514B and UL Category Control Number FKAV.
2. Options:

a. Material: Steel.
b. Coupling Method: Setscrew coupling. Setscrew couplings with only single screw per conduit are unacceptable.
c. Conduit Fittings for Hazardous (Classified) Locations: UL 1203.
d. Expansion and Deflection Fittings: UL 651 with flexible external bonding jumper.

D. Fittings for Type FMC Raceways:

1. General Characteristics: UL 514B and UL Category Control Number ILNR.

E. Fittings for Type LFMC and Type LFNC Raceways:

1. General Characteristics: UL 514B and UL Category Control Number DXAS.

2.10 ELECTRICALLY CONDUCTIVE CORROSION-RESISTANT COMPOUNDS FOR THREADED CONDUIT

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics: UL 2419 and UL Category Control Number FOIZ.

2.11 SOLVENT CEMENTS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics: As recommended by conduit manufacturer in accordance with UL 514B and UL Category Control Number DWTT.

B. Solvent Cements for Type PVC Raceways and Fittings:

2.12 SURFACE METAL RACEWAYS AND FITTINGS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics: UL 5 and UL Category Control Number RJBT.

B. Surface Metal Raceways and Fittings with Metal Covers:

1. Options:

a. Aluminum base with snap-on covers.
b. Manufacturer's standard enamel finish in color selected by Architect.
c. Wiring Channels: Dual. Multiple channels must be capable of housing a standard 20 to 30 A NEMA device flush within the raceway.

2.13 WIREWAYS AND AUXILIARY GUTTERS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics: UL 870 and UL Category Control Number ZOYX.

B. Metal Wireways and Auxiliary Gutters:

1. Additional Characteristics:

a. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
b. Finish: Manufacturer's standard enamel finish.

2. Options:

a. Degree of Protection: Type 1 unless otherwise indicated.
b. Wireway Covers: Hinged type unless otherwise indicated.

2.14 METALLIC OUTLET BOXES, DEVICE BOXES, RINGS, AND COVERS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics: UL 514A and UL Category Control Number QCIT.

B. Metallic Outlet Boxes:

1. Description: Box having pryout openings, knockouts, threaded entries, or hubs in either the sides of the back, or both, for entrance of conduit, conduit or cable fittings, or cables, with provisions for mounting outlet box cover, but without provisions for mounting wiring device directly to box.
2. Options:

a. Material: Sheet steel.

b. Sheet Metal Depth: Minimum 1.5 inch.
c. Luminaire Outlet Boxes and Covers: Nonadjustable, listed and labeled for attachment of luminaire weighing up to 50 lb.
d. Paddle Fan Outlet Boxes and Covers: Nonadjustable, designed for attachment of paddle fan weighing up to 70 lb.

C. Metallic Conduit Bodies:

1. Description: Means for providing access to interior of conduit or tubing system through one or more removable covers at junction or terminal point. In the United States, conduit bodies are listed in accordance with outlet box requirements.

D. Metallic Device Boxes:

1. Description: Box with provisions for mounting wiring device directly to box.
2. Options:

a. Material: Sheet steel.
b. Sheet Metal Depth: minimum 1.5 inch.

E. Metallic Extension Rings:

1. Description: Ring intended to extend sides of outlet box or device box to increase box depth, volume, or both.

F. Metallic Floor Boxes and Floor Box Covers:

1. Description: Box mounted in floor with floor box cover and other components to complete floor box enclosure.

2.15 NONMETALLIC OUTLET BOXES, DEVICE BOXES, RINGS, AND COVERS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics: UL 514C and UL Category Control Number QCMZ.

B. Nonmetallic Outlet Boxes:

1. Description: Box having pryout openings, knockouts, threaded entries, or hubs in either the sides or the back, or both, for entrance of conduit, conduit or cable fittings, or cables, with provisions for mounting outlet box cover, but without provisions for mounting wiring device directly to box.

C. Nonmetallic Conduit Bodies:

1. Description: Means for providing access to interior of conduit or tubing system through one or more removable covers at junction or terminal point. In the United States, conduit bodies are listed in accordance with outlet box requirements.

D. Nonmetallic Device Boxes:

1. Description: Box with provisions for mounting wiring device directly to box.

E. Nonmetallic Extension Rings:

1. Description: Ring intended to extend sides of outlet box or device box to increase box depth, volume, or both.

F. Nonmetallic Floor Boxes and Floor Box Covers:

1. Description: Box mounted in floor with floor box cover and other components to complete floor box enclosure.

2.16 CABINETS, CUTOUT BOXES, JUNCTION BOXES, PULL BOXES, AND MISCELLANEOUS ENCLOSURES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics:

a. Non-Environmental Characteristics: UL 50.
b. Environmental Characteristics: UL 50E.

B. Indoor Sheet Metal Cabinets:

1. Description: Enclosure provided with frame, mat, or trim in which swinging door or doors are or can be hung.
2. Additional Characteristics: UL Category Control Number CYIV.
3. Options:

a. Degree of Protection: Type 1.

C. Indoor Sheet Metal Cutout Boxes:

1. Description: Enclosure that has swinging doors or covers secured directly to and telescoping with walls of enclosure.
2. Additional Characteristics: UL Category Control Number CYIV.
3. Options:

a. Degree of Protection: Type 1.

D. Indoor Sheet Metal Junction and Pull Boxes:

1. Description: Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
2. Additional Characteristics: UL Category Control Number BGUZ.
3. Options:

a. Degree of Protection: Type 1.

E. Outdoor Sheet Metal Cabinets:

1. Description: Enclosure provided with frame, mat, or trim in which swinging door or doors are or can be hung.
2. Additional Characteristics: UL Category Control Number CYIV.
3. Options:

    a. Degree of Protection: Type 3R.

F. Outdoor Sheet Metal Cutout Boxes:

1. Description: Enclosure that has swinging doors or covers secured directly to and telescoping with walls of enclosure.
2. Additional Characteristics: UL Category Control Number CYIV.
3. Options:

    a. Degree of Protection: Type 3R.

G. Outdoor Sheet Metal Junction and Pull Boxes:

1. Description: Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
2. Additional Characteristics: UL Category Control Number BGUZ.
3. Options:

    a. Degree of Protection: Type 3R.

2.17 COVER PLATES FOR DEVICES BOXES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics:

    a. Reference Standards: UL 514D and UL Category Control Numbers QCIT and QCMZ.
    b. Wallplate-Securing Screws: Metal with head color to match wallplate finish.

B. Metallic Cover Plates for Device Boxes:

1. Options:

    a. Damp and Wet Locations: Listed, labeled, and marked for location and use. Provide gaskets and accessories necessary for compliance with listing.
    b. Wallplate Material: Galvanized steel.

C. Nonmetallic Cover Plates for Device Boxes:

1. Options:

    a. Damp and Wet Locations: Listed, labeled, and marked for location and use. Provide gaskets and accessories necessary for compliance with listing.
    b. Wallplate Material: 0.060 inch thick high-impact thermoplastic (nylon) with smooth finish and color matching wiring device.

c. Color: As indicated on architectural Drawings.

2.18 HOODS FOR OUTLET BOXES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics:

a. Reference Standards:

1) UL 514D and UL Category Control Numbers QCIT and QCMZ.
2) Receptacle, hood, cover plate, gaskets, and seals comply with UL 498 Supplement SA when mated with box or enclosure complying with UL 514A, UL 514C, or UL 50E.

b. Mounts to box using fasteners different from wiring device.

B. Extra-Duty, While-in-Use Hoods for Outlet Boxes:

1. Additional Characteristics: Marked "Extra-Duty" in accordance with UL 514D.
2. Options:

a. Provides clear, weatherproof, "while-in-use" cover.
b. Manufacturer may combine nonmetallic device box with hood as extra-duty rated assembly.

PART 3 - EXECUTION

3.1 SELECTION OF RACEWAYS

A. Unless more stringent requirements are specified in Contract Documents or manufacturers' written instructions, comply with NFPA 70 for selection of raceways. Consult Architect for resolution of conflicting requirements.

B. Outdoors:

1. Exposed and Subject to Physical Damage: IMC.
2. Exposed and Not Subject to Physical Damage: ERMC.
3. Concealed Aboveground: ERMC.
4. Direct Buried: PVC-40.
5. Concrete Encased Not in Trench: PVC-40.
6. Concrete Encased in Trench: PVC-40.
7. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.

C. Indoors:

1. Hazardous Classified Locations: ERMC.
2. Exposed and Subject to Physical Damage: IMC.

3. Exposed and Not Subject to Physical Damage: EMT.
4. Concealed in Ceilings and Interior Walls and Partitions: EMT.
5. Damp or Wet Locations: ERMC.
6. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.

D. Raceway Fittings: Select fittings in accordance with NEMA FB 2.10 guidelines.

1. ERMC and IMC: Provide threaded type fittings unless otherwise indicated.

3.2 SELECTION OF BOXES AND ENCLOSURES

A. Unless more stringent requirements are specified in Contract Documents or manufacturers' written instructions, comply with NFPA 70 for selection of boxes and enclosures. Consult Architect for resolution of conflicting requirements.

B. Degree of Protection:

1. Outdoors:

a. Type 3R unless otherwise indicated.
b. Locations in-Ground or Exposed to Corrosive Agents: Type 4X.

2. Indoors:

a. Type 1 unless otherwise indicated.
b. Damp or Dusty Locations: Type 12.
c. Locations Exposed to Corrosive Agents: Type 4X.

C. Exposed Boxes Installed Less Than 2.5 m (8 ft) Above Floor:

1. Boxes with knockouts or unprotected openings are prohibited.
2. Provide exposed cover. Flat covers with angled mounting slots or knockouts are prohibited.

3.3 INSTALLATION OF RACEWAYS

A. Installation Standards:

1. Unless more stringent requirements are specified in Contract Documents or manufacturers' written instructions, comply with NFPA 70 for installation of raceways. Consult Architect for resolution of conflicting requirements.
2. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.
3. Comply with requirements in Section 26 05 29 "Hangers and Supports for Electrical Systems" for hangers and supports.
4. Comply with NECA NEIS 101 for installation of steel raceways.
5. Comply with NECA NEIS 102 for installation of aluminum raceways.
6. Comply with NECA NEIS 111 for installation of nonmetallic raceways.
7. Install raceways square to the enclosure and terminate at enclosures without hubs with locknuts on both sides of enclosure wall. Install locknuts hand tight, plus one-quarter turn more.

8. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to metric designator 35 (trade size 1-1/4) and insulated throat metal bushings on metric designator 41 (trade size 1-1/2) and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.
9. Raceway Terminations at Locations Subject to Moisture or Vibration:

    a. Provide insulating bushings to protect conductors, including conductors smaller than No. 4 AWG. Install insulated throat metal grounding bushings on service conduits.

B. General Requirements for Installation of Raceways:

1. Complete raceway installation before starting conductor installation.
2. Provide stub-ups through floors with coupling threaded inside for plugs, set flush with finished floor. Plug coupling until conduit is extended above floor to final destination or a minimum of 2 ft above finished floor.
3. Install no more than equivalent of three 90-degree bends in conduit run except for control wiring conduits, for which no more than equivalent of two 90-degree fewer bends are permitted. Support within 12 inch of changes in direction.
4. Make bends in raceway using large-radius preformed ells except for parallel bends. Field bending must be in accordance with NFPA 70 minimum radii requirements. Provide only equipment specifically designed for material and size involved.
5. Conceal conduit within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.
6. Support conduit within 12 inch of enclosures to which attached.
7. Install raceway sealing fittings at accessible locations in accordance with NFPA 70 and fill them with listed sealing compound. For concealed raceways, install fitting in flush steel box with blank cover plate having finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings in accordance with NFPA 70.
8. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal interior of raceways at the following points:

    a. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
    b. Where an underground service raceway enters a building or structure.
    c. Conduit extending from interior to exterior of building.
    d. Conduit extending into pressurized duct and equipment.
    e. Conduit extending into pressurized zones that are automatically controlled to maintain different pressure set points.
    f. Where otherwise required by NFPA 70.

9. Do not install raceways or electrical items on "explosion-relief" walls or rotating equipment.
10. Do not install conduits within 2 inch of the bottom side of a metal deck roof.
11. Keep raceways at least 6 inch away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
12. Cut conduit perpendicular to the length. For conduits metric designator 53 (trade size 2) and larger, use roll cutter or a guide to make cut straight and perpendicular to the length. Ream inside of conduit to remove burrs.
13. Install pull wires in empty raceways. Provide polypropylene or monofilament plastic line with not less than 200 lb tensile strength. Leave at least 12 inch of slack at both ends of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.

C. Requirements for Installation of Specific Raceway Types:

1. Types ERMC and IMC:

a. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound that maintains electrical conductivity to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

2. Types FMC, LFMC, and LFNC:

a. Comply with NEMA RV 3. Provide a maximum of 72 inch of flexible conduit for recessed and semirecessed luminaires, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

3. Types PVC and EPEC:

a. Do not install Type PVC or Type EPEC conduit where ambient temperature exceeds 122 deg F. Conductor ratings must be limited to 75 deg C except where installed in a trench outside buildings with concrete encasement, where 90 deg C conductors are permitted.
b. Comply with manufacturer's written instructions for solvent welding and fittings.

D. Raceways Embedded in Slabs:

1. Run raceways larger than metric designator 27 (trade size 1) below concrete slab..
2. Arrange raceways to cross building expansion joints with expansion fittings at right angles to the joint.
3. Arrange raceways to ensure that each is surrounded by a minimum of 1 inch of concrete without voids.
4. Do not embed threadless fittings in concrete unless locations have been specifically approved by Architect.
5. Change from ENT to ERMC before rising above floor.

E. Stub-ups to Above Recessed Ceilings:

1. Provide EMT, IMC, or ERMC for raceways.
2. Provide a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.

F. Raceway Fittings: Install fittings in accordance with NEMA FB 2.10 guidelines.

1. EMT: Provide setscrew, steel fittings. Comply with NEMA FB 2.10.
2. Flexible Conduit: Provide only fittings listed for use with flexible conduit type. Comply with NEMA FB 2.20.

G. Expansion-Joint Fittings:

1. Install in runs of aboveground PVC that are located where environmental temperature change may exceed 30 deg F and that have straight-run length that exceeds 25 ft. Install in runs of aboveground ERMC and EMT conduit that are located where environmental temperature change may exceed 100 deg F and that have straight-run length that exceeds 100 ft.

2. Install type and quantity of fittings that accommodate temperature change listed for the following locations:

   a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F temperature change.
   b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F temperature change.
   c. Indoor Spaces Connected with Outdoors without Physical Separation: 125 deg F temperature change.
   d. Attics: 135 deg F temperature change.

3. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F of temperature change for PVC conduits. Install fitting(s) that provide expansion and contraction for at least 0.000078 inch per foot of length of straight run per deg F of temperature change for metal conduits.
4. Install expansion fittings at locations where conduits cross building or structure expansion joints.
5. Install expansion-joint fitting with position, mounting, and piston setting selected in accordance with manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.

3.4 INSTALLATION OF SURFACE RACEWAYS

A. Install surface raceways only where indicated on Drawings.

B. Install surface raceway with a minimum 2 inch radius control at bend points.

C. Secure surface raceway with screws or other anchor-type devices at intervals not exceeding 48 inch and with no less than two supports per straight raceway section. Support surface raceway in accordance with manufacturer's written instructions. Tape and glue are unacceptable support methods.

3.5 INSTALLATION OF BOXES AND ENCLOSURES

A. Provide boxes in wiring and raceway systems wherever required for pulling of wires, making connections, and mounting of devices or fixtures.

B. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.

C. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall. Prepare block surfaces to provide a flat surface for a raintight connection between box and cover plate or supported equipment and box, whether installed indoors or outdoors.

D. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.

E. Locate boxes so that cover or plate will not span different building finishes.

F. Support boxes in recessed ceilings independent of ceiling tiles and ceiling grid.

G. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for purpose.

H. Fasten junction and pull boxes to, or support from, building structure. Do not support boxes by conduits.

I. Set metal floor boxes level and flush with finished floor surface.

J. Set nonmetallic floor boxes level. Trim after installation to fit flush with finished floor surface.

K. Do not install aluminum boxes, enclosures, or fittings in contact with concrete or earth.

L. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to ensure a continuous ground path.

3.6 FIRESTOPPING

A. Install firestopping at penetrations of fire-rated floor and wall assemblies. Comply with requirements in Section 07 84 13 "Penetration Firestopping."

3.7 PROTECTION

A. Protect coatings, finishes, and cabinets from damage and deterioration.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

3.8 CLEANING

A. Boxes: Remove construction dust and debris from device boxes, outlet boxes, and floor-mounted enclosures before installing wallplates, covers, and hoods.

END OF SECTION 26 05 33

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SECTION 26 05 53
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Labels.
2. Bands and tubes.
3. Tapes and stencils.
4. Tags.
5. Signs.
6. Cable ties.
7. Miscellaneous identification products.

B. Related Requirements:

1. Section 26 00 10 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for electrical identification products.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Comply with ASME A13.1.

B. Comply with 29 CFR 1910.144 for color identification of hazards; 29 CFR 1910.145 for danger, caution, warning, and safety instruction signs and tags; and the following:

1. Fire-protection and fire-alarm equipment, including raceways, must be finished, painted, or suitably marked safety red.

C. Signs, labels, and tags required for personnel safety must comply with the following standards:

1. Safety Colors: NEMA Z535.1.
2. Facility Safety Signs: NEMA Z535.2.
3. Safety Symbols: NEMA Z535.3.
4. Product Safety Signs and Labels: NEMA Z535.4.

5. Safety Tags and Barricade Tapes for Temporary Hazards: NEMA Z535.5.

D. Comply with NFPA 70E requirements for arc-flash warning labels.

E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, must comply with UL 969.

F. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 COLOR AND LEGEND REQUIREMENTS

A. Raceways and Cables Carrying Circuits at 1000 V or Less:

1. Black letters on orange field.
2. Legend: Indicate voltage and system or service type.

B. Color-Coding for Phase- and Voltage-Level Identification, 1000 V or Less: Use colors listed below for ungrounded service feeder and branch-circuit conductors.

1. Color must be factory applied or field applied for sizes larger than 8 AWG if authorities having jurisdiction permit.
2. Colors for 208Y/120 V Circuits:

a. Phase A: Black.
b. Phase B: Red.
c. Phase C: Blue.

3. Colors for 480Y/277 V Circuits:

a. Phase A: Brown.
b. Phase B: Orange.
c. Phase C: Yellow.

4. Color for Neutral: White.
5. Color for Equipment Grounds: Green.

C. Warning Label Colors:

1. Identify system voltage with black letters on orange background.

D. Warning labels and signs must include, but are not limited to, the following legends:

1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 3 FEET MINIMUM."

E. Equipment Identification Labels:

1. Black letters on white field.

2.3 LABELS

A. Vinyl Wraparound Labels: Preprinted, flexible labels laminated with clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing label ends.

B. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeves, with diameters sized to suit diameters and that stay in place by gripping action.

C. Self-Adhesive Wraparound Labels: Preprinted, 3 mil thick, vinyl flexible label with acrylic pressure-sensitive adhesive.

1. Self-Lamination: Clear; UV-, weather- and chemical-resistant; self-laminating, protective shield over legend. Labels sized such that clear shield overlaps entire printed legend.
2. Marker for Labels:

a. Machine-printed, permanent, waterproof, black ink recommended by printer manufacturer.

D. Self-Adhesive Labels: Vinyl, thermal, transfer-printed, 3 mil thick, multicolor, weather- and UV-resistant, pressure-sensitive adhesive labels, configured for intended use and location.

1. Minimum Nominal Size:

a. 1-1/2 by 6 inch for raceway and conductors.
b. 3-1/2 by 5 inch for equipment.
c. As required by authorities having jurisdiction.

2.4 BANDS AND TUBES

A. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeves, 2 inch long, with diameters sized to suit diameters and that stay in place by gripping action.

B. Heat-Shrink Preprinted Tubes: Flame-retardant polyolefin tubes with machine-printed identification labels, sized to suit diameter and shrunk to fit firmly. Full shrink recovery occurs at maximum of 200 deg F. Comply with UL 224.

2.5 TAPES AND STENCILS

A. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

B. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; not less than 3 mil thick by 1 to 2 inch wide; compounded for outdoor use.

C. Tape and Stencil: 4 inch wide black stripes on 10 inch centers placed diagonally over orange background and are 12 inch wide. Stop stripes at legends.

D. Floor Marking Tape: 2 inch wide, 5 mil pressure-sensitive vinyl tape, with black and white stripes and clear vinyl overlay.

E. Underground-Line Warning Tape:

1. Tape:

    a. Recommended by manufacturer for method of installation and suitable to identify and locate underground electrical and communications utility lines.
    b. Printing on tape must be permanent and may not be damaged by burial operations.
    c. Tape material and ink must be chemically inert and not be subject to degradation when exposed to acids, alkalis, and other destructive substances commonly found in soils.

2. Color and Printing:

    a. Comply with APWA Uniform Color Code using NEMA Z535.1 safety colors.
    b. Inscriptions for Red Tapes: "CAUTION BURIED ELECTRIC LINE BELOW".
    c. Inscriptions for Orange Tapes: "CAUTION BURIED CATV LINE BELOW" "CAUTION BURIED TELEPHONE LINE BELOW" "CAUTION BURIED FIBER OPTIC LINE BELOW" "CAUTION BURIED COMMUNICATION LINE BELOW".

3. Tape:

    a. Pigmented polyolefin, bright colored, continuous-printed on one side with inscription of utility, compounded for direct-burial service.
    b. Width: 3 inch.
    c. Thickness: 4 mil.
    d. Weight: 18.5 lb/1000 sq. ft.
    e. Tensile in accordance with ASTM D882: 30 lbf and 2500 psi.

2.6 TAGS

A. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch, with stamped legend, punched for use with self-locking cable tie fastener.

B. Nonmetallic Preprinted Tags: Polyethylene tags, 0.015 inch thick, color-coded for phase and voltage level, with factory printed permanent designations; punched for use with self-locking cable tie fastener.

C. Write-on Tags:

1. Polyester Tags: 0.010 inch thick, with corrosion-resistant grommet and cable tie for attachment.
2. Marker for Tags:

    a. Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

2.7 SIGNS

A. Baked-Enamel Signs:

1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
2. 1/4 inch grommets in corners for mounting.

3. Nominal Size: 7 by 10 inch.

B. Metal-Backed Butyrate Signs:

1. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs, with 0.0396 inch galvanized-steel backing, punched and drilled for fasteners, and with colors, legend, and size required for application.
2. 1/4 inch grommets in corners for mounting.
3. Nominal Size: 10 by 14 inch.

C. Laminated Acrylic or Melamine Plastic Signs:

1. Engraved legend.
2. Thickness:

a. For signs up to 20 sq. inch, minimum 1/16 inch thick.
b. For signs larger than 20 sq. inch, 1/8 inch thick.
c. Engraved legend with black letters on white face.
d. Punched or drilled for mechanical fasteners with 1/4 inch grommets in corners for mounting.
e. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.8 CABLE TIES

A. General-Purpose Cable Ties: Fungus inert, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 deg F in accordance with ASTM D638: 12,000 psi.
3. Temperature Range: Minus 40 to plus 185 deg F.
4. Color: Black, except where used for color-coding.

B. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 deg F in accordance with ASTM D638: 12,000 psi.
3. Temperature Range: Minus 40 to plus 185 deg F.
4. Color: Black.

C. Plenum-Rated Cable Ties: Self-extinguishing, UV stabilized, one piece, and self-locking.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 deg F in accordance with ASTM D638: 7000 psi.
3. UL 94 Flame Rating: 94V-0.
4. Temperature Range: Minus 50 to plus 284 deg F.
5. Color: Black.

2.9 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Retain paint system applicable for surface material and location (exterior or interior).

B. Fasteners for Labels and Signs: Self-tapping, stainless steel screws or stainless steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 PREPARATION

A. Self-Adhesive Identification Products: Before applying electrical identification products, clean substrates of substances that could impair bond, using materials and methods recommended by manufacturer of identification product.

3.2 INSTALLATION

A. Verify and coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and operation and maintenance manual. Use consistent designations throughout Project.

B. Install identifying devices before installing acoustical ceilings and similar concealment.

C. Verify identity of item before installing identification products.

D. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and operation and maintenance manual.

E. Apply identification devices to surfaces that require finish after completing finish work.

F. Install signs with approved legend to facilitate proper identification, operation, and maintenance of electrical systems and connected items.

G. System Identification for Raceways and Cables under 1000 V: Identification must completely encircle cable or conduit. Place identification of two-color markings in contact, side by side.

1. Secure tight to surface of conductor, cable, or raceway.

H. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.

I. Emergency Operating Instruction Signs: Install instruction signs with white legend on red background with minimum 3/8 inch high letters for emergency instructions at equipment used for power transfer.

J. Elevated Components: Increase sizes of labels, signs, and letters to those appropriate for viewing from floor.

K. Accessible Fittings for Raceways: Identify cover of junction and pull box of the following systems with wiring system legend and system voltage. System legends must be as follows:

1. "EMERGENCY POWER."
2. "POWER."

L. Vinyl Wraparound Labels:

1. Secure tight to surface of raceway or cable at location with high visibility and accessibility.
2. Attach labels that are not self-adhesive type with clear vinyl tape, with adhesive appropriate to location and substrate.

M. Snap-Around Labels: Secure tight to surface at location with high visibility and accessibility.

N. Self-Adhesive Wraparound Labels: Secure tight to surface at location with high visibility and accessibility.

O. Self-Adhesive Labels:

1. Install unique designation label that is consistent with wiring diagrams, schedules, and operation and maintenance manual.
2. Unless otherwise indicated, provide single line of text with 1/2 inch high letters on 1-1/2 inch high label; where two lines of text are required, use labels 2 inch high.

P. Snap-Around Color-Coding Bands: Secure tight to surface at location with high visibility and accessibility.

Q. Heat-Shrink, Preprinted Tubes: Secure tight to surface at location with high visibility and accessibility.

R. Marker Tapes: Secure tight to surface at location with high visibility and accessibility.

S. Self-Adhesive Vinyl Tape: Secure tight to surface at location with high visibility and accessibility.

1. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for minimum distance of 6 inch where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding.

T. Tape and Stencil: Comply with requirements in painting Sections for surface preparation and paint application.

U. Floor Marking Tape: Apply stripes to finished surfaces following manufacturer's instructions.

V. Underground Line Warning Tape:

1. During backfilling of trenches, install continuous underground-line warning tape directly above cable or raceway at 6 to 8 inch below finished grade. Use multiple tapes where width of multiple lines installed in common trench or concrete envelope exceeds 16 inch overall.
2. Limit use of underground-line warning tape to direct-buried cables.

W. Metal Tags:

1. Place in location with high visibility and accessibility.

2. Secure using general-purpose cable ties.

X. Nonmetallic Preprinted Tags:

1. Place in location with high visibility and accessibility.
2. Secure using general-purpose cable ties.

Y. Write-on Tags:

1. Place in location with high visibility and accessibility.
2. Secure using general-purpose cable ties.

Z. Baked-Enamel Signs:

1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to location and substrate.
2. Unless otherwise indicated, provide single line of text with 1/2 inch high letters on minimum 1-1/2 inch high sign; where two lines of text are required, use signs minimum 2 inch high.

AA. Metal-Backed Butyrate Signs:

1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to location and substrate.
2. Unless otherwise indicated, provide single line of text with 1/2 inch high letters on 1-1/2 inch high sign; where two lines of text are required, use labels 2 inch high.

BB. Laminated Acrylic or Melamine Plastic Signs:

1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to location and substrate.
2. Unless otherwise indicated, provide single line of text with 1/2 inch high letters on 1-1/2 inch high sign; where two lines of text are required, use labels 2 inch high.

CC. Cable Ties: General purpose, for attaching tags, except as listed below:

1. Outdoors: UV-stabilized nylon.
2. In Spaces Handling Environmental Air: Plenum rated.

3.3 IDENTIFICATION SCHEDULE

A. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.

B. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, pull points, and locations of high visibility. Identify by system and circuit designation.

C. Accessible Raceways and Metal-Clad Cables, 1000 V or Less, for Service, Feeder, and Branch Circuits, More Than 30 A and 120 V to Ground: Identify with self-adhesive raceway labels.

1. Locate identification at changes in direction, at penetrations of walls and floors, at 50 ft maximum intervals in straight runs, and at 25 ft maximum intervals in congested areas.

D. Accessible Fittings for Raceways and Cables within Buildings: Identify cover of junction and pull box of the following systems with self-adhesive labels containing wiring system legend and system voltage. System legends must be as follows:

1. "EMERGENCY POWER."
2. "POWER."

E. Power-Circuit Conductor Identification, 1000 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use self-adhesive vinyl tape to identify phase.

1. Locate identification at changes in direction, at penetrations of walls and floors, at 50 ft maximum intervals in straight runs, and at 25 ft maximum intervals in congested areas.

F. Control-Circuit Conductor Identification: For conductors and cables in pull and junction boxes, manholes, and handholes, use write-on tags with conductor or cable designation, origin, and destination.

G. Control-Circuit Conductor Termination Identification: For identification at terminations, provide self-adhesive labels with conductor designation.

H. Conductors to Be Extended in Future: Attach write-on tags to conductors and list source.

I. Auxiliary Electrical Systems Conductor Identification: Marker tape that is uniform and consistent with system used by manufacturer for factory-installed connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.

J. Locations of Underground Lines: Underground-line warning tape for power, lighting, communication, and control wiring and optical-fiber cable.

K. Workspace Indication: Apply floor marking tape to finished surfaces. Show working clearances in direction of access to live parts. Workspace must comply with NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.

L. Instructional Signs: Self-adhesive labels, including color code for grounded and ungrounded conductors.

M. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive labels.

1. Apply to exterior of door, cover, or other access.
2. For equipment with multiple power or control sources, apply to door or cover of equipment, including, but not limited to, the following:

a. Power-transfer switches.
b. Controls with external control power connections.

N. Arc Flash Warning Labeling: Self-adhesive labels.

O. Operating Instruction Signs: Self-adhesive labels.

P. Emergency Operating Instruction Signs: Self-adhesive labels with white legend on red background with minimum 3/8 inch high letters for emergency instructions at equipment used for power transfer.

Q. Equipment Identification Labels:

1. Indoor Equipment: Laminated acrylic or melamine plastic sign.
2. Outdoor Equipment: Laminated acrylic or melamine sign.
3. Equipment to Be Labeled:

   a. Panelboards: Typewritten directory of circuits in location provided by panelboard manufacturer. Panelboard identification must be in form of self-adhesive, engraved, laminated acrylic or melamine label.
   b. Enclosures and electrical cabinets.
   c. Access doors and panels for concealed electrical items.
   d. Switchgear.
   e. Switchboards.
   f. Transformers: Label that includes tag designation indicated on Drawings for transformer, feeder, and panelboards or equipment supplied by secondary.
   g. Emergency system boxes and enclosures.
   h. Enclosed switches.
   i. Enclosed circuit breakers.
   j. Enclosed controllers.
   k. Variable-speed controllers.
   l. Push-button stations.
   m. Power-transfer equipment.
   n. Contactors.
   o. Remote-controlled switches, dimmer modules, and control devices.
   p. Monitoring and control equipment.

END OF SECTION 26 05 53

SECTION 26 05 73.13
SHORT-CIRCUIT STUDIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Computer-based, fault-current study to determine minimum interrupting capacity of circuit protective devices.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.
2. Section 260573.16 "Coordination Studies" for overcurrent protective device coordination studies.
3. Section 260573.19 "Arc-Flash Hazard Analysis" for arc-flash studies.

1.2 DEFINITIONS

A. One-Line Diagram: A diagram that shows, by means of single lines and graphic symbols, the course of an electric circuit or system of circuits and the component devices or parts used therein.

B. Protective Device: A device that senses when an abnormal current flow exists and then removes the affected portion of the circuit from the system.

C. SCCR: Short-circuit current rating.

D. Service: The conductors and equipment for delivering electric energy from the serving utility to the wiring system of the premises served.

E. Single-Line Diagram: See "One-Line Diagram."

1.3 ACTION SUBMITTALS

A. Product Data:

1. For power system analysis software to be used for studies.

B. Short-Circuit Study Report:

1. Submit the following after approval of system protective devices submittals. Submittals may be in digital form.

a. Short-circuit study input data, including completed computer program input data sheets.

b. Submit study report for action prior to receiving final approval of distribution equipment submittals. If formal completion of studies will cause delay in equipment manufacturing, obtain approval from Architect for preliminary submittal of sufficient study data to ensure that selection of devices and associated characteristics is satisfactory.
c. Revised one-line diagram, reflecting field investigation results and results of short-circuit study.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For short-circuit study software, certifying compliance with IEEE 399.

1.5 QUALITY ASSURANCE

A. Study must be performed using commercially developed and distributed software designed specifically for power system analysis.

B. Software algorithms must comply with requirements of standards and guides specified in this Section.

C. Manual calculations are unacceptable.

PART 2 - PRODUCTS

2.1 POWER SYSTEM ANALYSIS SOFTWARE

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. EasyPower, LLC (formerly ESA Inc.).
2. EDSA Micro Corporation.
3. ESA Inc.
4. Operation Technology, Inc.
5. Power Analytics, Corporation.
6. SKM Systems Analysis, Inc.

B. Comply with IEEE 399 and IEEE 551.

C. Analytical features of power systems analysis software program must have capability to calculate "mandatory," "very desirable," and "desirable" features as listed in IEEE 399.

D. Computer program must be designed to perform short-circuit studies or have function, component, or add-on module designed to perform short-circuit studies.

E. Computer program must be developed under supervision of licensed professional engineer who holds IEEE Computer Society's Certified Software Development Professional certification.

2.2 SHORT-CIRCUIT STUDY REPORT CONTENTS

A. Executive summary of study findings.

B. Study descriptions, purpose, basis, and scope. Include case descriptions, definition of terms, and guide for interpretation of results.

C. One-line diagram of modeled power system, showing the following:

1. Protective device designations and ampere ratings.
2. Conductor types, sizes, and lengths.
3. Transformer kVA and voltage ratings.
4. Motor and generator designations and kVA ratings.
5. Switchgear, switchboard, motor-control center, and panelboard designations and ratings.
6. Derating factors and environmental conditions.
7. Any revisions to electrical equipment required by study.

D. Comments and recommendations for system improvements or revisions in written document, separate from one-line diagram.

E. Protective Device Evaluation:

1. Evaluate equipment and protective devices and compare to available short-circuit currents. Verify that equipment withstand ratings exceed available short-circuit current at equipment installation locations.
2. Tabulations of circuit breaker, fuse, and other protective device ratings versus calculated short-circuit duties.
3. For 600 V overcurrent protective devices, ensure that interrupting ratings are equal to or higher than calculated 1/2-cycle symmetrical fault current.
4. For devices and equipment rated for asymmetrical fault current, apply multiplication factors listed in standards to 1/2-cycle symmetrical fault current.
5. Verify adequacy of phase conductors at maximum three-phase bolted fault currents; verify adequacy of equipment grounding conductors and grounding electrode conductors at maximum ground-fault currents. Ensure that short-circuit withstand ratings are equal to or higher than calculated 1/2-cycle symmetrical fault current.

F. Short-Circuit Study Input Data:

1. One-line diagram of system being studied.
2. Power sources available.
3. Manufacturer, model, and interrupting rating of protective devices.
4. Conductors.
5. Transformer data.

G. Short-Circuit Study Output Reports:

1. Low-Voltage Fault Report: Three-phase and unbalanced fault calculations, showing the following for each overcurrent device location:

a. Voltage.
b. Calculated fault-current magnitude and angle.
c. Fault-point X/R ratio.
d. Equivalent impedance.

2. Momentary Duty Report: Three-phase and unbalanced fault calculations, showing the following for each overcurrent device location:

    a. Voltage.
    b. Calculated symmetrical fault-current magnitude and angle.
    c. Fault-point X/R ratio.
    d. Calculated asymmetrical fault currents:

        1) Based on fault-point X/R ratio.
        2) Based on calculated symmetrical value multiplied by 1.6.
        3) Based on calculated symmetrical value multiplied by 2.7.

3. Interrupting Duty Report: Three-phase and unbalanced fault calculations, showing the following for each overcurrent device location:

    a. Voltage.
    b. Calculated symmetrical fault-current magnitude and angle.
    c. Fault-point X/R ratio.
    d. No AC Decrement (NACD) ratio.
    e. Equivalent impedance.
    f. Multiplying factors for 2-, 3-, 5-, and 8-cycle circuit breakers rated on symmetrical basis.
    g. Multiplying factors for 2-, 3-, 5-, and 8-cycle circuit breakers rated on total basis.

PART 3 - EXECUTION

3.1 POWER SYSTEM DATA

A. Obtain data necessary for conduct of study.

1. Verify completeness of data supplied on one-line diagram. Call discrepancies to Architect's attention.
2. For equipment included as Work of this Project, use characteristics submitted under provisions of action submittals and information submittals for this Project.

B. Gather and tabulate required input data to support short-circuit study. Comply with requirements in Section 017839 "Project Record Documents" for recording circuit protective device characteristics. Record data on Record Document copy of one-line diagram. Comply with recommendations in IEEE 551 as to amount of detail that is required to be acquired in field. Field data gathering must be by, or under supervision of, qualified electrical professional engineer. Data include, but are not limited to, the following:

1. Product Data for Project's overcurrent protective devices involved in overcurrent protective device coordination studies. Use equipment designation tags that are consistent with electrical distribution system diagrams, overcurrent protective device submittals, input and output data, and recommended device settings.
2. Obtain electrical power utility impedance at service.
3. Power sources and ties.
4. For transformers, include kVA, primary and secondary voltages, connection type, impedance, X/R ratio, taps measured in percent, and phase shift.
5. For reactors, provide manufacturer and model designation, voltage rating, and impedance.

6. For circuit breakers and fuses, provide manufacturer and model designation. List type of breaker, type of trip, SCCR, current rating, and breaker settings.
7. Generator short-circuit current contribution data, including short-circuit reactance, rated kVA, rated voltage, and X/R ratio.
8. Busway manufacturer and model designation, current rating, impedance, lengths, and conductor material.
9. Motor horsepower and NEMA MG 1 code letter designation.
10. Conductor sizes, lengths, number, conductor material and conduit material (magnetic or nonmagnetic).
11. Derating factors.

3.2 SHORT-CIRCUIT STUDY

A. Perform study following general study procedures contained in IEEE 399.

B. Calculate short-circuit currents according to IEEE 551.

C. Base study on device characteristics supplied by device manufacturer.

D. Begin short-circuit current analysis at service, extending down to system overcurrent protective devices as follows:

1. To normal system low-voltage load buses where fault current is 5 kA or less.
2. Exclude equipment supplied by single transformer smaller than 75 kVA.

E. Study electrical distribution system from normal and alternate power sources throughout electrical distribution system for Project. Study cases of system-switching configurations and alternate operations that could result in maximum fault conditions.

F. Include ac fault-current decay from induction motors, synchronous motors, and asynchronous generators and apply to low- and medium-voltage, three-phase ac systems. Also account for fault-current dc decrement to address asymmetrical requirements of interrupting equipment.

G. Calculate short-circuit momentary and interrupting duties for three-phase bolted fault and single line-to-ground fault at each equipment indicated on one-line diagram.

1. For grounded systems, provide bolted line-to-ground fault-current study for areas as defined for three-phase bolted fault short-circuit study.

H. Include in report identification of protective device applied outside its capacity.

END OF SECTION 26 05 73.13

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SECTION 26 05 73.16
COORDINATION STUDIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Computer-based, overcurrent protective device coordination studies to determine overcurrent protective devices and to determine overcurrent protective device settings for selective tripping.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.
2. Section 260573.13 "Short-Circuit Studies" for fault-current studies.
3. Section 260573.19 "Arc-Flash Hazard Analysis" for arc-flash studies.

1.2 DEFINITIONS

A. One-Line Diagram: A diagram that shows, by means of single lines and graphic symbols, the course of electric circuit or system of circuits and the component devices or parts used therein.

B. Protective Device: A device that senses when abnormal current flow exists and then removes the affected portion of the circuit from the system.

C. SCCR: Short-circuit current rating.

D. Service: The conductors and equipment for delivering electric energy from the serving utility to the wiring system of the premises served.

E. Single-Line Diagram: See "One-Line Diagram."

1.3 ACTION SUBMITTALS

A. Product Data:

1. For power system analysis software to be used for studies.

B. Coordination Study Report:

1. Submit the following after approval of system protective devices submittals. Submittals may be in digital form.

a. Coordination-study input data, including completed computer program input data sheets.
b. Study and equipment evaluation reports.

c. Submit study report for action prior to receiving final approval of distribution equipment submittals. If formal completion of studies will cause delay in equipment manufacturing, obtain approval from Architect for preliminary submittal of sufficient study data to ensure that selection of devices and associated characteristics is satisfactory.
d. Revised one-line diagram, reflecting field investigation results and results of coordination study.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For overcurrent protective device coordination study software, certifying compliance with IEEE 399.

1.5 QUALITY ASSURANCE

A. Studies must be performed using commercially developed and distributed software designed specifically for power system analysis.

B. Software algorithms must comply with requirements of standards and guides specified in this Section.

C. Manual calculations are unacceptable.

PART 2 - PRODUCTS

2.1 POWER SYSTEM ANALYSIS SOFTWARE

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. EasyPower, LLC (formerly ESA Inc.).
2. EDSA Micro Corporation.
3. ESA Inc.
4. Operation Technology, Inc.
5. Power Analytics, Corporation.
6. SKM Systems Analysis, Inc.

B. Comply with IEEE 242 and IEEE 399.

C. Analytical features of device coordination study computer software program must have capability to calculate "mandatory," "very desirable," and "desirable" features as listed in IEEE 399.

D. Computer software program must be capable of plotting and diagramming time-current-characteristic curves as part of its output. Computer software program must report device settings and ratings of overcurrent protective devices and must demonstrate selective coordination by computer-generated, time-current coordination plots.

E. Computer program must be designed to perform coordination studies or have function, component, or add-on module designed to perform coordination studies.

F. Computer program must be developed under supervision of licensed professional engineer who holds IEEE Computer Society's Certified Software Development Professional certification.

2.2 COORDINATION STUDY REPORT CONTENTS

A. Executive summary of study findings.

B. Study descriptions, purpose, basis, and scope. Include case descriptions, definition of terms, and guide for interpretation of results.

C. One-line diagram of modeled power system, showing the following:

1. Protective device designations and ampere ratings.
2. Conductor types, sizes, and lengths.
3. Transformer kVA and voltage ratings.
4. Motor and generator designations and kVA ratings.
5. Switchgear, switchboard, motor-control center, and panelboard designations.
6. Revisions to electrical equipment required by study.
7. Study Input Data: As described in "Power System Data" Article.

a. Short-Circuit Study Output: As specified in "Short-Circuit Study Output Reports" Paragraph in "Short-Circuit Study Report Contents" Article in Section 260573.13 "Short-Circuit Studies."

D. Protective Device Coordination Study:

1. Report recommended settings of protective devices, ready to be applied in field. Use manufacturer's data sheets for recording recommended setting of overcurrent protective devices when available.

a. Phase and Ground Relays:

1) Device tag.
2) Relay current transformer ratio and tap, time dial, and instantaneous pickup value.
3) Recommendations on improved relaying systems, if applicable.

b. Circuit Breakers:

1) Adjustable pickups and time delays (long time, short time, and ground).
2) Adjustable time-current characteristic.
3) Adjustable instantaneous pickup.
4) Recommendations on improved trip systems, if applicable.

c. Fuses: Show current rating, voltage, and class.

E. Time-Current Coordination Curves: Determine settings of overcurrent protective devices to achieve selective coordination. Graphically illustrate that adequate time separation exists between devices installed in series, including power utility company's upstream devices. Prepare separate sets of curves for switching schemes and for emergency periods where power source is local generation. Show the following information:

1. Device tag and title, one-line diagram with legend identifying portion of system covered.

2. Terminate device characteristic curves at point reflecting maximum symmetrical or asymmetrical fault current to which device is exposed.
3. Identify device associated with each curve by manufacturer type, function, and, if applicable, tap, time delay, and instantaneous settings recommended.
4. Plot the following listed characteristic curves, as applicable:

    a. Power utility's overcurrent protective device.
    b. Medium-voltage equipment overcurrent relays.
    c. Medium- and low-voltage fuses including manufacturer's minimum melt, total clearing, tolerance, and damage bands.
    d. Low-voltage equipment circuit-breaker trip devices, including manufacturer's tolerance bands.
    e. Transformer full-load current, magnetizing inrush current, and ANSI through-fault protection curves.
    f. Cables and conductors damage curves.
    g. Ground-fault protective devices.
    h. Motor-starting characteristics and motor damage points.
    i. Generator short-circuit decrement curve and generator damage point.
    j. Largest feeder circuit breaker in each motor-control center and panelboard.

5. Maintain selectivity for tripping currents caused by overloads.
6. Provide adequate time margins between device characteristics such that selective operation is achieved.
7. Comments and recommendations for system improvements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine Project overcurrent protective device submittals for compliance with electrical distribution system coordination requirements and other conditions affecting performance of the Work. Devices to be coordinated are indicated on Drawings.

1. Proceed with coordination study only after relevant equipment submittals have been assembled. Overcurrent protective devices that have not been submitted and approved prior to coordination study may not be used in study.

3.2 POWER SYSTEM DATA

A. Obtain data necessary for conduct of overcurrent protective device study.

1. Verify completeness of data supplied in one-line diagram on Drawings. Call discrepancies to Architect's attention.
2. For equipment included as Work of this Project, use characteristics submitted under provisions of action submittals and information submittals for this Project.

B. Gather and tabulate required input data to support coordination study. List below is guide. Comply with recommendations in IEEE 551 for amount of detail required to be acquired in field. Field data gathering must be by, or under supervision of, qualified electrical professional engineer. Data include, but are not limited to, the following:

1. Product Data for overcurrent protective devices specified in other Sections and involved in overcurrent protective device coordination studies. Use equipment designation tags that are consistent with electrical distribution system diagrams, overcurrent protective device submittals, input and output data, and recommended device settings.
2. Electrical power utility impedance at service.
3. Power sources and ties.
4. Short-circuit current at each system bus (three phase and line to ground).
5. Full-load current of loads.
6. Voltage level at each bus.
7. For transformers, include kVA, primary and secondary voltages, connection type, impedance, X/R ratio, taps measured in percent, and phase shift.
8. For reactors, provide manufacturer and model designation, voltage rating, and impedance.
9. For circuit breakers and fuses, provide manufacturer and model designation. List type of breaker, type of trip and available range of settings, SCCR, current rating, and breaker settings.
10. Generator short-circuit current contribution data, including short-circuit reactance, rated kVA, rated voltage, and X/R ratio.
11. For relays, provide manufacturer and model designation, current transformer ratios, potential transformer ratios, and relay settings.
12. Maximum demands from service meters.
13. Busway manufacturer and model designation, current rating, impedance, lengths, size, and conductor material.
14. Motor horsepower and NEMA MG 1 code letter designation.
15. Low-voltage cable sizes, lengths, number, conductor material, and conduit material (magnetic or nonmagnetic).
16. Medium-voltage cable sizes, lengths, conductor material, cable construction, metallic shield performance parameters, and conduit material (magnetic or nonmagnetic).
17. Data sheets to supplement electrical distribution system one-line diagram, cross-referenced with tag numbers on diagram, showing the following:

    a. Special load considerations, including starting inrush currents and frequent starting and stopping.
    b. Transformer characteristics, including primary protective device, magnetic inrush current, and overload capability.
    c. Motor full-load current, locked rotor current, service factor, starting time, type of start, and thermal-damage curve.
    d. Generator thermal-damage curve.
    e. Ratings, types, and settings of utility company's overcurrent protective devices.
    f. Special overcurrent protective device settings or types stipulated by utility company.
    g. Time-current-characteristic curves of devices indicated to be coordinated.
    h. Manufacturer, frame size, interrupting rating in amperes root mean square (rms) symmetrical, ampere or current sensor rating, long-time adjustment range, short-time adjustment range, and instantaneous adjustment range for circuit breakers.
    i. Manufacturer and type, ampere-tap adjustment range, time-delay adjustment range, instantaneous attachment adjustment range, and current transformer ratio for overcurrent relays.
    j. Switchgear, switchboards, motor-control centers, and panelboards ampacity, and SCCR in amperes rms symmetrical.
    k. Identify series-rated interrupting devices for condition where available fault current is greater than interrupting rating of downstream equipment. Obtain device data details to allow verification that series application of these devices complies with NFPA 70 and UL 489 requirements.

3.3 COORDINATION STUDY

A. Comply with IEEE 242 for calculating short-circuit currents and determining coordination time intervals.

B. Comply with IEEE 399 for general study procedures.

C. Base study on device characteristics supplied by device manufacturer.

D. Begin analysis at service, extending down to system overcurrent protective devices as follows:

1. To normal system low-voltage load buses where fault current is 5 kA or less.

E. Study electrical distribution system from normal and alternate power sources throughout electrical distribution system for Project. Study cases of system-switching configurations and alternate operations that could result in maximum fault conditions.

F. Transformer Primary Overcurrent Protective Devices:

1. Device must not operate in response to the following:

a. Inrush current when first energized.
b. Self-cooled, full-load current or forced-air-cooled, full-load current, whichever is specified for that transformer.
c. Permissible transformer overloads according to IEEE C57.96 if required by unusual loading or emergency conditions.

2. Device settings must protect transformers according to IEEE C57.12.00, for fault currents.

G. Motor Protection:

1. Select protection for low-voltage motors according to IEEE 242 and NFPA 70.
2. Select protection for motors served at voltages more than 600 V according to IEEE 620.

H. Conductor Protection: Protect cables against damage from fault currents according to ICEA P-32-382, ICEA P-45-482, and protection recommendations in IEEE 242. Demonstrate that equipment withstands maximum short-circuit current for time equivalent to tripping time of primary relay protection or total clearing time of fuse. To determine temperatures that damage insulation, use curves from cable manufacturers or from listed standards indicating conductor size and short-circuit current.

I. Generator Protection: Select protection according to manufacturer's instructions and to IEEE 242.

J. Include ac fault-current decay from induction motors, synchronous motors, and asynchronous generators and apply to low- and medium-voltage, three-phase ac systems. Also account for fault-current dc decrement, to address asymmetrical requirements of interrupting equipment.

K. Calculate short-circuit momentary and interrupting duties for three-phase bolted fault and single line-to-ground fault at each equipment indicated on one-line diagram.

1. For grounded systems, provide bolted line-to-ground fault-current study for areas as defined for three-phase bolted fault short-circuit study.

L. Protective Device Evaluation:

1. Evaluate equipment and protective devices and compare to short-circuit ratings.
2. Adequacy of switchgear, motor-control centers, and panelboard bus bars to withstand short-circuit stresses.
3. Include in report identification of protective device applied outside its capacity.

3.4 FIELD ADJUSTING

A. Adjust relay and protective device settings according to recommended settings provided by coordination study. Field adjustments must be completed by engineering service division of equipment manufacturer under "Startup and Acceptance Testing" contract portion.

B. Make minor modifications to equipment as required to accomplish compliance with short-circuit and protective device coordination studies.

C. Testing and adjusting must be by qualifiedlow-voltage electrical testing and inspecting agency.

1. Perform each visual and mechanical inspection and electrical test stated in NETA ATS. Certify compliance with test parameters. Perform NETA tests and inspections for adjustable overcurrent protective devices.

END OF SECTION 26 05 73.16

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SECTION 26 05 73.19
ARC-FLASH HAZARD ANALYSIS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Computer-based, arc-flash study to determine arc-flash hazard distance and incident energy to which personnel could be exposed during work on or near electrical equipment.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

1.2 DEFINITIONS

A. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

B. One-Line Diagram: A diagram that shows, by means of single lines and graphic symbols, the course of an electric circuit or system of circuits and the component devices or parts used therein.

C. Protective Device: A device that senses when an abnormal current flow exists and then removes the affected portion from the system.

D. p.u.: Per unit. The reference unit, established as a calculating convenience, for expressing all power system electrical parameters on a common reference base.

E. SCCR: Short-circuit current rating.

F. Service: The conductors and equipment for delivering electric energy from the serving utility to the wiring system of the premises served.

G. Single-Line Diagram: See "One-Line Diagram."

1.3 ACTION SUBMITTALS

A. Product Data:

1. For power system analysis software to be used for studies.

B. Study Submittals:

1. Submit the following after approval of system protective devices submittals. Submittals may be in digital form:

a. Arc-flash study input data, including completed computer program input data sheets.
b. Submit study report for action prior to receiving final approval of distribution equipment submittals. If formal completion of studies will cause delay in equipment manufacturing, obtain approval from Architect for preliminary submittal of sufficient study data to ensure that selection of devices and associated characteristics is satisfactory.
c. Revised one-line diagram, reflecting field investigation results and results of arc-flash study.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For arc-flash hazard analysis software, certifying compliance with IEEE 1584 and NFPA 70E.

1.5 QUALITY ASSURANCE

A. Study must be performed using commercially developed and distributed software designed specifically for power system analysis.

B. Software algorithms must comply with requirements of standards and guides specified in this Section.

C. Manual calculations are unacceptable.

PART 2 - PRODUCTS

2.1 COMPUTER SOFTWARE

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. EasyPower, LLC (formerly ESA Inc.).
2. EDSA Micro Corporation.
3. ESA Inc.
4. Operation Technology, Inc.
5. Power Analytics, Corporation.
6. SKM Systems Analysis, Inc.

B. Comply with IEEE 1584 and NFPA 70E.

C. Analytical features of device coordination study computer software program must have capability to calculate "mandatory," "very desirable," and "desirable" features as listed in IEEE 399.

D. Computer program must be designed to perform arc-flash analysis or have function, component, or add-on module designed to perform arc-flash analysis.

E. Computer program must be developed under supervision of licensed professional engineer who holds IEEE Computer Society's Certified Software Development Professional certification.

2.2 ARC-FLASH STUDY REPORT CONTENT

A. Executive summary of study findings.

B. Study descriptions, purpose, basis, and scope. Include case descriptions, definition of terms, and guide for interpretation of results.

C. One-line diagram, showing the following:

1. Protective device designations and ampere ratings.
2. Conductor types, sizes, and lengths.
3. Transformer kVA and voltage ratings, including derating factors and environmental conditions.
4. Motor and generator designations and kVA ratings.
5. Switchgear, switchboard, motor-control center, panelboard designations, and ratings.

D. Study Input Data: As described in "Power System Data" Article.

E. Arc-Flash Study Output Reports:

1. Interrupting Duty Report: Three-phase and unbalanced fault calculations, showing the following for each equipment location included in report:

a. Voltage.
b. Calculated symmetrical fault-current magnitude and angle.
c. Fault-point X/R ratio.
d. No AC Decrement (NACD) ratio.
e. Equivalent impedance.
f. Multiplying factors for 2-, 3-, 5-, and 8-cycle circuit breakers rated on symmetrical basis.
g. Multiplying factors for 2-, 3-, 5-, and 8-cycle circuit breakers rated on total basis.

F. Incident Energy and Flash Protection Boundary Calculations:

1. Arcing fault magnitude.
2. Protective device clearing time.
3. Duration of arc.
4. Arc-flash boundary.
5. Restricted approach boundary.
6. Limited approach boundary.
7. Working distance.
8. Incident energy.
9. Hazard risk category.
10. Recommendations for arc-flash energy reduction.

G. Fault study input data, case descriptions, and fault-current calculations including definition of terms and guide for interpretation of computer printout.

2.3 ARC-FLASH WARNING LABELS

A. Comply with requirements in Section 260553 "Identification for Electrical Systems" for self-adhesive equipment labels. Produce 3.5 by 5 inch self-adhesive equipment label for each work location included in analysis.

B. Label must have orange header with wording, "WARNING, ARC-FLASH HAZARD," and must include the following information taken directly from arc-flash hazard analysis:

1. Location designation.
2. Nominal voltage.
3. Protection boundaries.

    a. Arc-flash boundary.
    b. Restricted approach boundary.
    c. Limited approach boundary.

4. Arc flash PPE category.
5. Required minimum arc rating of PPE in Cal/cm squared.
6. Available incident energy.
7. Working distance.
8. Engineering report number, revision number, and issue date.

C. Labels must be machine printed, with no field-applied markings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine Project overcurrent protective device submittals. Proceed with arc-flash study only after relevant equipment submittals have been assembled. Overcurrent protective devices that have not been submitted and approved prior to arc-flash study may not be used in study.

3.2 ARC-FLASH HAZARD ANALYSIS

A. Comply with NFPA 70E and its Annex D for hazard analysis study.

B. Preparatory Studies: Perform Short-Circuit and Protective Device Coordination studies prior to starting Arc-Flash Hazard Analysis.

1. Short-Circuit Study Output: As specified in "Short-Circuit Study Output Reports" Paragraph in "Short-Circuit Study Report Contents" Article in Section 260573.13 "Short-Circuit Studies."
2. Coordination Study Report Contents: As specified in "Coordination Study Report Contents" Article in Section 260573.16 "Coordination Studies."

C. Calculate maximum and minimum contributions of fault-current size.

1. Maximum calculation must assume maximum contribution from utility and must assume motors to be operating under full-load conditions.
2. Calculate arc-flash energy at 38 percent of maximum short-circuit current in accordance with NFPA 70E recommendations.

D. Calculate arc-flash protection boundary and incident energy at locations in electrical distribution system where personnel could perform work on energized parts.

E. Include medium- and low-voltage equipment locations, except equipment fed from transformers smaller than 75 kVA.

F. Calculate limited, restricted, and prohibited approach boundaries for each location.

G. Incident energy calculations must consider accumulation of energy over time when performing arc-flash calculations on buses with multiple sources. Iterative calculations must take into account changing current contributions, as sources are interrupted or decremented with time. Fault contribution from motors and generators must be decremented as follows:

1. Fault contribution from induction motors must not be considered beyond three to five cycles.
2. Fault contribution from synchronous motors and generators must be decayed to match actual decrement of each as closely as possible (for example, contributions from permanent magnet generators will typically decay from 10 p.u. to 3 p.u. after 10 cycles).

H. Arc-flash energy must generally be reported for maximum of line or load side of circuit breaker. However, arc-flash computation must be performed and reported for both line and load side of circuit breaker as follows:

1. When circuit breaker is in separate enclosure.
2. When line terminals of circuit breaker are separate from work location.

I. Base arc-flash calculations on actual overcurrent protective device clearing time. Cap maximum clearing time at two seconds based on IEEE 1584, Section B.1.2.

3.3 POWER SYSTEM DATA

A. Obtain data necessary for conduct of arc-flash hazard analysis.

1. Verify completeness of data supplied on one-line diagram on Drawings and under "Preparatory Studies" Paragraph in "Arc-Flash Hazard Analysis" Article. Call discrepancies to Architect's attention.
2. For new equipment, use characteristics from approved submittals under provisions of action submittals and information submittals for this Project.
3. For existing equipment, whether or not relocated, obtain required electrical distribution system data by field investigation and surveys conducted by qualified technicians and engineers.

B. Electrical Survey Data: Gather and tabulate the following input data to support study. Comply with recommendations in IEEE 1584 and NFPA 70E as to amount of detail that is required to be acquired in field. Field data gathering must be under direct supervision and control of engineer in charge of performing study, and must be by, or under supervision of, qualified electrical professional engineer. Data include, but are not limited to, the following:

1. Product Data for overcurrent protective devices specified in other Sections and involved in overcurrent protective device coordination studies. Use equipment designation tags that are consistent with electrical distribution system diagrams, overcurrent protective device submittals, input and output data, and recommended device settings.
2. Obtain electrical power utility impedance or available short circuit current at service.
3. Power sources and ties.
4. Short-circuit current at each system bus (three phase and line to ground).
5. Full-load current of loads.

6. Voltage level at each bus.
7. For transformers, include kVA, primary and secondary voltages, connection type, impedance, X/R ratio, taps measured in percent, and phase shift.
8. For reactors, provide manufacturer and model designation, voltage rating and impedance.
9. For circuit breakers and fuses, provide manufacturer and model designation. List type of breaker, type of trip and available range of settings, SCCR, current rating, and breaker settings.
10. Generator short-circuit current contribution data, including short-circuit reactance, rated kVA, rated voltage, and X/R ratio.
11. For relays, provide manufacturer and model designation, current transformer ratios, potential transformer ratios, and relay settings.
12. Busway manufacturer and model designation, current rating, impedance, lengths, size, and conductor material.
13. Motor horsepower and NEMA MG 1 code letter designation.
14. Low-voltage conductor sizes, lengths, number, conductor material and conduit material (magnetic or nonmagnetic).
15. Medium-voltage conductor sizes, lengths, conductor material, conductor construction and metallic shield performance parameters, and conduit material (magnetic or nonmagnetic).

3.4 LABELING

A. Apply one arc-flash label on front cover of each section of equipment and on side or rear covers with accessible live parts and hinged doors or removable plates for each equipment included in study. Base arc-flash label data on highest values calculated at each location.

B. Each piece of equipment listed below must have arc-flash label applied to it:
   1. Low-voltage switchgear.
   2. Switchboards.
   3. Panelboards.
   4. Low voltage transformers.
   5. Safety switches.
   6. Control panels.

C. Note on record Drawings location of equipment where personnel could be exposed to arc-flash hazard during their work.

   1. Indicate arc-flash energy.
   2. Indicate protection level required.

3.5 APPLICATION OF WARNING LABELS

A. Install arc-flash warning labels under direct supervision and control of qualified electrical professional engineer.

END OF SECTION 26 05 73.19

SECTION 26 08 00
COMMISSIONING OF ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Electrical equipment connected to Normal electrical systems, including the following:

a. Transformers.
b. Distribution and branch-circuit panelboards.
c. Grounding systems.

2. Electrical equipment connected to Essential electrical systems that provide an alternative source of power in the absence of power from the Normal electrical system, including the following:

a. Distribution and branch-circuit panelboards.
b. Grounding systems.
c. Generators.
d. UPS.

3. Controls and instrumentation, including the following:

a. Electrical metering and metering system.
b. Lighting control systems.
c. Security systems.
d. Fire-alarm systems.

4. Systems testing and verification, including Normal and Essential electrical systems, and transitions from Normal to Essential electrical systems and back.

B. Related Requirements:

1. Section 01 91 13 "General Commissioning Requirements" for general Cx process requirements and CxA responsibilities.
2. Section 26 00 10 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

1.2 DEFINITIONS

A. BoD: Basis-of-Design Document, as defined in Section 01 91 13 "General Commissioning Requirements."

B. Cx: Commissioning, as defined in Section 01 91 13 "General Commissioning Requirements."

C. CxA: Commissioning Authority, as defined in Section 01 91 13 "General Commissioning Requirements."

D. OPR: Owner's Project Requirements, as defined in Section 01 91 13 "General Commissioning Requirements."

E. "Systems," "Assemblies," "Subsystems," "Equipment," and "Components": Where these terms are used together or separately, they mean "as-built" systems, assemblies, subsystems, equipment, and components.

1.3 INFORMATIONAL SUBMITTALS

A. Construction Checklists by CxA: Draft construction checklists will be created by CxA for Contractor review.

1.4 QUALITY ASSURANCE

A. Testing Equipment and Instrumentation Quality and Calibration: For test equipment and instrumentation required to perform electrical Cx work, perform the following:

1. Submit test equipment and instrumentation list. For each equipment or instrument, identify the following:

a. Equipment/instrument identification number.
b. Planned Cx application or use.
c. Manufacturer, make, model, and serial number.
d. Calibration history, including certificates from agencies that calibrate the equipment and instrumentation.

2. Test equipment and instrumentation must meet the following criteria:

a. Capable of testing and measuring performance within the specified acceptance criteria.
b. Be calibrated at manufacturer's recommended intervals with current calibration tags permanently affixed to the instrument being used.
c. Be maintained in good repair and operating condition throughout duration of use on Project.
d. Be recalibrated/repaired if dropped or damaged in any way since last calibrated.

B. Proprietary Test Instrumentation and Tools:

1. Equipment Manufacturer's Proprietary Instrumentation and Tools: For installed equipment included in the Cx process, test instrumentation and tools manufactured or prescribed by equipment manufacturer to service, calibrate, adjust, repair, or otherwise work on its equipment or required as a condition of equipment warranty, perform the following:

a. Submit proprietary instrumentation and tools list. For each instrument or tool, identify the following:

1) Instrument or tool identification number.
2) Equipment schedule designation of equipment for which the instrument or tool is required.

3) Manufacturer, make, model, and serial number.
4) Calibration history, including certificates from agencies that calibrate the instrument or tool, where appropriate.

b. Include a separate list of proprietary test instrumentation and tools in operation and maintenance manuals.
c. Electrical proprietary test instrumentation and tools become property of Owner at the time of Substantial Completion.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 CONSTRUCTION CHECKLIST REVIEW

A. Review and provide written comments on draft construction checklists. CxA will create required draft construction checklists and provide them to Contractor.

B. Return draft Construction Checklist review comments within 10 days of receipt.

C. When review comments have been resolved, CxA will provide final construction checklists, marked "Approved for Use, (date)."

D. Use only construction checklists, marked "Approved for Use, (date)."

3.2 GENERAL TESTING REQUIREMENTS

A. Certify that electrical systems, subsystems, and equipment have been installed, calibrated, and started and that they are operating according to the Contract Documents and approved Shop Drawings and submittals.

B. Certify that electrical instrumentation and control systems have been completed and calibrated, that they are operating according to the Contract Documents and approved Shop Drawings and submittals, and that pretest set points have been recorded.

C. Set systems, subsystems, and equipment into operating mode to be tested according to approved test procedures (for example, normal shutdown, normal auto position, normal manual position, unoccupied cycle, emergency power, and alarm conditions).

D. Measure capacities and effectiveness of systems, assemblies, subsystems, equipment, and components, including operational and control functions to verify compliance with acceptance criteria.

E. Test systems, assemblies, subsystems, equipment, and components operating modes, interlocks, control responses, and responses to abnormal or emergency conditions, and response according to acceptance criteria.

F. Construction Checklists: Prepare and submit detailed construction checklists for electrical systems, subsystems, equipment, and components.

1. Contributors to development of construction checklists must include, but are not limited to, the following:

    a. Electrical systems and equipment installers.
    b. Electrical instrumentation and controls installers.

G. Perform tests using design conditions, whenever possible.

1. Simulated conditions may, with approval of Architect, be imposed using an artificial load when it is impractical to test under design conditions. Before simulating conditions, calibrate testing instruments. Provide equipment to simulate loads. Set simulated conditions as directed by CxA, and document simulated conditions and methods of simulation. After tests, return configurations and settings to normal operating conditions.
2. Cx test procedures may direct that set points be altered when simulating conditions is impractical.
3. Cx test procedures may direct that sensor values be altered with a signal generator when design or simulating conditions and altering set points are impractical.

H. If tests cannot be completed because of a deficiency outside the scope of the electrical system, document the deficiency and report it to Owner. After deficiencies are resolved, reschedule tests.

I. If seasonal testing is specified, complete appropriate initial performance tests and documentation and schedule seasonal tests.

J. Coordinate schedule with, and perform Cx activities at the direction of the CxA.

K. Comply with Construction Checklist requirements, including material verification, installation checks, startup, and performance tests requirements specified in Sections specifying electrical systems and equipment.

L. Provide qualified testing and inspecting agency personnel in accordance with Section 26 00 10 "Supplemental Requirements for Electrical," instrumentation, tools, and equipment to complete and document the following:

1. Performance tests.
2. Demonstration of a sample of performance tests.
3. Cx tests.
4. Cx test demonstrations.

3.3 Cx TESTS FOR ELECTRICAL SYSTEMS

A. Verification of Normal Electrical System Operation:

1. Prerequisites: Acceptance of results for construction checklists for Division 26 electrical components associated with Normal electrical system.
2. Equipment and Systems to Be Tested: Division 26 electrical equipment.
3. Test Purpose: Verify operation of Normal electrical system.
4. Test Conditions: Energize components of Normal electrical system, one at a time.
5. Acceptance Criteria: Proper operation of Normal electrical system over a 24-hour period.

B. Verification of Essential Electrical System Operation:

1. Prerequisites:

    a. Acceptance of results for construction checklists for Division 26 electrical components associated with Essential electrical system.
    b. Completion of "Verification of Normal Electrical System Operation" tests.

2. Equipment and Systems to Be Tested: Division 26 electrical equipment.
3. Test Purpose: Verify operation of Essential electrical system.
4. Test Conditions:

    a. Energize components of Normal electrical system.
    b. Simulate a failure of Normal electrical system.

5. Acceptance Criteria: Transfer of power from Normal to Essential electrical system within OPR.

C. Verification of Control and Instrumentation:

D. Test Purpose: Verify operation of control and monitoring systems for Normal and Essential electrical systems.

E. Test Conditions:

1. Energize components of Normal electrical system.
2. Test operation of equipment.

F. Acceptance Criteria: Operation of equipment according to OPR.

END OF SECTION 26 08 00

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SECTION 26 09 23
LIGHTING CONTROL DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Electronic time switches.
2. Outdoor photoelectric switches, low voltage.
3. Daylight-harvesting dimming controls, digital.
4. Indoor occupancy and vacancy sensors.
5. Switchbox-mounted occupancy sensors.
6. Digital timer light switch.
7. High-bay occupancy sensors.
8. Outdoor motion sensors.
9. Lighting contactors.
10. Emergency shunt relay.
11. Conductors and cables.

B. Related Requirements:

1. Section 26 00 10 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.
2. Section 26 27 26 "Wiring Devices" for wall-box dimmers, non-networkable wall-switch occupancy sensors, and manual light switches.

1.2 ACTION SUBMITTALS

A. Product Data:

1. For each type of product.

B. Shop Drawings:

1. Show installation details for the following:

   a. Occupancy sensors.
   b. Vacancy sensors.

2. Interconnection diagrams showing field-installed wiring.
3. Include diagrams for power, signal, and control wiring.

C. Field quality-control reports.

1.3 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For manufacturer's warranties.

1.4 WARRANTY

A. Special Extended Warranty: Manufacturer and Installer warrant that installed lighting control devices perform in accordance with specified requirements and agree to repair or replace, including labor, materials, and equipment, devices that fail to perform as specified within extended warranty period.

1. Failures include, but are not limited to, the following:

a. Faulty operation of lighting control software.
b. Faulty operation of lighting control devices.

2. Extended Warranty Period: Two year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 ELECTRONIC TIME SWITCHES

A. Electronic Time Switches: Solid state, programmable, with alphanumeric display; complying with UL 917.

1. Listed and labeled in accordance with NFPA 70, by a qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Contact Configuration: SPST DPST DPDT.
3. Contact Rating: 20 A ballast load, 120/240 V(ac).
4. Programs:

a. Two on-off set points on a 24-hour schedule, allowing different set points for each day of the week and an annual holiday schedule that overrides the weekly operation on holidays.

5. Circuitry: Allow connection of a photoelectric relay as substitute for on-off function of a program.
6. Astronomic Time: All channels.
7. Automatic daylight savings time changeover.
8. Battery Backup: Not less than seven days reserve, to maintain schedules and time clock.

2.2 OUTDOOR PHOTOELECTRIC SWITCHES, LOW VOLTAGE

A. Description: Solid state; one set of NO dry contacts rated for 24 V(dc) at 1 A, to operate connected load, complying with UL 773, and compatible with lighting control panelboard.

1. Listed and labeled in accordance with NFPA 70, by a qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. Light-Level Monitoring Range: 1.5 to 10 fc, with an adjustment for turn-on and turn-off levels within that range.
3. Time Delay: Thirty-second minimum, to prevent false operation.
4. Mounting: 1/2 inch threaded male conduit.
5. Failure Mode: Luminaire stays ON.

2.3 DAYLIGHT-HARVESTING DIMMING CONTROLS, DIGITAL

A. Description: Sensing daylight and electrical lighting levels, the system adjusts the indoor electrical lighting levels. As daylight increases, lights are dimmed.

1. Lighting control set point is based on the following two lighting conditions:

   a. When no daylight is present (target level).
   b. When significant daylight is present.

2. System programming is done with two hand-held, remote-control tools.

   a. Initial setup tool.
   b. Tool for occupants to adjust the target levels by increasing the set point up to 25 percent, or by minimizing the electric lighting level.

B. Ceiling-Mounted Dimming Controls: Solid-state, light-level sensor unit, with integrated power pack, to detect changes in indoor lighting levels that are perceived by the eye.

C. Electrical Components, Devices, and Accessories:

1. Listed and labeled in accordance with NFPA 70, by a qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Sensor Output: zero to 10 V(dc) to operate luminaires. Sensor is powered by controller unit.
3. Light-Level Sensor Set-Point Adjustment Range: 20 to 60 fc.

D. Power Pack: Digital controller capable of accepting RJ45 inputs with one output rated for 20 A incandescent or LED load at 120 and 277 V(ac), for 16 A ballast load or LED at 120 and 277 V(ac), and for 1 hp at 120 V(ac). Sensor has 24 V(dc) Class 2 power source.

1. With integral current monitoring.
2. Compatible with digital addressable lighting interface.
3. Plenum rated.

2.4 INDOOR OCCUPANCY AND VACANCY SENSORS

A. General Requirements for Sensors:

1. Ceiling-mounted, solid-state indoor occupancy and vacancy sensors.
2. Dual technology.
3. Integrated power pack.
4. Hardwired connection to switch.

5. Listed and labeled in accordance with NFPA 70, by a qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
6. Operation:

    a. Combination Sensor: Unless otherwise indicated, sensor must be programmed to turn lights on when coverage area is occupied and turn them off when unoccupied, or to turn off lights that have been manually turned on; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.

7. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A.
8. Power: Line voltage.
9. Power Pack: Dry contacts rated for 20 A ballast or LED load at 120 and 277 V(ac), for 13 A tungsten at 120 V(ac), and for 1 hp at 120 V(ac). Sensor has 24 V(dc), 150 mA, Class 2 power source.
10. Mounting:

    a. Sensor: Suitable for mounting in any position in a standard device box or outlet box.
    b. Relay: Externally mounted through a 1/2 inch knockout in a standard electrical enclosure.
    c. Time-Delay and Sensitivity Adjustments: Recessed and concealed behind hinged door.

11. Indicator: Digital display, to show when motion is detected during testing and normal operation of sensor.
12. Bypass Switch: Override the "on" function in case of sensor failure.
13. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc; turn lights off when selected lighting level is present.

B. Dual-Technology Type: Ceiling mounted; detect occupants in coverage area using PIR and ultrasonic detection methods. The particular technology or combination of technologies that control on-off functions is selectable in the field by operating controls on unit.

1. Sensitivity Adjustment: Separate for each sensing technology.
2. Detector Sensitivity: Detect occurrences of 6 inch minimum movement of any portion of a human body that presents a target of not less than 36 sq. inch, and detect a person of average size and weight moving not less than 12 inch in either a horizontal or a vertical manner at an approximate speed of 12 inch/s.
3. Detection Coverage (Standard Room): Detect occupancy anywhere within a circular area of 1000 sq. ft. when mounted on a 96 inch high ceiling.

2.5 SWITCHBOX-MOUNTED OCCUPANCY SENSORS

A. General Requirements for Sensors: Automatic-wall-switch occupancy sensor with manual on-off switch, suitable for mounting in a single gang switchbox using hardwired connection.

1. Listed and labeled in accordance with NFPA 70, by a qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Occupancy Sensor Operation: Unless otherwise indicated, turn lights on when coverage area is occupied, and turn lights off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.

3. Operating Ambient Conditions: Dry interior conditions, 32 to 120 deg F.
4. Switch Rating: Not less than 800 VA ballast or LED load at 120 V, 1200 VA ballast or LED load at 277 V, and 800 W incandescent.

2.6 DIGITAL TIMER LIGHT SWITCH

A. Description: Combination digital timer and conventional switch lighting control unit. Switchbox-mounted, backlit LCD display, with selectable time interval in [10] [20] minute increments.

1. Rated 960 W at 120 V(ac) for tungsten lighting, 10 A at 120 V(ac) or 10 A at 277 V(ac) for fluorescent or LED lighting, and 1/4 hp at 120 V(ac).
2. Standards: Comply with UL 20.
3. Integral relay for connection to BAS.
4. Voltage: Match the circuit voltage.
5. Color: White.
6. Faceplate: Color matched to switch.

2.7 HIGH-BAY OCCUPANCY SENSORS

A. Description: Solid-state unit. The unit is designed to operate with the lamp and ballasts indicated.

1. Listed and labeled in accordance with NFPA 70, by a qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Operation: Turn lights on when coverage area is occupied, and to half-power when unoccupied; with a time delay for turning lights to half-power that is adjustable over a minimum range of 1 to 16 minutes.
3. Continuous Lamp Monitoring: When lamps are dimmed continuously for 24 hours, automatically turn lamps on to full power for 15 minutes for every 24 hours of continuous dimming.
4. Power: Line voltage.
5. Operating Ambient Conditions: 32 to 149 deg F.
6. Mounting: Threaded pipe.
7. Time-Delay and Sensitivity Adjustments: Recessed and concealed behind hinged door.
8. Detector Technology: PIR.
9. Power and dimming control from the luminaire ballast that has been modified to include the dimming capacitor.

B. Detector Coverage: User selectable by interchangeable PIR lenses, suitable for mounting heights from 12 to 50 ft..

C. Accessories: Obtain manufacturer's installation and maintenance kit with laser alignment tool for sensor positioning and power port connectors.

2.8 OUTDOOR MOTION SENSORS

A. Description: Solid-state outdoor motion sensors.

1. Listed and labeled in accordance with NFPA 70, by a qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Dual-technology (PIR and ultrasonic) type, weatherproof. Detect occurrences of 6 inch minimum movement of any portion of a human body that presents a target of not less than 36 sq. inch. Comply with UL 773A.
3. Switch Rating:

    a. Luminaire-Mounted Sensor: 1000 W incandescent, 500 VA fluorescent/LED.
    b. Separately Mounted Sensor: Dry contacts rated for 20 A ballast or LED load at 120 and 277 V(ac), for 13 A tungsten at 120 V(ac), and for 1 hp at 120 V(ac). Sensor has 24 V(dc), 150 mA, Class 2 power source.

4. Switch Type: SP, field-selectable automatic "on," or manual "on," automatic "off." With bypass switch to override the "on" function in case of sensor failure.
5. Voltage: Match the circuit voltage type.
6. Detector Coverage:

    a. Standard Range: 210-degree field of view, with a minimum coverage area of 900 sq. ft..
    b. Long Range: 180-degree field of view and 110 ft. detection range.

7. Ambient-Light Override: Concealed, field-adjustable, light-level sensor from 10 to 150 fc. The switch prevents the lights from turning on when the light level is higher than the set point of the sensor.
8. Concealed, field-adjustable, "off" time-delay selector at up to 30 minutes.
9. Adaptive Technology: Self-adjusting circuitry detects and memorizes usage patterns of the space and help eliminate false "off" switching.
10. Operating Ambient Conditions: Suitable for operation in ambient temperatures ranging from minus 40 to plus 130 deg F, rated as "raintight" in accordance with UL 773A.

2.9 LIGHTING CONTACTORS

A. Description: Electrically operated and electrically held, combination-type lighting contactors with nonfused disconnect, complying with NEMA ICS 2 and UL 508.

1. Current Rating for Switching: Listing or rating consistent with type of load served, including tungsten filament, inductive, and high-inrush ballast (ballast with 15 percent or less THD of normal load current).
2. Fault Current Withstand Rating: Equal to or exceeding the available fault current at the point of installation.
3. Enclosure: Comply with NEMA 250.
4. Provide with control and pilot devices matching the NEMA type specified for the enclosure.

2.10 EMERGENCY SHUNT RELAY

A. Description: NC, electrically held relay, arranged for wiring in parallel with manual or automatic switching contacts; complying with UL 924.

2.11 CONDUCTORS AND CABLES

A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than No. 12 AWG. Comply with requirements in Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables."

B. Classes 2 and 3 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 18 AWG. Comply with requirements in Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables."

C. Class 1 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 14 AWG. Comply with requirements in Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine lighting control devices before installation. Reject lighting control devices that are wet, moisture damaged, or mold damaged.

B. Examine walls and ceilings for suitable conditions where lighting control devices will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF SENSORS

A. Coordinate layout and installation of ceiling-mounted devices with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, smoke detectors, fire-suppression systems, and partition assemblies.

B. Install and aim sensors in locations to achieve not less than 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's instructions.

3.3 INSTALLATION OF CONTACTORS

A. Mount electrically held lighting contactors with elastomeric isolator pads to eliminate structure-borne vibration unless contactors are installed in an enclosure with factory-installed vibration isolators.

3.4 INSTALLATION OF WIRING

A. Wiring Method: Comply with Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables." Minimum conduit size is 1/2 inch.

B. Wiring within Enclosures: Separate power-limited and nonpower-limited conductors in accordance with conductor manufacturer's instructions.

C. Size conductors in accordance with lighting control device manufacturer's instructions unless otherwise indicated.

D. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, device, and outlet boxes; terminal cabinets; and equipment enclosures.

3.5 IDENTIFICATION

A. Identify components and power and control wiring in accordance with Section 26 05 53 "Identification for Electrical Systems.

1. Identify controlled circuits in lighting contactors.
2. Identify circuits or luminaires controlled by photoelectric and occupancy sensors at each sensor.

B. Label time switches and contactors with a unique designation.

3.6 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Operational Test: After installing time switches and sensors, and after electrical circuitry has been energized, start units to confirm proper unit operation.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

B. Nonconforming Work:

1. Lighting control devices will be considered defective if they do not pass tests and inspections.
2. Remove and replace defective units and retest.

C. Prepare test and inspection reports.

3.7 ADJUSTING

A. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting lighting control devices to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.

1. For occupancy and motion sensors, verify operation at outer limits of detector range. Set time delay to suit Owner's operations.
2. For daylighting controls, adjust set points and deadband controls to suit Owner's operations.
3. Align high-bay occupancy sensors using manufacturer's laser aiming tool.

3.8 MAINTENANCE

A. Software and Firmware Service Agreement:

1. Technical Support: Beginning at Substantial Completion, verify that software and firmware service agreement includes software support for two years.
2. Upgrade Service: At Substantial Completion, update software and firmware to latest version. Install and program software upgrades that become available within two years from date of Substantial Completion. Verify upgrading software includes operating system and new or revised licenses for using software.

    a. Upgrade Notice: No fewer than 30 days to allow Owner to schedule and access the system and to upgrade computer equipment if necessary.

3. Upgrade Reports: Prepare written report after each update, documenting upgrades installed.

END OF SECTION 26 09 23

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SECTION 26 22 13
LOW-VOLTAGE DISTRIBUTION TRANSFORMERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Distribution, dry-type transformers with nominal primary and secondary rating of 600 V and less, with capacities up to 1500 kVA.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

1.2 ACTION SUBMITTALS

A. Product Data:

1. For each type of product.

a. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type and size of transformer.
b. Include rated nameplate data, capacities, weights, dimensions, minimum clearances, installed devices and features, and performance for each type and size of transformer.

B. Shop Drawings:

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of field connections.
2. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment.
3. Include diagrams for power, signal, and control wiring.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Inspection: On receipt, inspect for and note shipping damage to packaging and transformer.

1. If manufacturer packaging is removed for inspection, and transformer will be stored after inspection, re-package transformer using original or new packaging materials that provide protection equivalent to manufacturer's packaging.

B. Storage: Store in warm, dry, and temperature-stable location in original shipping packaging.

C. Temporary Heating: Apply temporary heat in accordance with manufacturer's published instructions within enclosure of ventilated-type units, throughout periods during which equipment is not energized and when transformer is not in space that is continuously under normal control of temperature and humidity.

D. Handling: Follow manufacturer's instructions for lifting and transporting transformers.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Square D; by Schneider Electric – Universal preference
2. Eaton.
3. General Electric Company.
4. Siemens Industry, Inc., Energy Management Division.

B. Source Limitations: Obtain each type of transformer from single source from single manufacturer.

2.2 GENERAL TRANSFORMER REQUIREMENTS

A. Description: Factory-assembled and -tested, air-cooled units for 60 Hz service.

B. Electrical Components, Devices, and Accessories: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

C. Transformers Rated 15 kVA and Larger:

1. Comply with 10 CFR 431 (DOE 2016) efficiency levels.
2. Marked as compliant with DOE 2016 efficiency levels by qualified electrical testing laboratory recognized by authorities having jurisdiction.

D. Shipping Restraints: Paint or otherwise color-code bolts, wedges, blocks, and other restraints that are to be removed after installation and before energizing. Use fluorescent colors that are easily identifiable inside transformer enclosure.

2.3 DISTRIBUTION TRANSFORMERS

A. Comply with NFPA 70, and list and label as complying with UL 1561.

B. Cores: Electrical grade, non-aging silicon steel with high permeability and low hysteresis losses.

1. One leg per phase.
2. Core volume must allow efficient transformer operation at 10 percent above nominal tap voltage.

3. Grounded to enclosure.

C. Coils: Continuous windings without splices except for taps.

1. Coil Material: Aluminum.
2. Internal Coil Connections: Brazed or pressure type.
3. Terminal Connections: Bolted.

D. Enclosure: Ventilated.

1. Core and coil must be encapsulated within resin compound to seal out moisture and air.
2. KVA Ratings: Based on convection cooling only and not relying on auxiliary fans.
3. Wiring Compartment: Sized for conduit entry and wiring installation.
4. Environmental Protection:

a. Indoor: UL 50E, Type 2.

5. Finish Color: Gray weather-resistant enamel.

E. Taps for Transformers 3 kVA and Smaller: One 5 percent tap above normal full capacity.

F. Taps for Transformers 7.5 to 24 kVA: One 5 percent tap above and one 5 percent tap below normal full capacity.

G. Taps for Transformers 25 kVA and Larger: Two 2.5 percent taps above and four 2.5 percent taps below normal full capacity.

H. Insulation Class, Smaller Than 30 kVA: 180 deg C, UL-component-recognized insulation system with maximum of 115 deg C rise above 40 deg C ambient temperature.

I. Insulation Class, 30 kVA and Larger: 220 deg C, UL-component-recognized insulation system with maximum of 150 deg C rise above 40 deg C ambient temperature.

J. Grounding: Provide ground-bar kit or ground bar installed on inside of transformer enclosure.

K. Wall Brackets: Manufacturer's standard brackets.

2.4 IDENTIFICATION

A. Nameplates:

1. Engraved, laminated-acrylic or melamine plastic signs for distribution transformers, mounted with corrosion-resistant screws. Nameplates and label products are specified in Section 260553 "Identification for Electrical Systems."

2.5 SOURCE QUALITY CONTROL

A. Factory Tests and Inspections: Test and inspect assembled system, by, or under supervision of, qualified electrical testing laboratory recognized by authorities having jurisdiction, in accordance with IEEE C57.12.01 and IEEE C57.12.91 before delivering to site. Affix label with name and date of manufacturer's certification of system compliance on control units.

1. Resistance measurements of windings at rated voltage connections and at tap connections.
2. Ratio tests at rated voltage connections and at tap connections.
3. Phase relation and polarity tests at rated voltage connections.
4. No load losses, and excitation current and rated voltage at rated voltage connections.
5. Impedance and load losses at rated current and rated frequency at rated voltage connections.
6. Applied and induced tensile tests.
7. Regulation and efficiency at rated load and voltage.
8. Insulation-Resistance Tests:

    a. Line-side to ground.
    b. Load-side to ground.
    c. Line-side to load-side.

9. Temperature tests.

B. Nonconforming Work:

1. System equipment that does not pass tests and inspections will be considered defective.

C. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions for compliance with enclosure- and ambient-temperature requirements for transformers.

B. Verify that field measurements are as needed to maintain working clearances required by NFPA 70 and manufacturer's published instructions.

C. Examine walls, floors, roofs, and concrete bases for suitable mounting conditions where transformers will be installed.

D. Verify that ground connections are in place and requirements in Section 260526 "Grounding and Bonding for Electrical Systems" have been met. Maximum ground resistance must be 5 Ω at location of transformer.

E. Environment: Enclosures must be rated for environment in which they are located. Covers for UL 50E, Type 4X enclosures may not cause accessibility problems.

F. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install wall-mounted transformers level and plumb with wall brackets fabricated by transformer manufacturer.

1. Coordinate installation of wall-mounted and structure-hanging supports with actual transformer provided.

B. Install transformers level and plumb on concrete base with vibration-dampening supports. Locate transformers away from corners and not parallel to adjacent wall surface.

C. Construct concrete bases and anchor floor-mounted transformers in accordance with manufacturer's published instructions and requirements in Section 260529 "Hangers and Supports for Electrical Systems."

1. Coordinate size and location of concrete bases with actual transformer provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified with concrete.

D. Secure transformer to concrete base in accordance with manufacturer's published instructions.

E. Secure covers to enclosure and tighten bolts to manufacturer-recommended torques to reduce noise generation.

F. Remove shipping bolts, blocking, and wedges.

3.3 CONNECTIONS

A. Ground equipment in accordance with Section 260526 "Grounding and Bonding for Electrical Systems."

B. Connect wiring in accordance with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

C. Tighten electrical connectors and terminals in accordance with manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

D. Provide flexible connections at conduit and conductor terminations and supports to eliminate sound and vibration transmission to building structure.

3.4 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Small (Up to 167 kVA Single-Phase or 500 kVA Three-Phase) Dry-Type Transformer Field Tests:

a. Visual and Mechanical Inspection.

1) Inspect physical and mechanical condition.
2) Inspect anchorage, alignment, and grounding.
3) Verify that resilient mounts are free and that shipping brackets have been removed.
4) Verify that unit is clean.
5) Perform specific inspections and mechanical tests recommended by manufacturer.

6) Verify that as-left tap connections are as specified.
7) Verify presence of surge arresters and that their ratings are as specified.

b. Electrical Tests:

1) Measure resistance at windings, taps, and bolted connections.
2) Perform insulation-resistance tests winding-to-winding and windings-to-ground. Apply voltage in accordance with manufacturer's published data. In absence of manufacturer's published data, comply with NETA ATS, Table 100.5. Calculate polarization index: value of index may not be less than 1.0.
3) Perform turns-ratio tests at tap positions. Test results may not deviate by more than one-half percent from either adjacent coils or calculated ratio. If test fails, replace transformer.
4) Verify correct secondary voltage, phase-to-phase and phase-to-neutral, after energization and prior to loading.

2. Large (Larger Than 167 kVA Single Phase or 500 kVA Three Phase) Dry-Type Transformer Field Tests:

a. Visual and Mechanical Inspection:

1) Inspect physical and mechanical condition.
2) Inspect anchorage, alignment, and grounding.
3) Verify that resilient mounts are free and that shipping brackets have been removed.
4) Verify that unit is clean.
5) Perform specific inspections and mechanical tests recommended by manufacturer.
6) Verify that as-left tap connections are as specified.
7) Verify presence of surge arresters and that their ratings are as specified.

b. Electrical Tests:

1) Measure resistance at windings, taps, and bolted connections.
2) Perform insulation-resistance tests winding-to-winding and windings-to-ground. Apply voltage in accordance with manufacturer's published data. In absence of manufacturer's published data, comply with NETA ATS, Table 100.5. Calculate polarization index: value of index may not be less than 1.0.
3) Perform power-factor or dissipation-factor tests on windings.
4) Perform turns-ratio tests at tap positions. Test results may not deviate by more than one-half percent from either adjacent coils or calculated ratio. If test fails, replace transformer.
5) Perform excitation-current test on each phase.
6) Perform applied voltage test on line- and load-side windings to ground. See IEEE C57.12.91, Sections 10.2 and 10.9.
7) Verify correct secondary voltage, phase-to-phase and phase-to-neutral, after energization and prior to loading.

B. Test Labeling: On completion of satisfactory testing of units, attach dated and signed "Satisfactory Test" label to tested components.

C. Nonconforming Work:

1. Transformer will be considered defective if it does not pass tests and inspections.
2. Remove and replace units that do not pass tests or inspections and retest as specified above.

D. Assemble and submit test and inspection reports.

3.5 ADJUSTING

A. Record transformer secondary voltage at unit for at least 48 hours of typical occupancy period. Adjust transformer taps to provide optimum voltage conditions at secondary terminals. Optimum is defined as not exceeding nameplate voltage plus 5 percent and not being lower than nameplate voltage minus 3 percent at maximum load conditions. Submit recording and tap settings as test results.

B. Output Settings Report: Prepare written report recording output voltages and tap settings.

3.6 CLEANING

A. Vacuum dirt and debris; do not use compressed air to assist in cleaning.

END OF SECTION 26 22 13

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SECTION 26 24 16
PANELBOARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Power panelboards.
2. Lighting and appliance branch-circuit panelboards.
3. Disconnecting and overcurrent protective devices.

B. Related Requirements:

1. Section 26 00 10 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

1.2 DEFINITIONS

A. GFEP: Ground-fault equipment protection.

B. MCCB: Molded-case circuit breaker.

C. VPR: Voltage protection rating.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Power panelboards.
2. Lighting and appliance branch-circuit panelboards.
3. Disconnecting and overcurrent protective devices.
4. Include materials, switching and overcurrent protective devices, SPDs, accessories, and components indicated.
5. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

B. Shop Drawings: For each panelboard and related equipment.

1. Include dimensioned plans, elevations, sections, and details.
2. Show tabulations of installed devices with nameplates, conductor termination sizes, equipment features, and ratings.
3. Detail enclosure types including mounting and anchorage, environmental protection, knockouts, corner treatments, covers and doors, gaskets, hinges, and locks.
4. Detail bus configuration, current, and voltage ratings.
5. Short-circuit current rating of panelboards and overcurrent protective devices.

6. Include evidence of listing, by qualified electrical testing laboratory recognized by authorities having jurisdiction, for SPD as installed in panelboard.
7. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
8. Include wiring diagrams for power, signal, and control wiring.
9. Key interlock scheme drawing and sequence of operations.
10. Include time-current coordination curves for each type and rating of overcurrent protective device included in panelboards. Submit on translucent log-log graft paper; include selectable ranges for each type of overcurrent protective device. Include Internet link for electronic access to downloadable PDF of coordination curves.

C. Field Quality-Control Submittals:

1. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

A. Warranty documentation.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Spare Parts: Furnish to Owner spare parts, for repairing panelboards, that are packaged with protective covering for storage on-site and identified with labels describing contents. Include the following:

1. Keys: Two spares for each type of panelboard cabinet lock.
2. Circuit Breakers Including GFCI and GFEP Types: Two spares for each panelboard.
3. Fuses for Fused Switches: Equal to 10 percent of quantity installed for each size and type, but no fewer than three of each size and type.
4. Fuses for Fused Power-Circuit Devices: Equal to 10 percent of quantity installed for each size and type, but no fewer than three of each size and type.

B. Special Tools: Furnish to Owner proprietary equipment, keys, and software required to operate, maintain, repair, adjust, or implement future changes to panelboards, that are packaged with protective covering for storage on-site and identified with labels describing contents. Include the following:

1. Accessory Set: Include tools and miscellaneous items required for overcurrent protective device test, inspection, maintenance, and operation.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Remove loose packing and flammable materials from inside panelboards; install temporary electric heating (250 W per panelboard) to prevent condensation.

B. Handle and prepare panelboards for installation in accordance with NEMA PB 1.

1.7 WARRANTY

A. Special Installer Extended Warranty: Installer warrants that fabricated and installed panelboards perform in accordance with specified requirements and agrees to repair or replace components or products that fail to perform as specified within extended-warranty period.

1. Extended-Warranty Period: Two years from date of Substantial Completion; full coverage for labor, materials, and equipment.

PART 2 - PRODUCTS

2.1 PANELBOARDS AND LOAD CENTERS COMMON REQUIREMENTS

A. Product Selection for Restricted Space: Drawings indicate maximum dimensions for panelboards including clearances between panelboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.

B. Electrical Components, Devices, and Accessories: Listed and labeled in accordance with NFPA 70, by qualified electrical testing agency recognized by authorities having jurisdiction, and marked for intended location and application.

C. Comply with NEMA PB 1.

D. Comply with NFPA 70.

E. Enclosures: Flush and Surface-mounted, dead-front cabinets.

1. Rated for environmental conditions at installed location.

a. Indoor Dry and Clean Locations: UL 50E, Type 1.
b. Outdoor Locations: UL 50E, Type 3R.
c. Kitchen Wash-Down Areas: UL 50E, Type 4X, stainless steel.
d. Other Wet or Damp Indoor Locations: UL 50E, Type 4.
e. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: UL 50E, Type 12.

2. Height: 7 ft maximum.
3. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover. Trims must cover live parts and may have no exposed hardware.
4. Finishes:

a. Panels and Trim: Steel, factory finished immediately after cleaning and pretreating with manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.
b. Back Boxes: Same finish as panels and trim.

F. Incoming Mains:

1. Location: Convertible between top and bottom.
2. Main Breaker: Main lug interiors up to 400 A must be field convertible to main breaker.

G. Phase, Neutral, and Ground Buses:

1. Material: Hard-drawn copper, 98 percent conductivity.

    a. Plating must run entire length of bus.
    b. Bus must be fully rated for entire length.

2. Interiors must be factory assembled into unit. Replacing switching and protective devices may not disturb adjacent units or require removing main bus connectors.
3. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment grounding conductors; bonded to box.
4. Full-Sized Neutral: Equipped with full-capacity bonding strap for service entrance applications. Mount electrically isolated from enclosure.

H. Conductor Connectors: Suitable for use with conductor material and sizes.

1. Material: Hard-drawn copper, 98 percent conductivity.
2. Terminations must allow use of 75 deg C rated conductors without derating.
3. Size: Lugs suitable for indicated conductor sizes, with additional gutter space, if required, for larger conductors.
4. Main and Neutral Lugs: Mechanical type, with lug on neutral bar for each pole in panelboard.
5. Ground Lugs and Bus-Configured Terminators: Mechanical type, with lug on bar for each pole in panelboard.
6. Feed-Through Lugs: Mechanical type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
7. Subfeed (Double) Lugs: Mechanical type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.
8. Gutter-Tap Lugs: Compression type suitable for use with conductor material and with matching insulating covers. Locate at same end of bus as incoming lugs or main device.

I. Quality-Control Label: Panelboards or load centers must be labeled, by qualified electrical testing laboratory recognized by authorities having jurisdiction, for use as service equipment with one or more main service disconnecting and overcurrent protective devices. Panelboards or load centers must have meter enclosures, wiring, connections, and other provisions for utility metering. Coordinate with utility company for exact requirements.

J. Future Devices: Panelboards or load centers must have mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.

1. Percentage of Future Space Capacity: 10 percent.

K. Panelboard Short-Circuit Current Rating:

1. Fully rated to interrupt symmetrical short-circuit current available at terminals. Assembly listed, by qualified electrical testing laboratory recognized by authorities having jurisdiction, for 100 percent interrupting capacity.

    a. Panelboards and overcurrent protective devices rated 240 V or less must have short-circuit ratings as shown on Drawings, but not less than 10 000 A(rms) symmetrical.
    b. Panelboards and overcurrent protective devices rated above 240 V and less than 600 V must have short-circuit ratings as shown on Drawings, but not less than 14 000 A(rms) symmetrical.

L. Surge Suppression: Factory installed as integral part of indicated panelboards, complying with UL 1449 SPD Type 1.

2.2 POWER PANELBOARDS

A. Listing Criteria: NEMA PB 1, distribution type.

B. Doors: Secured with vault-type latch with tumbler lock; keyed alike.

1. For doors more than 36 inch high, provide two latches, keyed alike.

C. Mains: Circuit breaker.

D. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes 125 A and Smaller: Plug-in circuit breakers.

E. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes Larger Than 125 A: Plug-in circuit breakers where individual positive-locking device requires mechanical release for removal.

F. Contactors in Main Bus: NEMA ICS 2, Class A, electrically held, general-purpose controller, with same short-circuit interrupting rating as panelboard.

1. Internal Control-Power Source: Control-power transformer, with fused primary and secondary terminals, connected to main bus ahead of contactor connection.

2.3 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

A. Listing Criteria: NEMA PB 1, lighting and appliance branch-circuit type.

B. Mains: Circuit breaker or lugs only.

C. Branch Overcurrent Protective Devices: Plug-in circuit breakers, replaceable without disturbing adjacent units.

D. Contactors in Main Bus: NEMA ICS 2, Class A, electrically held, general-purpose controller, with same short-circuit interrupting rating as panelboard.

1. Internal Control-Power Source: Control-power transformer, with fused primary and secondary terminals, connected to main bus ahead of contactor connection.

E. Doors: Door-in-door construction with concealed hinges; secured with flush latch with tumbler lock; keyed alike. Outer door must permit full access to panel interior. Inner door must permit access to breaker operating handles and labeling, but current carrying terminals and bus must remain concealed.

2.4 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

A. MCCB: Comply with UL 489, with interrupting capacity to meet available fault currents.

1. Thermal-Magnetic Circuit Breakers:

a. Inverse time-current element for low-level overloads.
b. Instantaneous magnetic trip element for short circuits.
c. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

2. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
3. Electronic Trip Circuit Breakers:

    a. RMS sensing.
    b. Field-replaceable rating plug or electronic trip.
    c. Digital display of settings, trip targets, and indicated metering displays.
    d. Multi-button keypad to access programmable functions and monitored data.
    e. Ten-event, trip-history log. Each trip event must be recorded with type, phase, and magnitude of fault that caused trip.
    f. Integral test jack for connection to portable test set or laptop computer.
    g. Field-Adjustable Settings:

        1) Instantaneous trip.
        2) Long- and short-time pickup levels.
        3) Long and short time adjustments.
        4) Ground-fault pickup level, time delay, and I squared T response.

4. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller; let-through ratings less than NEMA FU 1, RK-5.
5. GFCI Circuit Breakers: Single- and double-pole configurations with Class A ground-fault protection (6 mA trip).
6. Arc-Fault Circuit Interrupter Circuit Breakers: Comply with UL 1699; 120/240 V, single-pole configuration.
7. Subfeed Circuit Breakers: Vertically mounted.
8. MCCB Features and Accessories:

    a. Standard frame sizes, trip ratings, and number of poles.
    b. Breaker handle indicates tripped status.
    c. UL listed for reverse connection without restrictive line or load ratings.
    d. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.
    e. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and HID lighting circuits.
    f. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
    g. Shunt Trip: 120 V trip coil energized from separate circuit, set to trip at 55 percent of rated voltage.
    h. Handle Padlocking Device: Fixed attachment, for locking circuit-breaker handle in on or off position.
    i. Handle Clamp: Loose attachment, for holding circuit-breaker handle in on position.
    j. Undervoltage Trip: Set to operate at 35 to 75 percent of rated voltage with field-adjustable 0.1- to 0.6-second time delay.
    k. Rating Plugs: Three-pole breakers with ampere ratings greater than 150 A must have interchangeable rating plugs or electronic adjustable trip units.
    l. Auxiliary Contacts: Two, SPDT switches with "a" and "b" contacts; "a" contacts mimic circuit-breaker contacts and "b" contacts operate in reverse of circuit-breaker contacts.
    m. Alarm Switch: Single-pole, normally open contact that actuates only when circuit breaker trips.
    n. Key Interlock Kit: Externally mounted to prohibit circuit-breaker operation; key must be removable only when circuit breaker is in off position.
    o. Zone-Selective Interlocking: Integral with electronic trip unit; for interlocking ground-fault protection function with other upstream or downstream devices.
    p. Multipole units enclosed in single housing with single handle.

B. Fused Switch: NEMA KS 1, Type HD; clips to accommodate specified fuses; lockable handle.

1. Fuses and Spare-Fuse Cabinet: Comply with requirements specified in Section 26 28 13 "Fuses."
2. Fused Switch Features and Accessories:

a. Standard ampere ratings and number of poles.
b. Mechanical cover interlock with manual interlock override, to prevent opening of cover when switch is in on position. Interlock must prevent switch from being turned on with cover open. Operating handle must have lock-off means with provisions for three padlocks.
c. Auxiliary Contacts: One normally open and normally closed contact(s) that operate with switch handle operation.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify actual conditions with field measurements prior to ordering panelboards to verify that equipment fits in allocated space in, and comply with, minimum required clearances specified in NFPA 70.

B. Receive, inspect, handle, and store panelboards in accordance with NEMA PB 1.1.

C. Examine panelboards before installation. Reject panelboards that are damaged, rusted, or have been subjected to water saturation.

D. Examine elements and surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the Work.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's published instructions.

B. Reference Standards:

1. Panelboards: Unless more stringent requirements are specified in Contract Documents or manufacturers' published instructions, comply with NEMA PB 1.1.
2. Consult Architect for resolution of conflicting requirements.

C. Special Techniques:

1. Equipment Mounting:

a. Attach panelboard to vertical finished or structural surface behind panelboard.
2. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from panelboards.
3. Mount top of trim 7.5 ft above finished floor unless otherwise indicated.
4. Mount panelboard cabinet plumb and rigid without distortion of box.

5. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.
6. Install overcurrent protective devices and controllers not already factory installed.

    a. Set field-adjustable, circuit-breaker trip ranges.
    b. Tighten bolted connections and circuit breaker connections using calibrated torque wrench or torque screwdriver in accordance with manufacturer's published instructions.

7. Make grounding connections and bond neutral for services and separately derived systems to ground. Make connections to grounding electrodes, separate grounds for isolated ground bars, and connections to separate ground bars.
8. Install filler plates in unused spaces.
9. Stub four 1 inch empty conduits from panelboard into accessible ceiling space or space designated to be ceiling space in future. Stub four 1 inch empty conduits into raised floor space or below slab not on grade.
10. Arrange conductors in gutters into groups and bundle and wrap with wire ties after completing load balancing.
11. Mount spare fuse cabinet in accessible location.

D. Interfaces with Other Work:

1. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

3.3 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; install warning signs complying with requirements in Section 26 05 53 "Identification for Electrical Systems."

B. Panelboard Nameplates: Label each panelboard with nameplate complying with requirements for identification specified in Section 26 05 53 "Identification for Electrical Systems."

C. Device Nameplates: Label each branch circuit device in power panelboards with nameplate complying with requirements for identification specified in Section 26 05 53 "Identification for Electrical Systems."

D. Install warning signs complying with requirements in Section 26 05 53 "Identification for Electrical Systems" identifying source of remote circuit.

E. Panelboard Label: Manufacturer's name and trademark, voltage, amperage, number of phases, and number of poles must be located on interior of panelboard door.

F. Breaker Labels: Faceplate must list current rating, UL and IEC certification standards, and AIC rating.

G. Circuit Directory:

1. Provide computer-generated circuit directory mounted inside panelboard door with transparent plastic protective cover.

a. Circuit directory must identify specific purpose with detail sufficient to distinguish it from other circuits.

2. Create directory to indicate installed circuit loads after balancing panelboard loads; incorporate Owner's final room designations. Obtain approval before installing. Handwritten directories are not acceptable. Install directory inside panelboard door.

3.4 FIELD QUALITY CONTROL

A. Acceptance Testing Preparation:

1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

B. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test for low-voltage air circuit breakers and low-voltage surge arrestors stated in NETA ATS, Paragraph 7.6 Circuit Breakers and Paragraph 7.19.1 Surge Arrestors, Low-Voltage. Do not perform optional tests. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
3. Perform the following infrared scan tests and inspections and prepare reports:

a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform infrared scan of each panelboard. Remove front panels so joints and connections are accessible to portable scanner.
b. Follow-up Infrared Scanning: Perform additional follow-up infrared scan of each panelboard 11 months after date of Substantial Completion.
c. Instruments and Equipment:

1) Use infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.

C. Nonconforming Work:

1. Panelboards will be considered defective if they do not pass tests and inspections.
2. Remove and replace defective units and retest.

D. Collect, assemble, and submit test and inspection reports, including certified report that identifies panelboards included and that describes scanning results, with comparisons of two scans. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.5 ADJUSTING

A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

B. Set field-adjustable circuit-breaker trip ranges as specified in Section 26 05 73.16 "Coordination Studies."

C. Load Balancing: After Substantial Completion, but not more than 60 days after Final Acceptance, measure load balancing and make circuit changes. Prior to making circuit changes to achieve load balancing, inform Architect of effect on phase color coding.

1. Measure loads during period of normal facility operations.
2. Perform circuit changes to achieve load balancing outside normal facility operation schedule or at times directed by Architect. Avoid disrupting services such as fax machines and on-line data processing, computing, transmitting, and receiving equipment.
3. After changing circuits to achieve load balancing, recheck loads during normal facility operations. Record load readings before and after changing circuits to achieve load balancing.
4. Tolerance: Maximum difference between phase loads, within panelboard, may not exceed 20 percent.

3.6 PROTECTION

A. Temporary Heating: Prior to energizing panelboards, apply temporary heat to maintain temperature in accordance with manufacturer's published instructions.

END OF SECTION 26 24 16

SECTION 26 27 26
WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General-use switches, dimmer switches, and fan-speed controller switches.
2. General-grade single straight-blade receptacles.
3. General-grade duplex straight-blade receptacles.
4. Receptacles with arc-fault and ground-fault protective devices.
5. Connectors, cords, and plugs.

B. Related Requirements:

1. Section 26 00 10 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.
2. Section 26 09 23 "Lighting Control Devices" for occupancy sensors, timers, control-voltage switches, and control-voltage dimmers.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Field Quality-Control Submittals:

1. Field quality-control reports.

PART 2 - PRODUCTS

2.1 GENERAL-USE SWITCHES, DIMMER SWITCHES, AND FAN-SPEED CONTROLLER SWITCHES

A. Toggle Switch:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. General Characteristics:

a. Reference Standards: UL CCN WMUZ and UL 20.

3. Options:

a. Device Color: As indicated on architectural Drawings.
b. Configuration:

1) General-duty, 120-277 V, 20 A.

4. Accessories:

a. Cover Plate: 0.060 inch thick, high-impact thermoplastic (nylon) with smooth finish and color matching wiring device; from same manufacturer as wiring device.
b. Securing Screws for Cover Plate: Metal with head color matching wallplate finish.

B. Toggle Switch with Forked Key Lock:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. General Characteristics:

a. Reference Standards: UL CCN WMUZ and UL 20.

3. Options:

a. Device Color: As indicated on architectural Drawings.
b. Configuration:

1) 120-277 V, 20 A.

2.2 GENERAL-GRADE SINGLE STRAIGHT-BLADE RECEPTACLES

A. Single Straight-Blade Receptacle:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. General Characteristics:

a. Reference Standards: UL CCN RTRT and UL 498.

3. Options:

a. Device Color: As indicated on architectural Drawings.
b. Configuration:

1) General-duty, NEMA 5-20R.

4. Accessories:

a. Cover Plate: 0.060 inch thick, high-impact thermoplastic (nylon) with smooth finish and color matching wiring device; from same manufacturer as wiring device.
b. Securing Screws for Cover Plate: Metal with head color matching wallplate finish.

2.3 GENERAL-GRADE DUPLEX STRAIGHT-BLADE RECEPTACLES

A. Duplex Straight-Blade Receptacle:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. General Characteristics:

a. Reference Standards: UL CCN RTRT and UL 498.

3. Options:

a. Device Color: As indicated on architectural Drawings.
b. Configuration:

1) General-duty, NEMA 5-20R.

4. Accessories:

a. Cover Plate: 0.060 inch thick, high-impact thermoplastic (nylon) with smooth finish and color matching wiring device; from same manufacturer as wiring device.
b. Securing Screws for Cover Plate: Metal with head color matching wallplate finish.

B. Tamper-Resistant Duplex Straight-Blade Receptacle:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. General Characteristics:

a. Reference Standards: UL CCN RTRT and UL 498.

3. Options:

a. Device Color: As indicated on architectural Drawings.
b. Configuration:

1) General-duty, NEMA 5-20R.

4. Accessories:

   a. Cover Plate: 0.060 inch thick, high-impact thermoplastic (nylon) with smooth finish and color matching wiring device; from same manufacturer as wiring device.
   b. Securing Screws for Cover Plate: Metal with head color matching wallplate finish.

C. Isolated Ground Duplex Straight-Blade Receptacle:

1. Regulatory Requirements:

   a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. General Characteristics:

   a. Reference Standards: UL CCN RTRT and UL 498.

3. Options:

   a. Device Color: As indicated on architectural Drawings.
   b. Configuration:

      1) General-duty, NEMA 5-20R.

4. Accessories:

   a. Cover Plate: 0.060 inch thick, high-impact thermoplastic (nylon) with smooth finish and color matching wiring device; from same manufacturer as wiring device.
   b. Securing Screws for Cover Plate: Metal with head color matching wallplate finish.

D. Tamper-Resistant Duplex Straight-Blade Receptacle with USB Outlet to Power Class 2 Equipment:

1. Regulatory Requirements:

   a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. General Characteristics:

   a. Reference Standards: UL CCN RTRT and UL 498.

3. Options:

   a. Device Color: As indicated on architectural Drawings.
   b. Configuration:

      1) General-duty, NEMA 5-20R; two USB-A ports.

4. Accessories:

a. Cover Plate: 0.060 inch thick, high-impact thermoplastic (nylon) with smooth finish and color matching wiring device; from same manufacturer as wiring device.
b. Securing Screws for Cover Plate: Metal with head color matching wallplate finish.

2.4 RECEPTACLES WITH ARC-FAULT AND GROUND-FAULT PROTECTIVE DEVICES

A. General-Grade, Tamper-Resistant Duplex Straight-Blade Receptacle with AFCI Device:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. General Characteristics:

a. Reference Standards: UL CCN AWBZ, UL 498, UL 1699, and UL Subject 1699A.

3. Options:

a. Device Color: As indicated on architectural Drawings.
b. Configuration: Heavy-duty, NEMA 5-20R.

4. Accessories:

a. Cover Plate: 0.060 inch thick, high-impact thermoplastic (nylon) with smooth finish and color matching wiring device; from same manufacturer as wiring device.
b. Securing Screws for Cover Plate: Metal with head color matching wallplate finish.

B. General-Grade, Tamper-Resistant Duplex Straight-Blade Receptacle with AFCI and GFCI Device:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. General Characteristics:

a. Reference Standards: UL CCN KCXX, UL 498, UL 943, UL 1699, and UL Subject 1699A.

3. Options:

a. Device Color: As indicated on architectural Drawings.
b. Configuration: Heavy-duty, NEMA 5-20R.

4. Accessories:

a. Cover Plate: 0.060 inch thick, high-impact thermoplastic (nylon) with smooth finish and color matching wiring device; from same manufacturer as wiring device.

b. Securing Screws for Cover Plate: Metal with head color matching wallplate finish.

C. General-Grade, Weather-Resistant, Tamper-Resistant Duplex Straight-Blade Receptacle with GFCI Device:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. General Characteristics:

a. Reference Standards: UL CCN KCXS, UL 498, and UL 943.

3. Options:

a. Device Color: As indicated on architectural Drawings.
b. Configuration: Heavy-duty, NEMA 5-20R.

4. Accessories:

a. Cover Plate: 0.060 inch thick, high-impact thermoplastic (nylon) with smooth finish and color matching wiring device; from same manufacturer as wiring device.
b. Securing Screws for Cover Plate: Metal with head color matching wallplate finish.

2.5 CONNECTORS, CORDS, AND PLUGS

A. Outdoor-Use, Watertight, Sealed Cord Connector:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. General Characteristics:

a. Reference Standards: UL CCN AXUT and UL 498.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Receptacles:

1. Verify that receptacles to be procured and installed for Owner-furnished equipment are compatible with mating attachment plugs on equipment.

B. Cord Reels:

1. Examine roughing-in for cord reel mounting and power connections to verify actual locations of mounts and power connections before cord reel installation.
2. Examine walls, floors, and ceilings for suitable conditions where cord reel will be installed.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF SWITCHES

A. Comply with manufacturer's instructions.

B. Reference Standards:

1. Unless more stringent requirements are specified in Contract Documents or manufacturers' instructions, comply with installation instructions in NECA NEIS 130.
2. Mounting Heights: Unless otherwise indicated in Contract Documents, comply with mounting heights recommended in NECA NEIS 1.
3. Consult Architect for resolution of conflicting requirements.

C. Identification:

1. Identify cover or cover plate for device with panelboard identification and circuit number in accordance with Section 26 05 53 "Identification for Electrical Systems."

    a. Mark cover or cover plate using hot, stamped, or engraved machine printing with black-filled lettering, and provide durable wire markers or tags inside device box or outlet box.

3.3 INSTALLATION OF STRAIGHT-BLADE RECEPTACLES

A. Comply with manufacturer's instructions.

B. Reference Standards:

1. Unless more stringent requirements are specified in Contract Documents or manufacturers' instructions, comply with installation instructions in NECA NEIS 130.
2. Mounting Heights: Unless otherwise indicated in Contract Documents, comply with mounting heights recommended in NECA NEIS 1.
3. Receptacle Orientation: Install ground pin of vertically mounted receptacles down, and on horizontally mounted receptacles to the right.
4. Consult Architect for resolution of conflicting requirements.

C. Identification:

1. Identify cover or cover plate for device with panelboard identification and circuit number in accordance with Section 26 05 53 "Identification for Electrical Systems."

    a. Mark cover or cover plate using hot, stamped, or engraved machine printing with black-filled lettering, and provide durable wire markers or tags inside device box or outlet box.

D. Interfaces with Other Work:

1. Do not install Type 3 SPD, including surge-protected relocatable taps and power strips, on branch circuit downstream of GFCI device.

3.4 FIELD QUALITY CONTROL OF SWITCHES

A. Tests and Inspections:

1. Perform tests and inspections in accordance with manufacturers' instructions.

B. Nonconforming Work:

1. Unit will be considered defective if it does not pass tests and inspections.
2. Remove and replace defective units and retest.

C. Assemble and submit test and inspection reports.

3.5 FIELD QUALITY CONTROL OF STRAIGHT-BLADE RECEPTACLES

A. Tests and Inspections:

1. Insert and remove test plug to verify that device is securely mounted.
2. Verify polarity of hot and neutral pins.
3. Measure line voltage.
4. Measure percent voltage drop.
5. Measure grounding circuit continuity; impedance must be not greater than 2 ohms.

B. Nonconforming Work:

1. Device will be considered defective if it does not pass tests and inspections.
2. Remove and replace defective units and retest.

C. Assemble and submit test and inspection reports.

3.6 PROTECTION

A. Devices:

1. Schedule and sequence installation to minimize risk of contamination of wires and cables, devices, device boxes, outlet boxes, covers, and cover plates by plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other materials.
2. After installation, protect wires and cables, devices, device boxes, outlet boxes, covers, and cover plates from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

B. Cord Reels and Fittings:

1. After installation, protect cord reels and fittings from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

C. Connectors, Cords, and Plugs:

1. After installation, protect connectors, cords, and plugs from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

END OF SECTION 26 27 26

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SECTION 26 28 13
FUSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Cartridge fuses rated 600 V ac and less for use in the following:

a. Control circuits.
b. Enclosed controllers.
c. Enclosed switches.

2. Spare-fuse cabinets.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for spare-fuse cabinets. Include the following for each fuse type indicated:

1. Ambient Temperature Adjustment Information: If ratings of fuses have been adjusted to accommodate ambient temperatures, provide list of fuses with adjusted ratings.

a. For each fuse having adjusted ratings, include location of fuse, original fuse rating, local ambient temperature, and adjusted fuse rating.
b. Provide manufacturer's technical data on which ambient temperature adjustment calculations are based.

2. Dimensions and manufacturer's technical data on features, performance, electrical characteristics, and ratings.
3. Current-limitation curves for fuses with current-limiting characteristics.
4. Time-current coordination curves (average melt) and current-limitation curves (instantaneous peak let-through current) for each type and rating of fuse. Submit in PDF format.
5. Coordination charts and tables and related data.
6. Fuse sizes for elevator feeders and elevator disconnect switches.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fuses to include in emergency, operation, and maintenance manuals. In addition to items specified in Section 01 77 00 "Closeout Procedures," Section 01 78 23 "Operation and Maintenance Data," include the following:

1. Ambient temperature adjustment information.
2. Current-limitation curves for fuses with current-limiting characteristics.
3. Time-current coordination curves (average melt) and current-limitation curves (instantaneous peak let-through current) for each type and rating of fuse used on the Project. Submit in PDF format.
4. Coordination charts and tables and related data.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fuses: Equal to 10 percent of quantity installed for each size and type, but no fewer than three of each size and type.

1.6 FIELD CONDITIONS

A. Where ambient temperature to which fuses are directly exposed is less than 40 deg F or more than 100 deg F, apply manufacturer's ambient temperature adjustment factors to fuse ratings.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain fuses, for use within a specific product or circuit, from single source from single manufacturer.

2.2 CARTRIDGE FUSES

A. Characteristics: NEMA FU 1, current-limiting, nonrenewable cartridge fuses with voltage ratings consistent with circuit voltages.

1. Type RK-1: 600-V, zero- to 600-A rating, 200 kAIC, time delay.
2. Type RK-5: 600-V, zero- to 600-A rating, 200 kAIC, time delay.
3. Type CC: 600-V, zero- to 30-A rating, 200 kAIC, fast acting.
4. Type CD: 600-V, 31- to 60-A rating, 200 kAIC, time delay.
5. Type J: 600-V, zero- to 600-A rating, 200 kAIC, time delay.
6. Type L: 600-V, 601- to 6000-A rating, 200 kAIC, time delay.
7. Type T: 250-V, zero- to 1200-A or 600-V, zero- to 800-A rating, 200 kAIC, very fast acting, or time delay.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Comply with NEMA FU 1 for cartridge fuses.

D. Comply with NFPA 70.

E. Coordinate fuse ratings with utilization equipment nameplate limitations of maximum fuse size and with system short-circuit current levels.

2.3 SPARE-FUSE CABINET

A. Characteristics: Wall-mounted steel unit with full-length, recessed piano-hinged door and key-coded cam lock and pull.

1. Size: Adequate for storage of spare fuses specified with 15 percent spare capacity minimum.
2. Finish: Gray, baked enamel.
3. Identification: "SPARE FUSES" in 1-1/2-inch-high letters on exterior of door.
4. Fuse Pullers: For each size of fuse, where applicable and available, from fuse manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fuses before installation. Reject fuses that are moisture damaged or physically damaged.

B. Examine holders to receive fuses for compliance with installation tolerances and other conditions affecting performance, such as rejection features.

C. Examine utilization equipment nameplates and installation instructions. Install fuses of sizes and with characteristics appropriate for each piece of equipment.

D. Evaluate ambient temperatures to determine if fuse rating adjustment factors must be applied to fuse ratings.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 FUSE APPLICATIONS

A. Cartridge Fuses:

1. Service Entrance: Class L, time delay.
2. Feeders: Class L, time delay Class RK1, time delay Class RK5, time delay Class J, time delay.
3. Motor Branch Circuits: Class RK5, time delay.
4. Large Motor Branch (601-4000 A): Class L, time delay.
5. Power Electronics Circuits: Class T, fast acting.
6. Other Branch Circuits: Class RK1, time delay Class RK5, time delay.
7. Control Transformer Circuits: Class CC, time delay, control transformer duty.
8. Provide open-fuse indicator fuses or fuse covers with open fuse indication.

3.3 INSTALLATION

A. Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.

B. Install spare-fuse cabinet(s) in main electrical room.

3.4 IDENTIFICATION

A. Install labels complying with requirements for identification specified in Section 26 05 53 "Identification for Electrical Systems" and indicating fuse replacement information inside of door of each fused switch and adjacent to each fuse block, socket, and holder.

END OF SECTION 26 28 13

SECTION 26 28 16
ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fusible switches.
2. Nonfusible switches.
3. Molded-case circuit breakers (MCCBs).
4. Enclosures.

B. Related Requirements:

1. Section 26 00 10 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

1.2 DEFINITIONS

A. GFEP: Ground-fault circuit-interrupter for equipment protection.

B. GFLS: Ground-fault circuit-interrupter for life safety.

C. SPDT: Single pole, double throw.

1.3 ACTION SUBMITTALS

A. Product Data:

1. For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include nameplate ratings, dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.
2. Enclosure types and details for types other than UL 50E, Type 1.
3. Current and voltage ratings.
4. Short-circuit current ratings (interrupting and withstand, as appropriate).
5. Include evidence of qualified electrical testing laboratory listing for series rating of installed devices.
6. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices, accessories, and auxiliary components.
7. Include time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device. Provide in PDF electronic format.

B. Shop Drawings: For enclosed switches and circuit breakers.

1. Include plans, elevations, sections, details, and attachments to other work.
2. Include wiring diagrams for power, signal, and control wiring.

C. Field Quality-Control Submittals:

1. Field quality-control reports.

1.4 INFORMATIONAL SUBMITTALS

A. Sample warranties.

1.5 CLOSEOUT SUBMITTALS

A. Warranty documentation.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Spare Parts: Furnish to Owner spare parts, for repairing enclosed switches and circuit breakers, that are packaged with protective covering for storage on-site and identified with labels describing contents.

1. Fuses: Equal to 10 percent of quantity installed for each size and type, but no fewer than three of each size and type.
2. Fuse Pullers: Two for each size and type.

1.7 WARRANTY

A. Special Installer Extended Warranty: Installer warrants that fabricated and installed enclosed switches and circuit breakers perform in accordance with specified requirements and agrees to repair or replace components or products that fail to perform as specified within extended-warranty period.

1. Extended-Warranty Period: Two years from date of Substantial Completion; full coverage for labor, materials, and equipment.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS

A. Source Limitations: Obtain products from single manufacturer.

B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for enclosed switches and circuit breakers, including clearances between enclosures, and adjacent surfaces and other items. Comply with indicated maximum dimensions.

C. Electrical Components, Devices, and Accessories: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2.2 FUSIBLE SWITCHES

A. Type HD, Heavy Duty:

1. Single throw.
2. Three pole.
3. 600 V(ac).
4. 1200 A and smaller.
5. UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate specified fuses.
6. Lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

B. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Isolated Ground Kit: Internally mounted; insulated, labeled for copper and aluminum neutral conductors.
4. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
5. Service-Rated Switches: Labeled for use as service equipment.
6. Hookstick Handle: Allows use of hookstick to operate handle.
7. Auxiliary Contact Kit: One NO/NC (Form "C") auxiliary contact(s), arranged to activate before switch blades open. Contact rating - 24 V(ac).
8. Lugs: Mechanical type, suitable for number, size, and conductor material.

2.3 NONFUSIBLE SWITCHES

A. Type HD, Heavy Duty, Three Pole, Single Throw, 600 V(ac), 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

B. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Isolated Ground Kit: Internally mounted; insulated, labeled for copper and aluminum neutral conductors.
4. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
5. Service-Rated Switches: Labeled for use as service equipment.
6. Hookstick Handle: Allows use of hookstick to operate handle.
7. Auxiliary Contact Kit: One NO/NC (Form "C") auxiliary contact(s), arranged to activate before switch blades open. Contact rating - 24 V(ac).
8. Lugs: Mechanical type, suitable for number, size, and conductor material.

2.4 MOLDED-CASE CIRCUIT BREAKERS

A. Circuit breakers must be constructed using glass-reinforced insulating material. Current carrying components must be completely isolated from handle and accessory mounting area.

B. Circuit breakers must have toggle operating mechanism with common tripping of all poles, which provides quick-make, quick-break contact action. Circuit-breaker handle must be over center, be trip free, and reside in tripped position between on and off to provide local trip indication. Circuit-breaker escutcheon must be clearly marked on and off in addition to providing international I/O markings. Equip circuit breaker with push-to-trip button, located on face of circuit breaker to mechanically operate circuit-breaker tripping mechanism for maintenance and testing purposes.

C. Maximum ampere rating and UL, IEC, or other certification standards with applicable voltage systems and corresponding interrupting ratings must be clearly marked on face of circuit breaker. Circuit breakers must be 100 percent rated.

D. MCCBs must be equipped with device for locking in isolated position.

E. Lugs must be suitable for 75 deg C rated wire.

F. Standard: Comply with UL 489 with required interrupting capacity for available fault currents.

G. Thermal-Magnetic Circuit Breakers: Inverse time-current thermal element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

H. Adjustable, Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.

I. Electronic Trip Circuit Breakers: Field-replaceable rating plug, RMS sensing, with the following field-adjustable settings:

1. Instantaneous trip.
2. Long- and short-time pickup levels.
3. Long- and short-time time adjustments.
4. Ground-fault pickup level, time delay, and I-squared t response.

J. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller, and let-through ratings less than NEMA FU 1, RK-5.

K. GFLS Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6 mA trip).

L. Features and Accessories:

1. Standard frame sizes, trip ratings, and number of poles.
2. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge lighting circuits.
3. Shunt Trip: Trip coil energized from separate circuit, with coil-clearing contact.
4. Alarm Switch: One NO contact that operates only when circuit breaker has tripped.
5. Auxiliary Contacts: One SPDT switch with "a" and "b" contacts; "a" contacts mimic circuit-breaker contacts, "b" contacts operate in reverse of circuit-breaker contacts.

6. Lugs: Mechanical type, suitable for number, size, trip ratings, and conductor material.
7. Ground-Fault Protection: Comply with UL 1053; integrally mounted, self-powered type with mechanical ground-fault indicator; relay with adjustable pickup and time-delay settings, push-to-test feature, internal memory, and shunt trip unit; and three-phase, zero-sequence current transformer/sensor.
8. Undervoltage Trip: Set to operate at 35 to 75 percent of rated voltage without intentional time delay.
9. Key Interlock Kit: Externally mounted to prohibit circuit-breaker operation; key must be removable only when circuit breaker is in off position.
10. Zone-Selective Interlocking: Integral with electronic trip unit; for interlocking ground-fault protection function.
11. Electrical Operator: Provide remote control for on, off, and reset operations.
12. Accessory Control Power: Integrally mounted, self-powered.

2.5 ENCLOSURES

A. Enclosed Switches and Circuit Breakers: UL 489, NEMA KS 1, UL 50E, and UL 50, to comply with environmental conditions at installed location.

B. Enclosure Finish: Enclosure must be finished with gray baked enamel paint, electrodeposited on cleaned, phosphatized steel (UL 50E Type 1).

C. Conduit Entry: UL 50E Types 4, 4X, and 12 enclosures may not contain knockouts. UL 50E Types 7 and 9 enclosures must be provided with threaded conduit openings in both endwalls.

D. Operating Mechanism: Circuit-breaker operating handle must be externally operable with operating mechanism being integral part of box, not cover. Cover interlock mechanism must have externally operated override. Override may not permanently disable interlock mechanism, which must return to locked position once override is released. Tool used to override cover interlock mechanism must not be required to enter enclosure in order to override interlock.

E. Enclosures designated as UL 50E Type 4, 4X stainless steel, 12, or 12K must have dual cover interlock mechanism to prevent unintentional opening of enclosure cover when circuit breaker is ON and to prevent turning circuit breaker ON when enclosure cover is open.

F. UL 50E Type 7/9 enclosures must be furnished with breather and drain kit to allow their use in outdoor and wet location applications.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

1. Commencement of work will indicate Installer's acceptance of areas and conditions as satisfactory.

3.2 SELECTION OF ENCLOSURES

A. Indoor, Dry and Clean Locations: UL 50E, Type 1.

B. Outdoor Locations: UL 50E, Type 3R.

C. Kitchen Wash-Down Areas: UL 50E, Type 4X, stainless steel.

D. Other Wet or Damp, Indoor Locations: UL 50E, Type 4.

E. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: UL 50E, Type 12.

3.3 INSTALLATION

A. Comply with manufacturer's published instructions.

B. Special Techniques:

1. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
2. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.
3. Temporary Lifting Provisions: Remove temporary lifting of eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
4. Install fuses in fusible devices.

3.4 IDENTIFICATION

A. Comply with requirements in Section 26 05 53 "Identification for Electrical Systems."

1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
2. Label each enclosure with engraved metal or laminated-plastic nameplate.

3.5 FIELD QUALITY CONTROL

A. Tests and Inspections for Switches:

1. Visual and Mechanical Inspection:

a. Inspect physical and mechanical condition.
b. Inspect anchorage, alignment, grounding, and clearances.
c. Verify that unit is clean.
d. Verify blade alignment, blade penetration, travel stops, and mechanical operation.
e. Verify that fuse sizes and types match the Specifications and Drawings.
f. Verify that each fuse has adequate mechanical support and contact integrity.
g. Inspect bolted electrical connections for high resistance using one of the following methods:

1) Use low-resistance ohmmeter.

a) Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from those of similar bolted connections by more than 50 percent of lowest value.

2) Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data or NETA ATS Table 100.12.

a) Bolt-torque levels must be in accordance with manufacturer's published data. In absence of manufacturer's published data, use NETA ATS Table 100.12.

h. Verify that operation and sequencing of interlocking systems is as described in the Specifications and shown on Drawings.
i. Verify correct phase barrier installation.
j. Verify lubrication of moving current-carrying parts and moving and sliding surfaces.

2. Electrical Tests:

a. Perform resistance measurements through bolted connections with low-resistance ohmmeter. Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from adjacent poles or similar switches by more than 50 percent of lowest value.
b. Measure contact resistance across each switchblade fuseholder. Drop values may not exceed high level of manufacturer's published data. If manufacturer's published data are not available, investigate values that deviate from adjacent poles or similar switches by more than 50 percent of lowest value.
c. Perform insulation-resistance tests for one minute on each pole, phase-to-phase and phase-to-ground with switch closed, and across each open pole. Apply voltage in accordance with manufacturer's published data. In absence of manufacturer's published data, use Table 100.1 from NETA ATS. Investigate values of insulation resistance less than those published in Table 100.1 or as recommended in manufacturer's published data.
d. Measure fuse resistance. Investigate fuse-resistance values that deviate from each other by more than 15 percent.
e. Perform ground fault test in accordance with NETA ATS Section 7.14 "Ground Fault Protection Systems, Low-Voltage."

B. Tests and Inspections for Molded-Case Circuit Breakers:

1. Visual and Mechanical Inspection:

a. Verify that equipment nameplate data are as described in the Specifications and shown on Drawings.
b. Inspect physical and mechanical condition.
c. Inspect anchorage, alignment, grounding, and clearances.
d. Verify that unit is clean.
e. Operate circuit breaker to ensure smooth operation.
f. Inspect bolted electrical connections for high resistance using one of the following methods:

1) Use low-resistance ohmmeter.

a) Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from those of similar bolted connections by more than 50 percent of lowest value.

2) Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data or NETA ATS Table 100.12.

a) Bolt-torque levels must be in accordance with manufacturer's published data. In absence of manufacturer's published data, use NETA ATS Table 100.12.

g. Inspect operating mechanism, contacts, and chutes in unsealed units.
h. Perform adjustments for final protective device settings in accordance with coordination study.

2. Electrical Tests:

a. Perform resistance measurements through bolted connections with low-resistance ohmmeter. Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from adjacent poles or similar switches by more than 50 percent of lowest value.
b. Perform insulation-resistance tests for one minute on each pole, phase-to-phase and phase-to-ground with circuit breaker closed, and across each open pole. Apply voltage in accordance with manufacturer's published data. In absence of manufacturer's published data, use Table 100.1 from NETA ATS. Investigate values of insulation resistance less than those published in Table 100.1 or as recommended in manufacturer's published data.
c. Perform contact/pole resistance test. Drop values may not exceed high level of manufacturer's published data. If manufacturer's published data are not available, investigate values that deviate from adjacent poles or similar switches by more than 50 percent of lowest value.
d. Perform insulation resistance tests on control wiring with respect to ground. Applied potential must be 500 V(dc) for 300 V rated cable and 1000 V(dc) for 600 V rated cable. Test duration must be one minute. For units with solid state components, follow manufacturer's recommendation. Insulation resistance values may be no less than 2 M Ω.
e. Determine the following by primary current injection:

1) Long-time pickup and delay. Pickup values must be as specified. Trip characteristics may not exceed manufacturer's published time-current characteristic tolerance band, including adjustment factors.
2) Short-time pickup and delay. Short-time pickup values must be as specified. Trip characteristics may not exceed manufacturer's published time-current characteristic tolerance band, including adjustment factors.
3) Ground-fault pickup and time delay. Ground-fault pickup values must be as specified. Trip characteristics may not exceed manufacturer's published time-current characteristic tolerance band, including adjustment factors.
4) Instantaneous pickup. Instantaneous pickup values must be as specified and within manufacturer's published tolerances.

f. Perform minimum pickup voltage tests on shunt trip and close coils in accordance with manufacturer's published data. Minimum pickup voltage of shunt trip and close coils must be as indicated by manufacturer.

g. Verify correct operation of auxiliary features such as trip and pickup indicators; zone interlocking; electrical close and trip operation; trip-free, anti-pump function; and trip unit battery condition. Reset trip logs and indicators. Investigate units that do not function as designed.
h. Verify operation of charging mechanism. Investigate units that do not function as designed.

3. Test and adjust controls, remote monitoring, and safeties.

C. Nonconforming Work:

1. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.
2. Remove and replace defective units and retest.

D. Collect, assemble, and submit test and inspection reports.

1. Test procedures used.
2. Include identification of each enclosed switch and circuit breaker tested and describe test results.
3. List deficiencies detected, remedial action taken, and observations after remedial action.

3.6 ADJUSTING

A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

B. Set field-adjustable circuit-breaker trip ranges as specified in Section 26 05 73.16 "Coordination Studies."

3.7 PROTECTION

A. After installation, protect enclosed switches and circuit breakers from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

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SECTION 26 29 13.03
MANUAL AND MAGNETIC MOTOR CONTROLLERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Manual motor controllers.
2. Enclosed full-voltage magnetic motor controllers.
3. Combination full-voltage magnetic motor controllers.
4. Enclosures.
5. Accessories.
6. Identification.

1.3 DEFINITIONS

A. CPT: Control power transformer.

B. MCCB: Molded-case circuit breaker.

C. MCP: Motor circuit protector.

D. NC: Normally closed.

E. OCPD: Overcurrent protective device.

F. SCCR: Short-circuit current rating.

G. SCPD: Short-circuit protective device.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings: For each type of magnetic controller.

1. Include plans, elevations, sections, and mounting details.
2. Indicate dimensions, weights, required clearances, and location and size of each field connection.
3. Wire Termination Diagrams and Schedules: Include diagrams for signal, and control wiring. Identify terminals and wiring designations and color-codes to facilitate installation, operation, and maintenance. Indicate recommended types, wire sizes, and circuiting

arrangements for field-installed wiring, and show circuit protection features. Differentiate between manufacturer-installed and field-installed wiring.

4. Include features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.

C. Product Schedule: List the following for each enclosed controller:

1. Each installed magnetic controller type.
2. NRTL listing.
3. Factory-installed accessories.
4. Nameplate legends.
5. SCCR of integrated unit.
6. For each combination magnetic controller include features, characteristics, ratings, and factory setting of the SCPD and OCPD.

    a. Listing document proving Type 2 coordination.

7. For each series-rated combination state the listed integrated short-circuit current (withstand) rating of SCPD and OCPDs by an NRTL acceptable to authorities having jurisdiction.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For magnetic controllers to include in operation and maintenance manuals.

1. In addition to items specified in Section 01 78 23 "Operation and Maintenance Data," include the following:

    a. Routine maintenance requirements for magnetic controllers and installed components.
    b. Manufacturer's written instructions for testing and adjusting circuit breaker and MCP trip settings.
    c. Manufacturer's written instructions for setting field-adjustable overload relays.
    d. Load-Current and List of Settings of Adjustable Overload Relays: Compile after motors have been installed, and arrange to demonstrate that switch settings for motor-running overload protection suit actual motors to be protected.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fuses for Fused Switches: Equal to 10 percent of quantity installed for each size and type, but no fewer than three of each size and type.
2. Control Power Fuses: Equal to 10 percent of quantity installed for each size and type, but no fewer than two of each size and type.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store controllers indoors in clean, dry space with uniform temperature to prevent condensation. Protect controllers from exposure to dirt, fumes, water, corrosive substances, and physical damage.

1.8 FIELD CONDITIONS

A. Ambient Environment Ratings: Rate equipment for continuous operation under the following conditions unless otherwise indicated:

1. Ambient Temperature: Not less than 23 deg F and not exceeding 104 deg F.
2. Altitude: Not exceeding 6600 feet for electromagnetic and manual devices.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

B. UL Compliance: Fabricate and label magnetic motor controllers to comply with UL 508 and UL 60947-4-1.

C. NEMA Compliance: Fabricate motor controllers to comply with ICS 2.

2.2 MANUAL MOTOR CONTROLLERS

A. Motor-Starting Switches (MSS): "Quick-make, quick-break" toggle or push-button action; marked to show whether unit is off or on.

1. Standard: Comply with NEMA ICS 2, general purpose, Class A.
2. Configuration: Nonreversing.
3. Surface mounting.
4. Red pilot light.

B. Fractional Horsepower Manual Controllers (FHPMC): "Quick-make, quick-break" toggle or push-button action; marked to show whether unit is off, on, or tripped.

1. Configuration: Nonreversing.
2. Overload Relays: Inverse-time-current characteristics; NEMA ICS 2, Class 10 tripping characteristics; heaters matched to nameplate full-load current of actual protected motor; external reset push button; bimetallic type.
3. Pilot Light: Red.

C. Integral Horsepower Manual Controllers (IHPMC): "Quick-make, quick-break" toggle or push-button action; marked to show whether unit is off, on, or tripped.

1. Configuration: Nonreversing.
2. Overload Relays: Inverse-time-current characteristics; NEMA ICS 2, Class 10 tripping characteristics; heaters matched to nameplate full-load current of actual protected motor; external reset push button; bimetallic type.

2.3 ENCLOSED FULL-VOLTAGE MAGNETIC MOTOR CONTROLLERS

A. Description: Across-the-line start, electrically held, for nominal system voltage of 600-V ac and less.

B. Standard: Comply with NEMA ICS 2, general purpose, Class A.

C. Configuration: Nonreversing.

D. Contactor Coils: Pressure-encapsulated type with coil transient suppressors when indicated.

1. Operating Voltage: Manufacturer's standard, unless indicated.

E. Control Power:

1. For on-board control power, obtain from line circuit or from integral CPT. The CPT shall have capacity to operate integral devices and remotely located pilot, indicating, and control devices.

F. Overload Relays:

1. Thermal Overload Relays:

a. Inverse-time-current characteristic.
b. Class 10 tripping characteristic.
c. Heaters in each phase shall be matched to nameplate full-load current of actual protected motor and with appropriate adjustment for duty cycle.
d. Ambient compensated.
e. Automatic resetting.

2. Solid-State Overload Relay:

a. Switch or dial selectable for motor-running overload protection.
b. Sensors in each phase.
c. Class 10 tripping characteristic selected to protect motor against voltage and current unbalance and single phasing.

2.4 COMBINATION FULL-VOLTAGE MAGNETIC MOTOR CONTROLLER

A. Description: Factory-assembled, combination full-voltage magnetic motor controller consisting of the controller described in this article, indicated disconnecting means, SCPD and OCPD, in a single enclosure.

B. Standard: Comply with NEMA ICS 2, general purpose, Class A.

C. Configuration: Nonreversing.

D. Contactor Coils: Pressure-encapsulated type with coil transient suppressors when indicated.

1. Operating Voltage: Manufacturer's standard, unless indicated.

E. Control Power:

1. For on-board control power, obtain from line circuit or from integral CPT. The CPT shall have capacity to operate integral devices and remotely located pilot, indicating, and control devices.

F. Overload Relays:

1. Thermal Overload Relays:

a. Inverse-time-current characteristic.
b. Class 10 tripping characteristic.
c. Heaters in each phase shall be matched to nameplate full-load current of actual protected motor and with appropriate adjustment for duty cycle.
d. Ambient compensated.
e. Automatic resetting.

2. Solid-State Overload Relay:

a. Switch or dial selectable for motor-running overload protection.
b. Sensors in each phase.
c. Class 10 tripping characteristic selected to protect motor against voltage and current unbalance and single phasing.

G. Fusible Disconnecting Means:

1. NEMA KS 1, heavy-duty, horsepower-rated, fusible switch with clips or bolt pads to accommodate indicated fuses.
2. Lockable Handle: Accepts three padlocks and interlocks with cover in closed position.

H. Nonfusible Disconnecting Means:

1. NEMA KS 1, heavy-duty, horsepower-rated, nonfusible switch.
2. Lockable Handle: Accepts three padlocks and interlocks with cover in closed position.

I. MCP Disconnecting Means:

1. UL 489 and NEMA AB 3, with interrupting capacity to comply with available fault currents, instantaneous-only circuit breaker with front-mounted, field-adjustable, short-circuit trip coordinated with motor locked-rotor amperes.
2. Lockable Handle: Accepts three padlocks and interlocks with cover in closed position.

J. MCCB Disconnecting Means:

1. UL 489 and NEMA AB 3, with interrupting capacity to comply with available fault currents; thermal-magnetic MCCB, with inverse-time-current element for low-level overloads and instantaneous magnetic trip element for short circuits.
2. Front-mounted, adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
3. Lockable Handle: Accepts three padlocks and interlocks with cover in closed position.

2.5 ENCLOSURES

A. Comply with NEMA 250, type designations as indicated on Drawings, complying with environmental conditions at installed location.

B. The construction of the enclosures shall comply with NEMA ICS 6.

C. Controllers in hazardous (classified) locations shall comply with UL 1203.

2.6 ACCESSORIES

A. General Requirements for Control Circuit and Pilot Devices: NEMA ICS 5; factory installed in controller enclosure cover unless otherwise indicated.

1. Push Buttons, Pilot Lights, and Selector Switches: Standard-duty, except as needed to match enclosure type. Heavy-duty or oil-tight where indicated in the controller schedule.

    a. Push Buttons: As indicated in the controller schedule.
    b. Pilot Lights: As indicated in the controller schedule.

2. Elapsed Time Meters: Heavy duty with digital readout in hours; resettable.

B. Motor protection relays shall be with solid-state sensing circuit and isolated output contacts for hardwired connections.

1. Phase-failure.
2. Phase-reversal, with bicolor LED to indicate normal and fault conditions. Automatic reset when phase reversal is corrected.
3. Under/overvoltage, operate when the circuit voltage reaches a preset value, and drop out when the operating voltage drops to a level below the preset value. Include adjustable time-delay setting.

C. Breather assemblies, to maintain interior pressure and release condensation in Type 4X enclosures installed outdoors or in unconditioned interior spaces subject to humidity and temperature swings.

D. Sun shields installed on fronts, sides, and tops of enclosures installed outdoors and subject to direct and extended sun exposure.

2.7 IDENTIFICATION

A. Controller Nameplates: Laminated acrylic or melamine plastic signs, as described in Section 26 05 53 "Identification for Electrical Systems," for each compartment, mounted with corrosion-resistant screws.

B. Arc-Flash Warning Labels:

1. Comply with requirements in Section 26 05 73.19 "Arc-Flash Hazard Analysis." Produce a 3.5-by-5-inch self-adhesive equipment label for each work location included in the analysis.
2. Comply with requirements in Section 26 05 53 "Identification for Electrical Systems." Produce a 3.5-by-5-inch self-adhesive equipment label for each work location included in the analysis. Labels shall be machine printed, with no field-applied markings.

    a. The label shall have an orange header with the wording, "WARNING, ARC-FLASH HAZARD," and shall include the following information taken directly from the arc-flash hazard analysis:

        1) Location designation.
        2) Nominal voltage.
        3) Flash protection boundary.
        4) Hazard risk category.
        5) Incident energy.
        6) Working distance.
        7) Engineering report number, revision number, and issue date.

    b. Labels shall be machine printed, with no field-applied markings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and space conditions for compliance with requirements for motor controllers, their relationship with the motors, and other conditions affecting performance of the Work.

3.2 INSTALLATION

A. Comply with NECA 1.

B. Wall-Mounted Controllers: Install magnetic controllers on walls with tops at uniform height indicated, and by bolting units to wall or mounting on lightweight structural-steel channels bolted to wall. For controllers not at walls, provide freestanding racks complying with Section 26 05 29 "Hangers and Supports for Electrical Systems" unless otherwise indicated.

C. Maintain minimum clearances and workspace at equipment according to manufacturer's written instructions and NFPA 70.

D. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Install lacing bars and distribution spools.

E. Setting of Overload Relays: Select and set overloads on the basis of full-load current rating as shown on motor nameplate. Adjust setting value for special motors as required by NFPA 70 for motors that are high-torque, high-efficiency, and so on.

3.3 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 26 05 53 "Identification for Electrical Systems."

3.4 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:

1. Comply with the provisions of NFPA 70B, "Testing and Test Methods" Chapter.

2. Visual and Mechanical Inspection:

a. Compare equipment nameplate data with drawings and specifications.
b. Inspect physical and mechanical condition.
c. Inspect anchorage, alignment, and grounding.
d. Verify the unit is clean.
e. Inspect contactors:

1) Verify mechanical operation.
2) Verify contact gap, wipe, alignment, and pressure are according to manufacturer's published data.

f. Motor-Running Protection:

1) Verify overload element rating is correct for its application.
2) If motor-running protection is provided by fuses, verify correct fuse rating.

g. Inspect bolted electrical connections for high resistance using one of the two following methods:

1) Use a low-resistance ohmmeter. Compare bolted connection resistance values with values of similar connections. Investigate values that deviate from those of similar bolted connections by more than 50 percent of the lowest value.
2) Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method according to manufacturer's published data or NETA ATS Table 100.12. Bolt-torque levels shall be according to manufacturer's published data. In the absence of manufacturer's published data, use NETA ATS Table 100.12.

h. Verify appropriate lubrication on moving current-carrying parts and on moving and sliding surfaces.

3. Electrical Tests:

a. Perform insulation-resistance tests for one minute on each pole, phase-to-phase and phase-to-ground with switch closed, and across each open pole. Insulation-resistance values shall be according to manufacturer's published data or NETA ATS Table 100.1. In the absence of manufacturer's published data, use Table 100.5. Values of insulation resistance less than those of this table or manufacturer's recommendations shall be investigated and corrected.
b. Measure fuse resistance. Investigate fuse-resistance values that deviate from each other by more than 15 percent.
c. Test motor protection devices according to manufacturer's published data.
d. Test circuit breakers as follows:

1) Operate the circuit breaker to ensure smooth operation.
2) For adjustable circuit breakers, adjust protective device settings according to the coordination study. Comply with coordination study recommendations.

e. Perform operational tests by initiating control devices.

4. Infrared Inspection: Perform the survey during periods of maximum possible loading. Remove all necessary covers prior to the inspection.

a. Comply with the recommendations of NFPA 70B, "Testing and Test Methods" Chapter, "Infrared Inspection" Article.
b. After Substantial Completion, but not more than 60 days after Final Acceptance, perform infrared inspection of the electrical power connections of each motor controller.
c. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each motor controller 11 months after date of Substantial Completion.
d. Act on inspection results and recommended action, and considering the recommendations of NETA ATS, Table 100.18. Correct possible and probable deficiencies as soon as Owner's operations permit. Retest until deficiencies are corrected.

C. Motor controller will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

3.5 SYSTEM FUNCTION TESTS

A. System function tests shall prove the correct interaction of sensing, processing, and action devices. Perform system function tests after field quality control tests have been completed and all components have passed specified tests.

1. Develop test parameters and perform tests for the purpose of evaluating performance of integral components and their functioning as a complete unit within design requirements and manufacturer's published data.
2. Verify the correct operation of interlock safety devices for fail-safe functions in addition to design function.
3. Verify the correct operation of sensing devices, alarms, and indicating devices.

B. Motor controller will be considered defective if it does not pass the system function tests and inspections.

C. Prepare test and inspection reports.

3.6 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain switchgear.

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SECTION 26 32 13.13
DIESEL-ENGINE-DRIVEN GENERATOR SETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Diesel engine.
2. Diesel fuel-oil system.
3. Control and monitoring.
4. Generator overcurrent and fault protection.
5. Generator, exciter, and voltage regulator.
6. Outdoor engine generator enclosure.
7. Vibration isolation devices.

B. Related Requirements:

1. Section 26 36 00 "Transfer Switches" for transfer switches including sensors and relays to initiate automatic-starting and -stopping signals for engine generators.

1.3 DEFINITIONS

A. EPS: Emergency power supply.

B. EPSS: Emergency power supply system.

C. Operational Bandwidth: The total variation from the lowest to highest value of a parameter over the range of conditions indicated, expressed as a percentage of the nominal value of the parameter.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
2. Include thermal damage curve for generator.
3. Include time-current characteristic curves for generator protective device.
4. Include fuel consumption in gallons per hour at 0.8 power factor at 0.5, 0.75, and 1.0 times generator capacity.
5. Include generator efficiency at 0.8 power factor at 0.5, 0.75, and 1.0 times generator capacity.
6. Include airflow requirements for cooling and combustion air in cubic feet per minute at 0.8 power factor, with air-supply temperature of 95, 80, 70, and 50 deg F. Provide Drawings indicating requirements and limitations for location of air intake and exhausts.

7. Include generator characteristics, including, but not limited to, kilowatt rating, efficiency, reactances, and short-circuit current capability.

B. Shop Drawings:

1. Include plans and elevations for engine generator and other components specified. Indicate access requirements affected by height of subbase fuel tank.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Identify fluid drain ports and clearance requirements for proper fluid drain.
4. Design calculations for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
5. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include base weights.
6. Include diagrams for power, signal, and control wiring. Complete schematic, wiring, and interconnection diagrams showing terminal markings for engine generators and functional relationship between all electrical components.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Source Quality-Control Reports: Including, but not limited to, the following:

1. Certified summary of prototype-unit test report.
2. Certified Test Reports: For components and accessories that are equivalent, but not identical, to those tested on prototype unit.
3. Report of factory test on units to be shipped for this Project, showing evidence of compliance with specified requirements.
4. Report of sound generation.
5. Report of exhaust emissions showing compliance with applicable regulations.
6. Certified Torsional Vibration Compatibility: Comply with NFPA 110.

C. Field quality-control reports.

D. Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For packaged engine generators to include in emergency, operation, and maintenance manuals.

1. In addition to items specified in Section 01 78 23 "Operation and Maintenance Data," include the following:

a. List of tools and replacement items recommended to be stored at Project for ready access. Include part and drawing numbers, current unit prices, and source of supply.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fuses: One for every 10 of each type and rating, but no fewer than one of each.
2. Indicator Lamps: Two for every six of each type used, but no fewer than two of each.
3. Filters: One set each of lubricating oil, fuel, and combustion-air filters.
4. Tools: Each tool listed by part number in operations and maintenance manual.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1.9 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of packaged engine generators and associated auxiliary components that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 2 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Caterpillar, Inc.; Electric Power Division.
2. Cummins Power Generation.
3. Generac.
4. Kohler Power Systems.
5. Rolls-Royce Solutions America Inc.

B. Source Limitations: Obtain packaged engine generators and auxiliary components from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. B11 Compliance: Comply with B11.19.

B. NFPA Compliance:

1. Comply with NFPA 37.
2. Comply with NFPA 70.
3. Comply with NFPA 110 requirements for Level 1 EPSS.

C. UL Compliance: Comply with UL 2200.

D. Engine Exhaust Emissions: Comply with EPA Tier 3 requirements and applicable state and local government requirements.

E. Noise Emission: Comply with applicable state and local government requirements for maximum noise level at adjacent property boundaries due to sound emitted by engine generator including engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation.

F. Environmental Conditions: Engine generator system shall withstand the following environmental conditions without mechanical or electrical damage or degradation of performance capability:

1. Ambient Temperature: 5 to 104 deg F.
2. Relative Humidity: Zero to 95 percent.
3. Altitude: Sea level to 1000 feet.

2.3 ENGINE GENERATOR ASSEMBLY DESCRIPTION

A. Factory-assembled and -tested, water-cooled engine, with brushless generator and accessories.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

C. Power Rating: Standby.

D. EPSS Class: Engine generator shall be classified as shown on drawings, according to NFPA 110.

E. Service Load: As shown on drawings.

F. Power Factor: 0.8, lagging.

G. Frequency: 60 Hz.

H. Voltage: As shown on drawings.

I. Phase: As shown on drawings.

J. Governor: Adjustable isochronous, with speed sensing.

K. Mounting Frame: Structural steel framework to maintain alignment of mounted components without depending on concrete foundation. Provide lifting attachments sized and spaced to prevent deflection of base during lifting and moving.

1. Rigging Diagram: Inscribed on metal plate permanently attached to mounting frame to indicate location and lifting capacity of each lifting attachment and engine generator center of gravity.

L. Capacities and Characteristics:

1. Power Output Ratings: Nominal ratings as indicated at 0.8 power factor excluding power required for the continued and repeated operation of the unit and auxiliaries, with capacity as required to operate as a unit as evidenced by records of prototype testing.
2. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component.

M. Engine Generator Performance:

1. Steady-State Voltage Operational Bandwidth: 3 percent of rated output voltage from no load to full load.

2. Transient Voltage Performance: Not more than 20 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within three seconds.
3. Steady-State Frequency Operational Bandwidth: 0.5 percent of rated frequency from no load to full load.
4. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.
5. Transient Frequency Performance: Less than 5 percent variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within five seconds.
6. Output Waveform: At no load, harmonic content measured line to line or line to neutral shall not exceed 5 percent total and 3 percent for single harmonics. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50 percent.
7. Sustained Short-Circuit Current: For a three-phase, bolted short circuit at system output terminals, system shall supply a minimum of 250 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to generator system components.
8. Start Time:

    a. Comply with NFPA 110, Type 10 system requirements.

2.4 DIESEL ENGINE

A. Fuel: ASTM D975, diesel fuel oil, Grade 2-D S15.

B. Rated Engine Speed: 1800 rpm.

C. Lubrication System: Engine or skid-mounted.

1. Filter and Strainer: Rated to remove 90 percent of particles 5 micrometers and smaller while passing full flow.
2. Thermostatic Control Valve: Control flow in system to maintain optimum oil temperature. Unit shall be capable of full flow and is designed to be fail-safe.
3. Crankcase Drain: Arranged for complete gravity drainage to an easily removable container with no disassembly and without use of pumps, siphons, special tools, or appliances.

D. Jacket Coolant Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with UL 499 and with NFPA 110 requirements for Level 1 equipment for heater capacity.

E. Integral Cooling System: Closed loop, liquid cooled, with radiator factory mounted on engine generator set mounting frame and integral engine-driven coolant pump.

1. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
2. Size of Radiator: Adequate to contain expansion of total system coolant from cold start to 110 percent load condition.
3. Expansion Tank: Constructed of welded steel plate and rated to withstand maximum closed-loop coolant system pressure for engine used. Equip with gage glass and petcock.

4. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
5. Coolant Hose: Flexible assembly with inside surface of nonporous rubber and outer covering of aging-, UV-, and abrasion-resistant fabric.

    a. Rating: 50-psig maximum working pressure with coolant at 180 deg F, and noncollapsible under vacuum.
    b. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.

F. Muffler/Silencer:

1. Critical type, sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements.

    a. Minimum sound attenuation of 25 dB at 500 Hz.
    b. Sound level measured at a distance of 25 feet from exhaust discharge after installation is complete shall be 78 dBA or less.

G. Air-Intake Filter: Heavy-duty, engine-mounted air cleaner with replaceable dry-filter element and "blocked filter" indicator.

H. Starting System: 24-V electric, with negative ground.

1. Components: Sized so they are not damaged during a full engine-cranking cycle with ambient temperature at maximum specified in "Performance Requirements" Article.
2. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
3. Cranking Cycle: As required by NFPA 110 for system level specified.
4. Battery: Lead acid, with capacity within ambient temperature range specified in "Performance Requirements" Article to provide specified cranking cycle at least three times without recharging.
5. Battery Cable: Size as recommended by engine manufacturer. Include required interconnecting conductors and connection accessories.
6. Battery Compartment: Factory fabricated of metal with acid-resistant finish and thermal insulation. Thermostatically controlled heater shall be arranged to maintain battery above 50 deg F regardless of external ambient temperature within range specified in "Performance Requirements" Article. Include accessories required to support and fasten batteries in place. Provide ventilation to exhaust battery gases.
7. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation and 35-A minimum continuous rating.
8. Battery Charger: Current-limiting, automatic-equalizing, and float-charging type designed for lead-acid batteries. Unit shall comply with UL 1236 and include the following features:

    a. Operation: Equalizing-charging rate of 10 A shall be initiated automatically after battery has lost charge until an adjustable equalizing voltage is achieved at battery terminals. Unit shall then be automatically switched to a lower float-charging mode and shall continue to operate in that mode until battery is discharged again.
    b. Automatic Temperature Compensation: Adjust float and equalize voltages for variations in ambient temperature from minus 40 to 140 deg F to prevent overcharging at high temperatures and undercharging at low temperatures.
    c. Automatic Voltage Regulation: Maintain constant output voltage regardless of input voltage variations up to plus or minus 10 percent.

d. Ammeter and Voltmeter: Flush mounted in door. Meters shall indicate charging rates.
e. Safety Functions: Sense abnormally low battery voltage and close contacts providing low battery voltage indication on control and monitoring panel. Sense high battery voltage and loss of ac input or dc output of battery charger. Either condition shall close contacts that provide a battery-charger malfunction indication at system control and monitoring panel.
f. Enclosure and Mounting: NEMA 250, Type 1, wall-mounted cabinet.

2.5 DIESEL FUEL-OIL SYSTEM

A. Comply with NFPA 37.

B. Piping: Fuel-oil piping shall be Schedule 40 black steel, complying with requirements in Section 23 11 13 "Facility Fuel-Oil Piping." Cast iron, aluminum, copper, and galvanized steel shall not be used in the fuel-oil system.

C. Main Fuel Pump: Mounted on engine to provide primary fuel flow under starting and load conditions.

D. Fuel Filtering: Remove water and contaminants larger than 1 micron.

E. Relief-Bypass Valve: Automatically regulates pressure in fuel line and returns excess fuel to source.

F. Subbase-Mounted, Double-Wall, Fuel-Oil Tank: Factory installed and piped, complying with UL 142 fuel-oil tank. Features include the following:

1. Tank level indicator.
2. Fuel-Tank Capacity: Minimum 133 percent of total fuel required for planned operation plus fuel for periodic maintenance operations between fuel refills.
3. Leak detection in interstitial space.
4. Vandal-resistant fill cap.
5. Containment Provisions: Comply with requirements of authorities having jurisdiction.

2.6 CONTROL AND MONITORING

A. Automatic Starting System Sequence of Operation: When mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in one or more separate automatic transfer switches initiate starting and stopping of engine generator. When mode-selector switch is switched to the on position, engine generator starts. The off position of same switch initiates engine generator shutdown. When engine generator is running, specified system or equipment failures or derangements automatically shut down engine generator and initiate alarms.

B. Provide minimum run time control set for 15 minutes with override only by operation of a remote emergency-stop switch.

C. Comply with UL 508A.

D. Configuration:

1. Operating and safety indications, protective devices, basic system controls, and engine gages shall be grouped in a common control and monitoring panel mounted on the engine

generator. Mounting method shall isolate the control panel from engine generator vibration. Panel shall be powered from the engine generator battery.

E. Control and Monitoring Panel:

1. Digital engine generator controller with integrated LCD display, controls, and microprocessor, capable of local and remote control, monitoring, and programming, with battery backup.
2. Instruments: Located on the control and monitoring panel and viewable during operation.

    a. Engine lubricating-oil pressure gage.
    b. Engine-coolant temperature gage.
    c. DC voltmeter (alternator battery charging).
    d. Running-time meter.
    e. AC voltmeter, connected to a phase selector switch.
    f. AC ammeter, connected to a phase selector switch.
    g. AC frequency meter.
    h. Generator-voltage adjusting rheostat.

3. Controls and Protective Devices: Controls, shutdown devices, and common alarm indication, including the following:

    a. Cranking control equipment.
    b. Run-Off-Auto switch.
    c. Control switch not in automatic position alarm.
    d. Overcrank alarm.
    e. Overcrank shutdown device.
    f. Low-water temperature alarm.
    g. High engine temperature.
    h. High engine temperature shutdown device.
    i. Overspeed alarm.
    j. Overspeed shutdown device.
    k. Low fuel main tank.

        1) Low-fuel-level alarm shall be initiated when the level falls below that required for operation for duration required for the indicated EPSS class.

    l. Coolant low-level alarm.
    m. Coolant high-temperature alarm.
    n. Coolant low-temperature alarm.
    o. Coolant high-temperature shutdown device.
    p. EPS load indicator.
    q. Battery high-voltage alarm.
    r. Low cranking voltage alarm.
    s. Battery-charger malfunction alarm.
    t. Battery low-voltage alarm.
    u. Lamp test.
    v. Contacts for local and remote common alarm.
    w. Remote manual stop shutdown device.
    x. Generator overcurrent-protective-device not-closed alarm.
    y. Hours of operation.
    z. Engine generator metering, including voltage, current, hertz, kilowatt, kilovolt ampere, and power factor.

F. Remote Alarm Annunciator: An LED indicator light labeled with proper alarm conditions shall identify each alarm event, and a common audible signal shall sound for each alarm condition. Silencing switch in face of panel shall silence signal without altering visual indication. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset. Cabinet and faceplate are surface- or flush-mounting type to suit mounting conditions indicated.

1. Overcrank alarm.
2. Low water-temperature alarm.
3. High engine temperature prealarm.
4. High engine temperature alarm.
5. Low lube oil pressure alarm.
6. Overspeed alarm.
7. Low fuel main tank alarm.
8. Low coolant level alarm.
9. Low cranking voltage alarm.
10. Contacts for local and remote common alarm.
11. Audible-alarm silencing switch.
12. Air shutdown damper when used.
13. Run-Off-Auto switch.
14. Control switch not in automatic position alarm.
15. Low-cranking voltage alarm.

G. Supporting Items: Include sensors, transducers, terminals, relays, and other devices and include wiring required to support specified items. Locate sensors and other supporting items on engine or generator unless otherwise indicated.

H. Remote Emergency-Stop Switch: Flush; wall mounted unless otherwise indicated; and labeled. Push button shall be protected from accidental operation.

2.7 GENERATOR OVERCURRENT AND FAULT PROTECTION

A. Overcurrent protective devices shall be coordinated to optimize selective tripping when a short circuit occurs.

1. Overcurrent protective devices for the entire EPSS shall be coordinated to optimize selective tripping when a short circuit occurs. Coordination of protective devices shall consider both utility and EPSS as the voltage source.
2. Overcurrent protective devices for the EPSS shall be accessible only to authorized personnel.

B. Generator Overcurrent Protective Device:

1. Molded-case circuit breaker, electronic-trip type; 100 percent rated; complying with UL 489:

a. Tripping Characteristics: Adjustable long-time and short-time delay and instantaneous.
b. Trip Settings: Selected to coordinate with generator thermal damage curve.
c. Shunt Trip: Connected to trip breaker when engine generator is shut down by other protective devices.
d. Mounting: Adjacent to, or integrated with, control and monitoring panel.

C. Ground-Fault Indication: Comply with NFPA 70, "Emergency System" signals for ground fault.

1. Indicate ground fault with other engine generator alarm indications.

2.8 GENERATOR, EXCITER, AND VOLTAGE REGULATOR

A. Comply with NEMA MG 1.

B. Drive: Generator shaft shall be directly connected to engine shaft. Exciter shall be rotated integrally with generator rotor.

C. Electrical Insulation: Class H.

D. Range: Provide limited range of output voltage by adjusting the excitation level.

E. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, overspeed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.

F. Enclosure: Dripproof.

G. Instrument Transformers: Mounted within generator enclosure.

H. Voltage Regulator: Solid-state type, separate from exciter, providing performance as specified and as required by NFPA 110.

1. Adjusting Rheostat on Control and Monitoring Panel: Provide plus or minus 5 percent adjustment of output-voltage operating band.
2. Maintain voltage within 20 percent on one step, full load.
3. Provide anti-hunt provision to stabilize voltage.
4. Maintain frequency within 5 percent and stabilize at rated frequency within 5 seconds.

I. Strip Heater: Thermostatically controlled unit arranged to maintain stator windings above dew point.

J. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.

K. Subtransient Reactance: 12 percent, maximum.

2.9 OUTDOOR ENGINE GENERATOR ENCLOSURE

A. Description:

1. Vandal-resistant, sound-attenuating, weatherproof steel housing. Multiple panels shall be lockable and provide adequate access to components requiring maintenance. Panels shall be removable by one person without tools. Instruments and control shall be mounted within enclosure.

B. Structural Design and Anchorage: Comply with ASCE/SEI 7 for wind loads up to 160 mph.

C. Hinged Doors: With padlocking provisions.

D. Lighting: Provide weather-resistant LED lighting with 30 fc average maintained.

E. Thermal Insulation: Manufacturer's standard materials and thickness selected in coordination with space heater to maintain winter interior temperature within operating limits required by engine generator components.

F. Muffler Location: Within enclosure.

G. Engine-Cooling Airflow through Enclosure: Maintain temperature rise of system components within required limits when unit operates at 110 percent of rated load for two hours with ambient temperature at top of range specified in system service conditions.

1. Louvers: Fixed-engine, cooling-air inlet and discharge. Stormproof and drainable louvers prevent entry of rain and snow.
2. Automatic Dampers: At engine cooling-air inlet and discharge. Dampers shall be closed to reduce enclosure heat loss in cold weather when unit is not operating.

H. Interior Lights with Switch: Factory-wired, vapor-proof luminaires within housing; arranged to illuminate controls and accessible interior. Arrange for external electrical connection.

1. AC lighting system and connection point for operation when remote source is available.
2. DC lighting system for operation when remote source and generator are both unavailable.

I. Convenience Outlets: Factory-wired, GFCI. Arrange for external electrical connection.

2.10 VIBRATION ISOLATION DEVICES

A. Restrained Spring Isolators: Freestanding, steel, open-spring isolators with seismic restraint.

1. Housing: Steel with resilient vertical-limit stops to prevent spring extension due to wind loads or if weight is removed; factory-drilled baseplate bonded to 1/4-inch-thick, elastomeric isolator pad attached to baseplate underside; and adjustable equipment-mounting and -leveling bolt that acts as blocking during installation.
2. Outside Spring Diameter: Not less than 80 percent of compressed height of the spring at rated load.
3. Minimum Additional Travel: 50 percent of required deflection at rated load.
4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
6. Minimum Deflection: 1 inch.

B. Comply with requirements in Section 23 21 16 "Hydronic Piping Specialties" for vibration isolation and flexible connector materials for steel piping.

C. Comply with requirements in Section 23 31 13 "Metal Ducts" for vibration isolation and flexible connector materials for exhaust shroud and ductwork.

D. Vibration isolation devices shall not be used to accommodate misalignments or to make bends.

2.11 FINISHES

A. Indoor and Outdoor Enclosures and Components: Manufacturer's standard finish over corrosion-resistant pretreatment and compatible primer.

2.12 SOURCE QUALITY CONTROL

A. Prototype Testing: Factory test engine generator using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.

1. Tests: Comply with IEEE 115 and with NFPA 110, Level 1 Energy Converters.

B. Project-Specific Equipment Tests: Before shipment, factory test engine generator and other system components and accessories manufactured specifically for this Project. Perform tests at rated load and power factor. Include the following tests:

1. Test components and accessories furnished with installed unit that are not identical to those on tested prototype to demonstrate compatibility and reliability.
2. Test generator, exciter, and voltage regulator as a unit.
3. Full load run.
4. Maximum power.
5. Voltage regulation.
6. Transient and steady-state governing.
7. Single-step load pickup.
8. Safety shutdown.
9. Report factory test results within 10 days of completion of test.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, equipment bases, and conditions, with Installer present, for compliance with requirements for installation and other conditions affecting packaged engine generator performance.

B. Examine roughing-in for piping systems and electrical connections. Verify actual locations of connections before packaged engine generator installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with NECA 1 and NECA 404.

B. Comply with packaged engine generator manufacturers' written installation and alignment instructions and with NFPA 110.

C. Equipment Mounting:

1. Install packaged engine generators on cast-in-place concrete equipment bases. Comply with requirements for equipment bases and foundations specified in Section 03 30 00 "Cast-in-Place Concrete."
2. Coordinate size and location of concrete bases for packaged engine generators. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified with concrete.

3. Install packaged engine generator with restrained spring isolators having a minimum deflection of 1 inch on 4-inch-high concrete base. Secure enclosure to anchor bolts installed in concrete bases.

D. Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.

E. Exhaust System: Install Schedule 40 black steel piping with welded joints and connect to engine muffler. Install thimble at wall. Piping shall be same diameter as muffler outlet.

1. Piping materials and installation requirements are specified in Section 23 21 13 "Hydronic Piping."
2. Install flexible connectors and steel piping materials according to requirements in Section 23 21 16 "Hydronic Piping Specialties."
3. Insulate muffler/silencer and exhaust system components according to requirements in Section 23 07 19 "HVAC Piping Insulation."

F. Drain Piping: Install condensate drain piping to muffler drain outlet full size of drain connection with a shutoff valve, stainless-steel flexible connector, and Schedule 40 black steel pipe with welded joints.

1. Piping materials and installation requirements are specified in Section 23 21 13 "Hydronic Piping."
2. Drain piping valves, connectors, and installation requirements are specified in Section 23 21 16 "Hydronic Piping Specialties."

G. Fuel Piping:

1. Diesel storage tanks, tank accessories, piping, valves, and specialties for fuel systems are specified in Section 23 11 13 "Facility Fuel-Oil Piping."
2. Copper and galvanized steel shall not be used in the fuel-oil piping system.

H. Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.

3.3 CONNECTIONS

A. Piping installation requirements are specified in other Sections. Drawings indicate general arrangement of piping and specialties.

B. Connect fuel, cooling-system, and exhaust-system piping adjacent to packaged engine generator to allow space for service and maintenance.

C. Connect cooling-system water piping to engine generator with flexible connectors.

D. Connect engine exhaust pipe to engine with flexible connector.

E. Connect fuel piping to engines with a gate valve and union and flexible connector.

F. Ground equipment according to Section 26 05 26 "Grounding and Bonding for Electrical Systems."

G. Connect wiring according to Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables." Provide a minimum of one 90-degree bend in flexible conduit routed to the engine generator from a stationary element.

H. Balance single-phase loads to obtain a maximum of 10 percent unbalance between any two phases.

3.4 IDENTIFICATION

A. Identify system components according to Section 23 05 53 "Identification for HVAC Piping and Equipment" and Section 26 05 53 "Identification for Electrical Systems."

B. Install a sign indicating the generator neutral is bonded to the main service neutral at the main service location.

3.5 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Perform tests recommended by manufacturer and each visual and mechanical inspection and electrical and mechanical test listed in first two subparagraphs below, as specified in NETA ATS. Certify compliance with test parameters.

a. Visual and Mechanical Inspection:

1) Compare equipment nameplate data with Drawings and the Specifications.
2) Inspect physical and mechanical condition.
3) Inspect anchorage, alignment, and grounding.
4) Verify that the unit is clean.

b. Electrical and Mechanical Tests:

1) Perform insulation-resistance tests according to IEEE 43.

a) Machines Larger Than 200 hp: Test duration shall be 10 minutes. Calculate polarization index.
b) Machines 200 hp or Less: Test duration shall be one minute. Calculate the dielectric-absorption ratio.

2) Test protective relay devices.
3) Verify phase rotation, phasing, and synchronized operation as required by the application.
4) Functionally test engine shutdown for low oil pressure, overtemperature, overspeed, and other protection features as applicable.
5) Perform vibration test for each main bearing cap.
6) Verify correct functioning of the governor and regulator.

2. NFPA 110 Acceptance Tests: Perform tests required by NFPA 110 that are additional to those specified here, including, but not limited to, single-step full-load pickup test.
3. Battery Tests: Equalize charging of battery cells according to manufacturer's written instructions. Record individual cell voltages.

a. Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions.
b. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery.
c. Verify acceptance of charge for each element of the battery after discharge.
d. Verify that measurements are within manufacturer's specifications.

4. Battery-Charger Tests: Verify specified rates of charge for both equalizing and float-charging conditions.
5. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine generator system before and during system operation. Check for air, exhaust, and fluid leaks.
6. Exhaust Emissions Test: Comply with applicable government test criteria.
7. Voltage and Frequency Transient Stability Tests: Use recording oscilloscope to measure voltage and frequency transients for 50 and 100 percent step-load increases and decreases, and verify that performance is as specified.
8. Harmonic-Content Tests: Measure harmonic content of output voltage at 25 and 100 percent of rated linear load. Verify that harmonic content is within specified limits.
9. Noise Level Tests: Measure A-weighted level of noise emanating from engine generator installation, including engine exhaust and cooling-air intake and discharge, at four locations 25 feet from edge of the generator enclosure, and compare measured levels with required values.

B. Coordinate tests with tests for transfer switches and run them concurrently.

C. Test instruments shall have been calibrated within the past 12 months, traceable to NIST Calibration Services, and adequate for making positive observation of test results. Make calibration records available for examination on request.

D. Leak Test: After installation, charge exhaust, coolant, and fuel systems and test for leaks. Repair leaks and retest until no leaks exist.

E. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation for generator and associated equipment.

F. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

G. Remove and replace malfunctioning units and retest as specified above.

H. Retest: Correct deficiencies identified by tests and observations, and retest until specified requirements are met.

I. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation resistances, time delays, and other values and observations. Attach a label or tag to each tested component indicating satisfactory completion of tests.

3.6 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of manufacturer's authorized service representative. Include quarterly preventive maintenance and exercising to check for proper

starting, load transfer, and running under load. Include routine preventive maintenance as recommended by manufacturer and adjusting as required for proper operation. Parts shall be manufacturer's authorized replacement parts and supplies.

3.7 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain packaged engine generators.

END OF SECTION 26 32 13.13

SECTION 26 36 00
TRANSFER SWITCHES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Contactor-type automatic transfer switches.
2. Transfer switch accessories.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for transfer switches.
2. Include rated capacities, operating characteristics, electrical characteristics, and accessories.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For each type of product to include in emergency, operation, and maintenance manuals.

1. In addition to items specified in Section 01 78 23 "Operation and Maintenance Data," include the following:

a. Features and operating sequences, both automatic and manual.
b. List of all factory settings of relays; provide relay-setting and calibration instructions, including software, where applicable.

1.5 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of transfer switch or transfer switch components that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 12 months from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NEMA ICS 1.

C. Comply with NFPA 110.

D. Comply with UL 1008 unless requirements of these Specifications are stricter.

E. Indicated Current Ratings: Apply as defined in UL 1008 for continuous loading and total system transfer, including tungsten filament lamp loads not exceeding 30 percent of switch ampere rating, unless otherwise indicated.

F. Tested Fault-Current Closing and Short-Circuit Ratings: Adequate for duty imposed by protective devices at installation locations in Project under the fault conditions indicated, based on testing according to UL 1008.

1. Short-time withstand capability for three cycles.

G. Repetitive Accuracy of Solid-State Controls: All settings shall be plus or minus 2 percent or better over an operating temperature range of minus 20 to plus 70 deg C.

H. Resistance to Damage by Voltage Transients: Components shall meet or exceed voltage-surge withstand capability requirements when tested according to IEEE C62.62. Components shall meet or exceed voltage-impulse withstand test of NEMA ICS 1.

I. Electrical Operation: Accomplish by a nonfused, momentarily energized solenoid or electric-motor-operated mechanism. Switches for emergency or standby purposes shall be mechanically and electrically interlocked in both directions to prevent simultaneous connection to both power sources unless closed transition.

J. Neutral Switching: Where four-pole switches are indicated, provide neutral pole switched simultaneously with phase poles.

K. Neutral Terminal: Solid and fully rated unless otherwise indicated.

L. Annunciation, Control, and Programming Interface Components: Devices at transfer switches for communicating with remote programming devices, annunciators, or annunciator and control panels shall have communication capability matched with remote device.

M. Factory Wiring: Train and bundle factory wiring and label, consistent with Shop Drawings, by color-code or by numbered or lettered wire and cable with printed markers at terminations. Color-coding and wire and cable markers are specified in Section 26 05 53 "Identification for Electrical Systems."

1. Designated Terminals: Pressure type, suitable for types and sizes of field wiring indicated.
2. Power-Terminal Arrangement and Field-Wiring Space: Suitable for top, side, or bottom entrance of feeder conductors as indicated.

3. Control Wiring: Equipped with lugs suitable for connection to terminal strips.
4. Accessible via front access.

2.2 CONTACTOR-TYPE AUTOMATIC TRANSFER SWITCHES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. ABB, Electrification Business.
2. Caterpillar, Inc.; Electric Power Division.
3. Cummins Power Generation.
4. Eaton.
5. Generac.
6. Hubbell Utility Solutions; Hubbell Incorporated.
7. Kohler Power Systems.
8. Rolls-Royce Solutions America Inc.
9. Russelectric, Inc.
10. Vertiv; Vertiv Holdings Co.

B. Comply with Level 1 equipment according to NFPA 110.

C. Switch Characteristics: Designed for continuous-duty repetitive transfer of full-rated current between active power sources.

1. Limitation: Switches using molded-case switches or circuit breakers or insulated-case circuit-breaker components are unacceptable.
2. Switch Action: Double throw; mechanically held in both directions.
3. Contacts: Silver composition or silver alloy for load-current switching. Contactor-style automatic transfer-switch units, rated 600 A and higher, shall have separate arcing contacts.
4. Conductor Connectors: Suitable for use with conductor material and sizes.
5. Material: Hard-drawn copper, 98 percent conductivity.
6. Main and Neutral Lugs: Mechanical type.
7. Ground Lugs and Bus-Configured Terminators: Mechanical type.
8. Ground bar.
9. Connectors shall be marked for conductor size and type according to UL 1008.

D. Automatic Open-Transition Transfer Switches: Interlocked to prevent the load from being closed on both sources at the same time.

1. Sources shall be mechanically and electrically interlocked to prevent closing both sources on the load at the same time.

E. Electric Nonautomatic Switch Operation: Electrically actuated by push buttons designated "Normal Source" and "Alternative Source." Switch shall be capable of transferring load in either direction with either or both sources energized.

F. Signal-Before-Transfer Contacts: A set of normally open/normally closed dry contacts operates in advance of retransfer to normal source. Interval shall be adjustable from 1 to 30 seconds.

G. Digital Communication Interface: Matched to capability of remote annunciator or annunciator and control panel.

H. Automatic Transfer-Switch Controller Features:

1. Controller operates through a period of loss of control power.
2. Undervoltage Sensing for Each Phase of Normal Source: Sense low phase-to-ground voltage on each phase. Pickup voltage shall be adjustable from 85 to 100 percent of nominal, and dropout voltage shall be adjustable from 75 to 98 percent of pickup value. Factory set for pickup at 90 percent and dropout at 85 percent.
3. Voltage/Frequency Lockout Relay: Prevent premature transfer to generator. Pickup voltage shall be adjustable from 85 to 100 percent of nominal. Factory set for pickup at 90 percent. Pickup frequency shall be adjustable from 90 to 100 percent of nominal. Factory set for pickup at 95 percent.
4. Time Delay for Retransfer to Normal Source: Adjustable from zero to 30 minutes, and factory set for 10 minutes. Override shall automatically defeat delay on loss of voltage or sustained undervoltage of emergency source, provided normal supply has been restored.
5. Test Switch: Simulate normal-source failure.
6. Switch-Position Pilot Lights: Indicate source to which load is connected.
7. Source-Available Indicating Lights: Supervise sources via transfer-switch normal- and emergency-source sensing circuits.

    a. Normal Power Supervision: Green light with nameplate engraved "Normal Source Available."
    b. Emergency Power Supervision: Red light with nameplate engraved "Emergency Source Available."

8. Unassigned Auxiliary Contacts: Two normally open, single-pole, double-throw contacts for each switch position, rated 10 A at 240-V ac.
9. Transfer Override Switch: Overrides automatic retransfer control so transfer switch will remain connected to emergency power source regardless of condition of normal source. Pilot light indicates override status.
10. Engine Starting Contacts: One isolated and normally closed, and one isolated and normally open; rated 10 A at 32-V dc minimum.
11. Engine Shutdown Contacts:

    a. Time delay adjustable from zero to five minutes, and factory set for five minutes. Contacts shall initiate shutdown at remote engine-generator controls after retransfer of load to normal source.

12. Engine-Generator Exerciser: Solid-state, programmable-time switch starts engine generator and transfers load to it from normal source for a preset time, then retransfers and shuts down engine after a preset cool-down period. Initiates exercise cycle at preset intervals adjustable from 7 to 30 days. Running periods shall be adjustable from 10 to 30 minutes. Factory settings shall be for 7-day exercise cycle, 20-minute running period, and 5-minute cool-down period. Exerciser features include the following:

    a. Exerciser Transfer Selector Switch: Permits selection of exercise with and without load transfer.
    b. Push-button programming control with digital display of settings.
    c. Integral battery operation of time switch when normal control power is unavailable.

2.3 TRANSFER SWITCH ACCESSORIES

PART 3 - EXECUTION

3.1 INSTALLATION

A. Annunciator and Control Panel Mounting: Flush in wall unless otherwise indicated.

B. Identify components according to Section 26 05 53 "Identification for Electrical Systems."

C. Set field-adjustable intervals and delays, relays, and engine exerciser clock.

D. Comply with NECA 1.

3.2 CONNECTIONS

A. Wiring to Remote Components: Match type and number of cables and conductors to generator sets, control, and communication requirements of transfer switches as recommended by manufacturer. Increase raceway sizes at no additional cost to Owner if necessary to accommodate required wiring.

B. Wiring Method: Install cables in raceways and cable trays except within electrical enclosures. Conceal raceway and cables except in unfinished spaces.

1. Comply with requirements for raceways and boxes specified in Section 26 05 33 "Raceways and Boxes for Electrical Systems."

C. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's limitations on bending radii.

D. Ground equipment according to Section 26 05 26 "Grounding and Bonding for Electrical Systems."

E. Connect wiring according to Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables."

F. Route and brace conductors according to manufacturer's written instructions. and Section 26 05 29 "Hangers and Supports for Electrical Systems." Do not obscure manufacturer's markings and labels.

G. Final connections to equipment shall be made with liquidtight, flexible metallic conduit no more than 18 inches in length.

3.3 FIELD QUALITY CONTROL

A. Administrant for Tests and Inspections:

1. Engage factory-authorized service representative to administer and perform tests and inspections on components, assemblies, and equipment installations, including connections.

B. Tests and Inspections:

1. After installing equipment, test for compliance with requirements according to NETA ATS.
2. Visual and Mechanical Inspection:

    a. Compare equipment nameplate data with Drawings and Specifications.
    b. Inspect physical and mechanical condition.
    c. Inspect anchorage, alignment, grounding, and required clearances.
    d. Verify that the unit is clean.
    e. Verify appropriate lubrication on moving current-carrying parts and on moving and sliding surfaces.
    f. Verify that manual transfer warnings are attached and visible.
    g. Verify tightness of all control connections.
    h. Inspect bolted electrical connections for high resistance using one of the following methods, or both:

        1) Use of low-resistance ohmmeter.
        2) Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method according to manufacturer's published data.

    i. Perform manual transfer operation.
    j. Verify positive mechanical interlocking between normal and alternate sources.
    k. Perform visual and mechanical inspection of surge arresters.
    l. Inspect control power transformers.

        1) Inspect for physical damage, cracked insulation, broken leads, tightness of connections, defective wiring, and overall general condition.
        2) Verify that primary and secondary fuse or circuit-breaker ratings match Drawings.
        3) Verify correct functioning of drawout disconnecting contacts, grounding contacts, and interlocks.

3. Electrical Tests:

    a. Perform insulation-resistance tests on all control wiring with respect to ground.
    b. Perform a contact/pole-resistance test. Compare measured values with manufacturer's acceptable values.
    c. Verify settings and operation of control devices.
    d. Calibrate and set all relays and timers.
    e. Verify phase rotation, phasing, and synchronized operation.
    f. Perform automatic transfer tests.
    g. Verify correct operation and timing of the following functions:

        1) Normal source voltage-sensing and frequency-sensing relays.
        2) Engine start sequence.
        3) Time delay on transfer.
        4) Alternative source voltage-sensing and frequency-sensing relays.
        5) Automatic transfer operation.
        6) Interlocks and limit switch function.
        7) Time delay and retransfer on normal power restoration.
        8) Engine cool-down and shutdown feature.

4. Measure insulation resistance phase-to-phase and phase-to-ground with insulation-resistance tester. Include external annunciation and control circuits. Use test voltages

and procedure recommended by manufacturer. Comply with manufacturer's specified minimum resistance.

a. Check for electrical continuity of circuits and for short circuits.
b. Inspect for physical damage, proper installation and connection, and integrity of barriers, covers, and safety features.
c. Verify that manual transfer warnings are properly placed.
d. Perform manual transfer operation.

5. After energizing circuits, perform each electrical test for transfer switches stated in NETA ATS and demonstrate interlocking sequence and operational function for each switch at least three times.

a. Simulate power failures of normal source to automatic transfer switches and retransfer from emergency source with normal source available.
b. Simulate loss of phase-to-ground voltage for each phase of normal source.
c. Verify time-delay settings.
d. Verify pickup and dropout voltages by data readout or inspection of control settings.
e. Test bypass/isolation unit functional modes and related automatic transfer-switch operations.
f. Verify proper sequence and correct timing of automatic engine starting, transfer time delay, retransfer time delay on restoration of normal power, and engine cool-down and shutdown.

C. Coordinate tests with tests of generator and run them concurrently.

D. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation and contact resistances and time delays. Attach a label or tag to each tested component indicating satisfactory completion of tests.

E. Transfer switches will be considered defective if they do not pass tests and inspections.

F. Remove and replace malfunctioning units and retest as specified above.

G. Prepare test and inspection reports.

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain transfer switches and related equipment.

B. Coordinate this training with that for generator equipment.

END OF SECTION 26 36 00

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SECTION 26 41 13
LIGHTNING PROTECTION FOR STRUCTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes lightning protection system for ordinary structures.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:

1. Include layouts of the lightning protection system, with details of the components to be used in the installation.
2. Include raceway locations needed for the installation of conductors.
3. Details of air terminals, ground rods, ground rings, conductor supports, splices, and terminations, including concealment requirements.
4. Include roof attachment details, coordinated with roof installation.
5. Calculations required by NFPA 780 for bonding of metal bodies.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: For each type of roof adhesive for attaching the roof-mounted air terminal assemblies, approved by the roofing-material manufacturer.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For lightning protection system to include in maintenance manuals.

1. In addition to items specified in Section 01 78 23 "Operation and Maintenance Data," include the following:

a. Dimensioned site plan showing dimensioned route of the ground loop conductor and the ground rod locations. Comply with requirements of Section 01 78 39 "Project Record Documents."
b. A system testing and inspection record, listing the results of inspections and ground resistance tests, as recommended by NFPA 780, Annex D.

B. Completion Certificate:

1. UL Master Label Certificate.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: UL-listed installer, category OWAY or LPI Master Installer.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. NFPA Lightning Protection Standard: Comply with NFPA 780 requirements for Class I buildings.

B. UL Lightning Protection Standard: Comply with UL 96A requirements for Class I buildings.

C. Lightning Protection Components, Devices, and Accessories: Listed and labeled by a qualified testing agency as complying with UL 96, and marked for intended location and application.

2.2 MATERIALS

A. Air Terminals:

1. Aluminum unless otherwise indicated.
2. 1/2-inch diameter by 18 inches long.
3. Rounded tip.
4. Integral base support.

B. Class 1 Main Conductors:

1. Aluminum: 98,600 circular mils in diameter.

C. Secondary Conductors:

1. Aluminum: 41,400 circular mils in diameter.

D. Ground Loop Conductor: Stranded copper.

E. Ground Rods:

1. Material: Copper-clad steel.
2. Diameter: 5/8 inch.
3. Rods shall be not less than 120 inches long.
4. Sectional type, with integral threads.

F. Conductor Splices and Connectors: Compression fittings that are installed with hydraulically operated tools, or exothermic welds, approved for use with the class type.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install lightning protection components and systems according to UL 96A.

B. Install conductors with direct paths from air terminals to ground connections. Avoid bends less than 90 degrees and 8 inches in radius and narrow loops.

C. Conceal conductors within normal view from exterior locations at grade within 200 feet of building. Comply with requirements for concealed installations in UL 96A.

1. Roof penetrations required for down conductors and connections to structural-steel framework shall be made using listed through-roof fitting and connector assemblies with solid rods and appropriate roof flashings. Use materials approved by the roofing manufacturer for the purpose. Conform to the methods and materials required at roofing penetrations of the lightning protection components to ensure compatibility with the roofing specifications and warranty.
2. Install conduit where necessary to comply with conductor concealment requirements.
3. Air Terminals on Single-Ply Membrane Roofing: Comply with adhesive manufacturer's written instructions.

D. Ground Ring Electrode: The conductor shall be not less than the main-size lightning conductor.

3.2 CONNECTIONS

A. Aboveground concealed connections, and connections in earth or concrete, shall be done by exothermic welds or by high-compression fittings listed for the purpose.

B. Aboveground exposed connections shall be done using the following types of connectors, listed and labeled for the purpose: bolted connectors.

C. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.

3.3 CORROSION PROTECTION

A. Do not combine materials that can form an electrolytic couple that will accelerate corrosion in the presence of moisture unless moisture is permanently excluded from junction of such materials.

B. Use conductors with protective coatings where conditions would cause deterioration or corrosion of conductors.

3.4 FIELD QUALITY CONTROL

A. Special Inspections: Engage a qualified special inspector to perform the following special inspections:

1. Perform inspections as required to obtain a UL Master Label for system.
2. Perform inspections to obtain an LPI certification.

B. Prepare test and inspection reports and certificates.

END OF SECTION 26 41 13

SECTION 26 51 19
LED INTERIOR LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Materials.
2. Luminaire support.

B. Related Requirements:

1. Section 26 09 23 "Lighting Control Devices" for automatic control of lighting, including time switches, photoelectric relays, occupancy sensors, and multipole lighting relays and contactors.

1.3 DEFINITIONS

A. CCT: Correlated color temperature.

B. CRI: Color Rendering Index.

C. Fixture: See "Luminaire."

D. IP: International Protection or Ingress Protection Rating.

E. LED: Light-emitting diode.

F. Lumen: Measured output of lamp and luminaire, or both.

G. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Arrange in order of luminaire designation.
2. Include data on features, accessories, and finishes.
3. Include physical description and dimensions of luminaires.
4. Include emergency lighting units, including batteries and chargers.
5. Include life, output (lumens, CCT, and CRI), and energy-efficiency data.

6. Photometric data and adjustment factors based on laboratory tests IES LM-79.

   a. Manufacturers' Certified Data: Photometric data certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For luminaires and lighting systems to include in operation and maintenance manuals.

   1. Provide a list of all lamp types used on Project; use ANSI and manufacturers' codes.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

   1. Lamps: Ten for every 100 of each type and rating installed. Furnish at least one of each type.
   2. Diffusers and Lenses: One for every 100 of each type and rating installed. Furnish at least one of each type.
   3. Globes and Guards: One for every 20 of each type and rating installed. Furnish at least one of each type.

1.7 QUALITY ASSURANCE

A. Luminaire Photometric Data Testing Laboratory Qualifications:

   1. Luminaire manufacturer's laboratory that is accredited under the NVLAP for Energy Efficient Lighting Products.

B. Provide luminaires from a single manufacturer for each luminaire type.

C. Each luminaire type shall be binned within a three-step MacAdam Ellipse to ensure color consistency among luminaires.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering before shipping.

1.9 WARRANTY

A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.

B. Warranty Period: Five year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Ambient Temperature: 5 to 104 deg F.

1. Relative Humidity: Zero to 95 percent.

B. Altitude: Sea level to 1000 feet.

2.2 LUMINAIRE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps. Locate labels where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

1. Label shall include the following lamp characteristics:

a. "USE ONLY" and include specific lamp type.
b. Lamp diameter, shape, size, wattage, and coating.
c. CCT and CRI.

C. Recessed luminaires shall comply with NEMA LE 4.

D. NRTL Compliance: Luminaires for hazardous locations shall be listed and labeled for indicated class and division of hazard by an NRTL.

E. FM Global Compliance: Luminaires for hazardous locations shall be listed and labeled for indicated class and division of hazard by FM Global.

2.3 MATERIALS

A. Metal Parts:

1. Free of burrs and sharp corners and edges.
2. Sheet metal components shall be steel unless otherwise indicated.
3. Form and support to prevent warping and sagging.

B. Steel:

1. ASTM A36/A36M for carbon structural steel.
2. ASTM A568/A568M for sheet steel.

C. Stainless Steel:

1. Manufacturer's standard grade.
2. Manufacturer's standard type, ASTM A240/240M.

D. Galvanized Steel: ASTM A653/A653M.

E. Aluminum: ASTM B209.

2.4 METAL FINISHES

A. Variations in finishes are unacceptable in the same piece. Variations in finishes of adjoining components are acceptable if they are within the range of approved Samples and if they can be and are assembled or installed to minimize contrast.

2.5 LUMINAIRE SUPPORT

A. Comply with requirements in Section 26 05 29 "Hangers and Supports for Electrical Systems" for channel and angle iron supports and nonmetallic channel and angle supports.

B. Single-Stem Hangers: 1/2-inch steel tubing with swivel ball fittings and ceiling canopy. Finish same as luminaire.

C. Wires: ASTM A641/A641M, Class 3, soft temper, zinc-coated steel, 12 gage.

D. Rod Hangers: 3/16-inch minimum diameter, cadmium-plated, threaded steel rod.

E. Hook Hangers: Integrated assembly matched to luminaire, line voltage, and equipment with threaded attachment, cord, and locking-type plug.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before luminaire installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 TEMPORARY LIGHTING

A. If approved by the Architect, use selected permanent luminaires for temporary lighting. When construction is sufficiently complete, clean luminaires used for temporary lighting and install new lamps.

3.3 INSTALLATION

A. Comply with NECA 1.

B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.

C. Install lamps in each luminaire.

D. Supports:

1. Sized and rated for luminaire weight.
2. Able to maintain luminaire position after cleaning and relamping.
3. Provide support for luminaire without causing deflection of ceiling or wall.
4. Luminaire-mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire weight and a vertical force of 400 percent of luminaire weight.

E. Flush-Mounted Luminaires:

1. Secured to outlet box.
2. Attached to ceiling structural members at four points equally spaced around circumference of luminaire.
3. Trim ring flush with finished surface.

F. Wall-Mounted Luminaires:

1. Attached using through bolts and backing plates on either side of wall.
2. Do not attach luminaires directly to gypsum board.

G. Suspended Luminaires:

1. Pendants and Rods: Where longer than 48 inches, brace to limit swinging.
2. Stem-Mounted, Single-Unit Luminaires: Suspend with twin-stem hangers. Support with approved outlet box and accessories that hold stem and provide damping of luminaire oscillations. Support outlet box vertically to building structure using approved devices.
3. Continuous Rows of Luminaires: Use tubing or stem for wiring at one point and wire support for suspension for each unit length of luminaire chassis, including one at each end.
4. Do not use ceiling grid as support for pendant luminaires. Connect support wires or rods to building structure.

H. Ceiling-Grid-Mounted Luminaires:

1. Secure to any required outlet box.
2. Secure luminaire to the luminaire opening using approved fasteners in a minimum of four locations, spaced near corners of luminaire.

I. Comply with requirements in Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables" for wiring connections.

3.4 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 26 05 53 "Identification for Electrical Systems."

3.5 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
2. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.

B. Luminaire will be considered defective if it does not pass operation tests and inspections.

C. Prepare test and inspection reports.

END OF SECTION 26 51 19

SECTION 26 52 13
EMERGENCY AND EXIT LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Emergency lighting.
2. Exit signs.
3. Materials.
4. Luminaire support components.

B. Related Requirements:

1. Section 26 00 10 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

1.2 DEFINITIONS

A. Correlated Color Temperature (CCT): The absolute temperature, measured in kelvins, of a blackbody whose chromaticity most nearly resembles that of the light source.

B. Color Rendering Index (CRI): Measure of the degree of color shift that objects undergo when illuminated by the light source as compared with the color of those same objects when illuminated by a reference source.

C. Emergency Lighting Unit: A lighting unit with internal or external emergency battery powered supply and the means for controlling and charging the battery and unit operation.

D. Lumen (lm): The SI derived unit of luminous flux equal to the luminous flux emitted within a unit solid angle by a unit point source (1 lm = 1 cd-sr).

1.3 ACTION SUBMITTALS

A. Product Data:

1. For each type of emergency lighting unit, exit sign, and emergency lighting support.

a. Include data on features, accessories, and finishes.
b. Include physical description of unit and dimensions.
c. Battery and charger for light units.
d. Include life, output of luminaire (lumens, CCT, and CRI), and energy-efficiency data.

e. Include photometric data and adjustment factors based on laboratory tests by, or under supervision of, qualified luminaire photometric testing laboratory, for each luminaire type.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Lamps: 10 for every 100 of each type and rating installed. Furnish at least one of each type.
2. Luminaire-mounted, emergency battery pack: One for every 20 emergency lighting units. Furnish at least one of each type.
3. Diffusers and Lenses: One for every 100 of each type and rating installed. Furnish at least one of each type.
4. Globes and Guards: One for every 20 of each type and rating installed. Furnish at least one of each type.

1.5 QUALITY ASSURANCE

A. FM Global Compliance: Luminaires for hazardous locations must be listed and labeled for indicated class and division of hazard by FM Global.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering before shipping.

1.7 WARRANTY

A. Special Installer Extended Warranty for Emergency and Exit Lighting: Installer warrants that fabricated and installed emergency luminaires and exit signs, including batteries, perform in accordance with specified requirements and agrees to repair or replace components and assemblies that fail to perform as specified within extended warranty period.

1. Extended Warranty Period: Two year(s) from date of Substantial Completion; full coverage for labor, materials, and equipment.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR EMERGENCY LIGHTING

A. Electrical Components, Devices, and Accessories: Listed and labeled in accordance with NFPA 70 and UL 924, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

B. Comply with NFPA 101.

C. Comply with NEMA LE 4 for recessed luminaires.

D. Comply with UL 1598 for fluorescent luminaires.

E. Internal Type Emergency Power Unit: Self-contained, modular, battery-inverter unit, factory mounted within luminaire body[and compatible with ballast].

1. Emergency Connection: Operate [one] <Insert number> lamp(s) continuously at an output of [1100] <Insert value> lumens each upon loss of normal power. Connect unswitched circuit to battery-inverter unit and switched circuit to luminaire ballast.
2. Operation: Relay automatically turns lamp on when power-supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
3. Test Push-Button and Indicator Light: Visible and accessible without opening luminaire or entering ceiling space.

    a. Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
    b. Indicator Light: LED indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.

4. Battery: Sealed, maintenance-free, nickel-cadmium type.
5. Charger: Fully automatic, solid-state, constant-current type with sealed power transfer relay.

F. External Type Emergency Power Unit: Self-contained, modular, battery-inverter unit, suitable for powering one or more lamps, remote mounted from luminaire.

1. Emergency Connection: Operate LED lamp continuously. Connect unswitched circuit to battery-inverter unit and switched circuit to luminaire.
2. Operation: Relay automatically turns lamp on when power-supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
3. Battery: Sealed, maintenance-free, nickel-cadmium type.
4. Charger: Fully automatic, solid-state, constant-current type.
5. Housing: Type 1 enclosure listed for installation inside, on top of, or remote from luminaire. Remote assembly must be located no less than half of distance recommended by ballast or emergency power unit manufacturer, whichever is less.
6. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
7. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
8. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.

2.2 MATERIALS

A. Metal Parts:

1. Free of burrs and sharp corners and edges.
2. Sheet metal components must be steel unless otherwise indicated.
3. Form and support to prevent warping and sagging.

B. Doors, Frames, and Other Internal Access:

1. Smooth operating, free of light leakage under operating conditions.
2. Designed to permit relamping without use of tools.
3. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.

2.3 METAL FINISHES

A. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within range of approved Samples and are assembled or installed to minimize contrast.

2.4 LUMINAIRE SUPPORT COMPONENTS

A. Comply with requirements in Section 26 05 29 "Hangers and Supports for Electrical Systems" for channel and angle iron supports and nonmetallic channel and angle supports.

B. Support Wires: ASTM A641/A641M, Class 3, soft temper, zinc-coated steel, 0.106 inch.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for conditions affecting performance of luminaires.

B. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before luminaire installation.

C. Examine walls, floors, roofs, and ceilings for suitable conditions where emergency lighting luminaires will be installed.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 26 05 53 "Identification for Electrical Systems."

3.3 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.

B. Nonconforming Work:

1. Luminaire will be considered defective if it does not pass operation tests and inspections.
2. Remove and replace defective units and retest.

C. Prepare test and inspection reports.

3.4 SYSTEM STARTUP

A. Perform startup service:

1. Charge emergency power units and batteries minimum of one hour and depress switch to conduct short-duration test.

3.5 PROTECTION

A. Remove and replace luminaires and exit signs that are damaged or caused to be unfit for use by construction activities.

END OF SECTION 26 52 13

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SECTION 26 56 19
LED EXTERIOR LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Luminaire-mounted photoelectric relays.
2. Luminaire types.
3. Materials.
4. Finishes.
5. Luminaire support components.

B. Related Requirements:

1. Section 26 09 23 "Lighting Control Devices" for automatic control of lighting, including time switches, photoelectric relays, occupancy sensors, and multipole lighting relays and contactors.

1.3 DEFINITIONS

A. CCT: Correlated color temperature.

B. CRI: Color rendering index.

C. Fixture: See "Luminaire."

D. IP: International Protection or Ingress Protection Rating.

E. Lumen: Measured output of lamp and luminaire, or both.

F. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of luminaire.

1. Arrange in order of luminaire designation.
2. Include data on features, accessories, and finishes.
3. Include physical description and dimensions of luminaire.
4. Lamps, include life, output (lumens, CCT, and CRI), and energy-efficiency data.

5. Photometric data and adjustment factors based on laboratory tests, complying with IES LM-79.

    a. Manufacturer's Certified Data: Photometric data certified by manufacturer's laboratory with a current accreditation under the NVLAP for Energy Efficient Lighting Products.

6. Wiring diagrams for power, control, and signal wiring.
7. Photoelectric relays.
8. Means of attaching luminaires to supports and indication that the attachment is suitable for components involved.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For luminaires to include in operation and maintenance manuals.

1. Provide a list of all lamp types used on Project. Use ANSI and manufacturers' codes.

1.6 QUALITY ASSURANCE

A. Luminaire Photometric Data Testing Laboratory Qualifications:

1. Luminaire manufacturers' laboratory that is accredited under the NVLAP for Energy Efficient Lighting Products.

B. Provide luminaires from a single manufacturer for each luminaire type.

C. Each luminaire type shall be binned within a three-step MacAdam Ellipse to ensure color consistency among luminaires.

D. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering prior to shipping.

1.8 FIELD CONDITIONS

A. Verify existing and proposed utility structures prior to the start of work associated with luminaire installation.

B. Mark locations of exterior luminaires for approval by Architect prior to the start of luminaire installation.

1.9 WARRANTY

A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures, including luminaire support components.
b. Faulty operation of luminaires and accessories.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Warranty Period: 2 year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 LUMINAIRE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. UL Compliance: Comply with UL 1598 and listed for wet location.

C. L70 lamp life of 50,000 hours.

D. Internal driver.

E. In-line Fusing: On the primary for each luminaire.

F. Source Limitations:

1. Obtain luminaires from single source from a single manufacturer.

2.2 MATERIALS

A. Metal Parts: Free of burrs and sharp corners and edges.

B. Sheet Metal Components: Corrosion-resistant aluminum. Form and support to prevent warping and sagging.

C. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses.

D. Diffusers and Globes:

1. Acrylic Diffusers: 100 percent virgin acrylic plastic, with high resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
2. Glass: Annealed crystal glass unless otherwise indicated.

3. Lens Thickness: At least 0.125 inch minimum unless otherwise indicated.

E. Lens and Refractor Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.

F. Reflecting surfaces shall have minimum reflectance as follows unless otherwise indicated:

1. White Surfaces: 85 percent.
2. Specular Surfaces: 83 percent.
3. Diffusing Specular Surfaces: 75 percent.

G. Housings:

1. Rigidly formed, weather- and light-tight enclosure that will not warp, sag, or deform in use.
2. Provide filter/breather for enclosed luminaires.

H. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

1. Label shall include the following lamp characteristics:

a. "USE ONLY" and include specific lamp type.
b. Lamp diameter, shape, size, wattage and coating.
c. CCT and CRI for all luminaires.

2.3 FINISHES

A. Variations in Finishes: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

B. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.

C. Factory-Applied Finish for Aluminum Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

D. Factory-Applied Finish for Steel Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

1. Surface Preparation: Clean surfaces to comply with SSPC-SP 1, to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1 or SSPC-SP 8.
2. Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high-gloss, high-build polyurethane enamel.

a. Color:

1) As selected from manufacturer's standard catalog of colors.

2.4 LUMINAIRE SUPPORT COMPONENTS

A. Comply with requirements in Section 26 05 29 "Hangers and Supports for Electrical Systems" for channel and angle iron supports and nonmetallic channel and angle supports.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for luminaire electrical conduit to verify actual locations of conduit connections before luminaire installation.

C. Examine walls, roofs, canopy ceilings and overhang ceilings for suitable conditions where luminaires will be installed.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 TEMPORARY LIGHTING

A. If approved by the Architect, use selected permanent luminaires for temporary lighting. When construction is substantially complete, clean luminaires used for temporary lighting and install new lamps.

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Comply with NECA 1.

B. Install lamps in each luminaire.

C. Fasten luminaire to structural support.

D. Wall-Mounted Luminaire Support:

1. Attached using through bolts and backing plates on either side of wall.

E. Wiring Method: Install cables in raceways. Conceal raceways and cables.

F. Install luminaires level, plumb, and square with finished grade unless otherwise indicated.

G. Coordinate layout and installation of luminaires with other construction.

H. Adjust luminaires that require field adjustment or aiming.

I. Comply with requirements in Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables" and Section 26 05 33 "Raceways and Boxes for Electrical Systems" for wiring connections and wiring methods.

3.4 CORROSION PREVENTION

A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.

B. Steel Conduits: Comply with Section 26 05 33 "Raceways and Boxes for Electrical Systems." In concrete foundations, wrap conduit with 0.010-inch-thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

3.5 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 26 05 53 "Identification for Electrical Systems."

3.6 FIELD QUALITY CONTROL

A. Inspect each installed luminaire for damage. Replace damaged luminaires and components.

B. Perform the following tests and inspections:

1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
2. Verify operation of photoelectric controls.

C. Illumination Tests:

1. Measure light intensities at night. Use photometers with calibration referenced to NIST standards.
2. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.

D. Luminaire will be considered defective if it does not pass tests and inspections.

E. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

3.7 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain luminaires.

3.8 ADJUSTING

A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting the direction of aim of luminaires to suit occupied conditions. Make up to

two visits to Project during other-than-normal hours for this purpose. Some of this work may be required during hours of darkness.

1. During adjustment visits, inspect all luminaires. Replace lamps or luminaires that are defective.
2. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
3. Adjust the aim of luminaires in the presence of the Architect.

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Division 27

Communications

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SECTION 27 00 10
TECHNOLOGY GENERAL PROVISIONS

PART 1 - GENERAL

1.1 GENERAL CONDITIONS AND DEFINITIONS

A. Scope: This specification section applies to all Division 27 specification sections and all Division 28 specification sections with the exception of Fire Alarm. All systems under the specifications indicated above are referenced also in this contract documents as “technology systems”.

B. Drawings and specifications: The words “drawings” and “specifications” used on this section refer to all contract drawings and specifications describing the scope of work of the technology system.

C. Installer and Contractor: The word “installer” where used on the drawings or specifications without any further description shall reference the installer of the system under reference. The word “contractor” where used on the drawings or specifications without any further description shall reference to the General Contractor (or Construction Manager) holding the prime agreement with the owner for the construction of this project.

D. Provide and Install: The word, "provide" where used on the drawings or specifications shall mean, "furnish, install, mount, connect, test, complete, document and make ready for operation". The word "install" where used on the drawings or specifications shall mean, "mount, connect, test, complete, and make ready for operation".

E. The word Engineer (also referenced as A&E) where used on the drawings or specification refers to the design engineer of the project working for the project architect or the owner. It does not refer to an engineer working for the General contractor, Construction Manager, or any of the installers in the project.

F. Complete systems: All technology systems are intended to be complete systems, including all materials, labor, and programming to make it an operation system. A Responsibility matrix has been included with the contract documents to clarify the scope of all system. Refer to design drawings for matrix details.

G. Active equipment: Active equipment is defined as equipment composed of electronic component and electric materials, design to work with power applied to it. Cables are not considered active equipment.

1.2 INTERPRETATION OF DRAWINGS AND SPECIFICATIONS

A. Objective: The intent of the design drawings and specifications is to provide the installer of a technology system a scope of work for bidding purposes and to make sure different bids received by the entity holding the bidding for the technology system are at the same level of scope for comparison purposes. The drawings and specifications are not intended to show every single element of the project to produce a buyout list for the installer. In general, for all technology systems, all active components are specifically called out but small wires and small installation materials (such as nut, bolts, washers, termination blocks, clamps, ties, etc) are not

indicated in the documents. Guidelines for installation of those systems are provided in the specification to allow the installer to produce the complete buyout list of materials.

B. Accuracy: The Drawings are diagrammatic and are not intended to show exact locations of conduit runs, outlet boxes, junction boxes, pull boxes, etc. The locations of equipment, appliances, fixtures, conduits, outlets, boxes and similar devices shown on the Drawings are approximate only. Exact locations shall be as accepted by the Architect or Engineer during construction. Obtain in the field all information relevant to the placing of technology systems work and in case of interference with other work, proceed as directed by the Architect or Engineer.

C. Distances: Although most drawings have a scale referenced on each sheet, the drawings are a two-dimensional representation of the system, so design drawings do not indicate changes in elevation that cause additional lengths and quantities of materials. It is the responsibility of the installer of each technology system to field verify all distances before bidding to properly estimate all cable distances and materials.

D. Discrepancies: Notify the A&E of any discrepancies found during construction of the project and do not proceed with that portion of the project, until a written definitive statement is received providing clear direction. If a conflict exists between the contract documents and any applicable code or standard, the most stringent requirement shall be included for this project. The Engineer shall make the decision regarding questionable areas of conflict.

E. Existing Conditions: All existing conditions might not be indicated in the design drawings. The installer of each system shall check site and existing conditions thoroughly before bidding and advice the Engineer of discrepancies prior to bid.

F. Coordination: Although design technology drawings were intended to be coordinated with other trades, the fact that installer for other non-technology system might have changes to their design drawings, requires the Contractor to produce coordination drawings for a specific space, including all elements of all trades for space planning and coordination purposes.

1.3 ABBREVIATIONS

A. Abbreviations: The following abbreviations or initials may be used:
1. ABV CLG - Above Ceiling
2. AC - Alternating Current
3. ADA - American Disabilities Act
4. AFF - Above Finished Floor
5. AFG - Above Finished Grade
6. AMP - Ampere
7. ANSI - American National Standards Institute
8. AWG - American Wire Gauge
9. BC - Bare Copper
10. BICSI – Building Industry Consulting Service International;
11. CCTV - Closed Circuit Television
12. CATV - Community Antenna Television
13. CLG - Ceiling
14. COAX - Coaxial Cable
15. CPU - Central Processing Unit
16. DC - Direct Current
17. DEG – Degree
18. EF - Telecommunications Entrance Facility
19. EMT - Electrical Metallic Tubing

20. GND - Ground
21. IDF - Intermediate Distribution Frame (Telecom Room)
22. IMC - Intermediate Metallic Conduit
23. IN - Inches
24. IP - Internet Protocol
25. JB - Junction Box
26. KVA - Kilo-Volt-Amps
27. KW - Kilowatts
28. LBS - Pounds
29. LED - Light Emitting Diode
30. MAX - Maximum
31. MDF - Main Distribution Frame (Main Telecom Room)
32. MIC - Microphone
33. MIN - Minimum
34. MTD - Mounted
35. MTG - Mounting
36. NEC - National Electric Code
37. NECA - National Electrical Contractors Association
38. NEMA - National Electrical Manufacturers Association
39. NFPA - National Fire Protection Association
40. NIC - Not in Contract
41. OFE - Owner Furnished Equipment
42. OFCI - Owner Furnished Contractor Installed equipment
43. OFOI - Owner Furnished Owner Installed equipment
44. OSHA - Occupational Safety and Health Administration
45. PB - Pull Box
46. PWR - Power
47. PVC - Polyvinylchloride
48. TIA - Telecommunications Industry Association
49. TR - Telecommunications Room
50. V - Volt
51. VSS - Video Surveillance System
52. WP - Weatherproof

1.4 CODES AND STANDARDS

A. Application: The codes, standards and practices listed herein generally apply to the entire project and all technology systems. Other codes, standards or practices that are more specific will be referenced within a particular specification.

B. Requirements: All articles, products, materials, fixtures, forms, or types of construction covered in the specifications will be required to meet or exceed all applicable standards of manufacturer, testing, performance, capabilities, procedures and installation according to the requirements of ANSI, NEMA, IEEE, NEC, BICSI and TIA referenced documents where indicated and the manufacturer's recommended practices. Requirements indicated on the contract documents which exceed but are not contrary to governing codes shall be followed.

C. Compliance and Certification: The installation shall comply with the governing state and local codes or ordinances. The completed technology system installation shall be inspected and certified by all applicable agencies that it is in compliance with all codes.

D. Applicability: The codes and standards and practices listed herein, and their respective dates are furnished as the minimum latest requirements. List of applicable codes:
   1. State Code: Florida Administrative Code

2. Building Code: Florida Building Code, 2020 edition
3. Manuals: Accessibility Requirements Manual - Florida Department of Community Affairs.
4. International Building Code, 2020 edition

E. UL Labels: All materials shall be new and free of defects, and shall be U.L. listed, bear the U.L. label or be labeled or listed with an approved, nationally recognized Electrical Testing Agency. No equipment shall be installed if there is no labeling or listing service is available for such equipment.

1.5 MATERIALS ALTERNATES AND SUBSTITUTIONS

A. Definitions:
1. Basis of design: A product or group of products from an identified manufacturer that was used as the basis of systems layouts and installation details, part of the contract documents.
2. Prototype: Is a product or a group of products that are not yet ready for commercial use because they are in the testing phase (Beta testing) of the product development.
3. Alternates: Products or manufacturers listed in the contract documents as acceptable compared to the basis of design. Use of alternates shall follow the same system architecture as the basis of design.
4. Obsolete: A product that has been discontinued by the manufacturer or declared in end of life, and it is no longer being manufactured.
5. Substitution: A product not listed in the contract documents but capable of similar characteristics as the basis of design operating as a direct replacement in the system in reference. The installers can propose a substitution if all requirements are met as indicated in this specification.
6. Substitutions that create a change in system architecture are products that create a very different system configuration impacting other trades (i.e., change in power/cooling requirements, changes in raceways layout or sizes, changes in equipment space requirements, changes in low voltage wiring layouts, types, and quantities, etc.) but providing a similar end result as the system/products basis of design.

B. Use of Prototype. Prototypes are not allowed in any technology system.

C. Use of alternates. Alternates are allowed and installer shall follow these requirements:
1. Where several brand names make or manufacturers are listed as acceptable alternates each shall be regarded as equally acceptable, based on the design selection. Where a manufacturer's model number is listed, this model shall set the standard of quality and performance required. Where no brand name is specified, the source and quality shall be subject to Engineer's review and acceptance. Where three or more manufacturers are listed, one of the listed manufacturers shall be submitted for acceptance.
2. The use of alternate products does not allow the change of system architecture with such products.

D. Use of substitutions. Substitutions are only allowed when they meet all the requirements below:
1. Substitutions are only allowed when a particular specification section for a technology system, allows the use of substitutions for that particular system.
2. The performance of all substitution’s components must meet or exceed those of the basis of design. Should an installer wish to submit a substitution product, or a product set stated in the construction documents as 'acceptable', it shall be the responsibility of the installer to submit to the Engineer an item-for-item CROSS REFERENCE for all specifications of the product, all related specifications and product data sheets, for the proposed substitution. Use the substitution request form indicated in Attachment 1 of this specification.

3. The Engineer has the authority to reject a substitution without cause and the installer shall provide the basis of design and no additional compensation.
4. Substitutions of unnamed manufacturers will not be acceptable.
5. Certification of substitutions: When a basis of design is specified to be in accordance with a trade association or government standard requested by the Engineer, installer shall provide a certificate that the substitution complies with the referenced standard. Upon request of Engineer, Contractor shall submit supporting test data to substantiate compliance.
6. Substitutions that create a change in system architecture are not allowed.

1.6 SHOP DRAWINGS AND SUBMITTALS

A. General: Shop drawings shall be submitted for equipment and material as indicated in the individual specification sections for each system.

B. Quantity of shop drawings submittals: Follow Division 1 requirements for quantity of shop drawings and submitting requirements. If the project does not have a Division 1 specification, shop drawings shall be submitted in quantity of one (1) for electronic format submittal and quantity of four (4) for hardcopies.

C. Electronic submittals. Submittals in electronic format (PDF) are accepted.

D. When cut sheets of products are submitted and the manufacturer cut sheets indicate several model numbers or variations of the same product, the cut sheet shall be highlighted by the installer to indicate the specific product that will be provided for this project. Submittals received with cut sheets indicating multiple parts numbers and not highlighted will be rejected and not reviewed.

E. Equipment and material quantities are not reviewed by the A&E as part of this submittal process. Equipment quantities are to be provided by the installer as indicated in contract documents. Approved shop drawings indicating any changes in equipment quantities or overall scope of work different from contract documents does not constitute approval by the A&E of those changes. The contract documents and any changes issued by the A&E in the form of Supplemental Information during the construction process are always to be followed for equipment quantities and scope of work.

F. All electronic equipment prone to obsolescence and with lead times less than 3 months shall be submitted for approval no sooner than 12 months before the date set for substantial completion of the project. Electronic equipment prone to obsolescence includes devices like flat panel displays, transceivers, servers, players, workstation, and routers

G. Equipment and materials installed not in accordance with the approved shop drawings shall be replaced at installer’s expense.

H. Multiple stages of shop drawings shall be required as indicated in each specification section. For final completion and testing the installer shall provide a submittal with the following information:
1. Detailed course syllabus for each type of training required in the specifications
2. A proposed schedule of training sessions in compliance with the specification sections and indicating place where the training will take place.
3. A copy of all training material to be used during each session.
4. Test result sheets for all testing done by the installer prior to the system acceptance test.

PART 2 - PRODUCTS

2.1 IDENTIFICATION AND LABELING TAGS

A. All conduit, cabinets, cables, wires, wiring forms, terminal blocks, and terminals shall be clearly identified with pre-printed labels or tags.

B. The only approved types of labels for inside premise environments for any technology systems are:
1. Non-laminated thermal transfer labels, printed with a high-quality thermal transfer printer.
2. Laminated thermal transfer labels printed with a high-quality thermal transfer printer.
3. Thermal transfer polyolefin tape printed with a high-quality thermal transfer printer.

C. For labeling of cables or equipment in outdoor environments use only marker plates attached to cable or equipment with cable ties. Do not use any labels with adhesive materials. Use different color plates for different cable types. Use only waterproof ink for writing on marker plates.

D. Any type of write-on labels (except for outdoor marker plates), handwriting on cable jackets or directly on equipment, labels made with masking tape, or any other type of tape not listed in previous paragraph are not acceptable and shall be corrected with approved labeling methods at no additional cost to the owner.

E. Approved manufacturer:
1. Brady
2. Panduit
3. Rhino
4. Approved equal

2.2 TECHNOLOGY EQUIPMENT AND MATERIALS

A. General: Each item of equipment or material shall be manufactured by a company regularly engaged in the manufacturer of the type and size of equipment, shall be suitable for the environment in which it is to be installed, shall be approved for its purpose, environment, and application, and shall bear a label as indicated in paragraph 1.4.E. of this section.

B. Installation Requirements: Each item of equipment or material shall be installed in accordance with instructions and recommendations of the manufacturer and the contract documents.

C. Required Accessories: All equipment specified in the technology systems shall be provided with all required accessories for proper operation and mounting. Typically, these accessories are not specifically indicated in the design drawings but shall be provided per this specification section. Such accessories include items such as power supplies, power cords, rack ears, rack rails, bolts, lugs, faceplates, etc.

PART 3 - EXECUTION

3.1 INSTALLATION PRACTICES

A. WORKMANSHIP: The installation of materials and equipment shall be performed in a neat, workmanlike and timely manner by an adequate number of craftsmen knowledgeable of the

requirements of the Contract Documents. They shall be skilled in the methods and craftsmanship needed to produce a quality level of workmanship. Personnel who install materials and equipment shall be qualified by training and experience to perform their assigned tasks.

B. STANDARD OF QUALITY: To define good workmanship, all installation practices described in BICSI standards shall be followed.

C. PROTECTION OF EQUIPMENT: Equipment for Technology systems shall at all times during construction be adequately protected against mechanical/chemical damage by the elements or work perform by other trades. Equipment shall be stored in dry permanent shelters. If equipment or materials has been damaged, such equipment shall be replaced at no additional cost or time extension to the Contract. Damaged equipment and materials include the following conditions:
   1. Equipment that has visible scratches, cracks or equipment that has paint or finished surface peeled off.
   2. Equipment with visible indication of rust or water intrusion.
   3. Equipment that has dents on the metal enclosures and are clearly visible to the end user.
   4. Equipment that has been sprayed with paint, fire proofing materials, or other type of chemicals, when the equipment was not intended to have this type of materials applied to it, per contract documents.
   5. Equipment that has been burnt by controlled fires, power surges, power sags or by lightning.
   6. Equipment that has a known damage to any parts, electronic board, or component, even if such component or board has no specific use in the project.
   7. Cables that have visible damages to the jackets even if cables are not broken and still provide electrical continuity.
   8. Cables sprayed with paints that affect the warranty of the cable as defined by the cable manufacturer.
   9. Equipment with screws with stripped heads.

D. CLEAN EQUIPMENT: All equipment installed in spaces accessible to the building occupants like in racks, cabinets, wall mounted panels, credenzas, etc. shall be free of dust at the time the space part of the project gets the final Certificate of Occupancy and at the time of the acceptance test by the A&E. A clean equipment is defined as an equipment that if wiped with a finger, in any surface, does not leave visible debris and dust in the finger, also equipment with no visible signs of dust inside the equipment, like in ventilation fans.

E. IDENTIFICATION AND TAGGING: All technology systems items shall be labeled and identified as specified in the Contract Documents. Such identification shall be in addition to the manufacturer's nameplates and shall serve to identify the item's function and the equipment or system which it serves or controls. Refer to Identification Section of the specifications for additional information. All labels of equipment and wiring shall match the labeling used in the shop drawings for the system.

3.2 COORDINATION

A. General: The installer shall compare shop drawings with those of other trades and report any conflicts between them to the A&E. Obtain from the A&E written instructions to make the necessary changes in any of the affected work. All work shall be installed in cooperation with other Trades installing interrelated work.

B. Adjustments: Locations of conduit and equipment shall be adjusted to accommodate the work with interferences anticipated and encountered. Determine the exact routing and location of all systems prior to fabrication or installation.

C. Replacement: All work shall be installed in a way to permit removal (without damage to other parts) of all other system components provided under this Contract requiring periodic replacement or maintenance. All conduits shall be arranged in a manner to clear the openings of swinging overhead access doors as well as ceiling tiles.

3.3 REQUEST OF IP ADDRESSES

A. General: When contract document requires the installer of any of the technology systems to use IP addresses for the configuration of such system, inside the owner's-controlled IP network, the installer shall request the owner to provide such IP addresses. The installer shall request such information no less than one (1) month in advance from the moment the installer will be programming the system and by using the form named "Network Connections Programming Plan" indicated in Attachment 3 of this specification. An electronic copy of this form is available upon request from TLC Engineering.

B. Completing the form. The Network Connections Programming plan shall be completed in separate by each trade that requires IP addresses. This form has two parts. The first part indicates all the different device types for a system (i.e., cameras, workstation, servers, controllers, VoIP phones, etc). The second part is a list of all devices required classified by their type and properly indicating location where the device will be used.

C. Request that does not follow this process or have incomplete information will be ignored and will not be processed.

D. Reprogramming cost of any technology systems due to un-approved addresses used by the installer shall be at the installer's expense

3.4 TELECOM ROOM/EQUIPMENT ROOM READINESS

A. In any projects where the technology systems require the use of network equipment (switches, routers, firewalls, etc) provided by the owner, the Contractor shall complete all telecom rooms to a point where they are suitable for the owner to deploy such equipment in those rooms. At a minimum the following conditions shall be meet at all rooms in order for the owner to install the equipment:

1. All power outlets in the telecom rooms shall be fed from the permanent source of power. Temporary power shall not be accepted.
2. Backup power (generator and/or UPS) shall be already operation, tested and connected to the final power distribution system.
3. The mechanical equipment providing the cooling for the telecom rooms shall be fully operational. Temporary cooling shall not be accepted.
4. Fire suppression system (sprinkler or gas-based system) protecting the telecom rooms shall be fully operational and tested.
5. All light fixtures in the telecom rooms shall be fully operational.
6. All walls to the telecom rooms shall be completed and including the last coat of paint.
7. The ceiling and flooring of the telecom rooms shall be finished.
8. All horizontal and backbone cabling system part of the structured cabling system (SCS) shall be installed, terminated, and tested.
9. The final and permanent doors to the telecom rooms shall be installed with a key core different from all other construction cores in the site.

10. Telecom rooms shall be cleared of any materials being stored inside the room.
11. Telecom rooms shall be clean. Clean will be measured as not having any debris left in the room and not having dust in rack, cabinets, or wall mounted panels. If wiping a finger in any of the surfaces of such equipment leaves visible dust residue in the finger, the room will not be considered clean.
12. Hallways and rooms leading into the telecom rooms shall have no more sanding to be done in the walls and the floor shall be completed to avoid dust from these spaces moving into the telecom rooms.
13. Prior to the owner deploying the equipment in these rooms, the Contractor shall provide disposable sticky mats at the entrance of each telecom room to capture dust and/or dirt from people's shoes or boots coming into the room. The sticky mats shall be selected as to cover the width of the door opening. Sticky mats shall contain no less than 60 sheets in each unit. Used sheets of the mats shall be replaced no less than on a daily basis or if worn out before the end of the day. Sticky mats shall be provided until the project receives the final Certificate of Occupancy.

B. In projects where the network equipment is part of the contract documents, the contractor is required to provide all equipment functioning and clean at the end of the project. The contractor is responsible to determine at what point this delicate equipment can be installed in the telecom room. The contractor shall make sure the recommended manufacturer guidelines are applied to the installation of the equipment when it comes to cleanness. It is highly recommended that all steps indicated above are followed even for this type of project.

3.5 SYSTEMS WARRANTY AND SERVICE

A. General: At a minimum all technology system shall include a warranty from the manufacturer and installer of the system for no less than one (1) year with the following exceptions:
1. Structured Cabling system shall have a warranty longer than one year as indicated in that specification section.
2. When specific equipment or software manufacturers include a warranty longer than one year, the manufacturer's warranty shall be transferred to the owner in the same terms as indicated by the manufacturer.

B. Warranty coverage. The warranty for the technology system shall cover the following elements:
1. All equipment parts, cabling and materials.
2. Any software updates/patches issued during the warranty period by the manufacturer.
3. The labor to replace those parts and programming time to re-configure equipment.
4. Shipping and freight charges to send equipment back and forth from the manufacturer and/or site.
5. Tool rentals such as scaffold or lifts to access equipment.
6. The troubleshooting time to detect the faults in the system.
7. All travel time and expenses associated with the service.

C. Start of warranty. The warranty period for the technology systems starts the day the project gets the Certificate of Occupancy (CO), for new construction projects. For retrofit jobs of a particular system, the warranty starts when the project is accepted by A&E. For most equipment/software manufacturer's the warranty period starts when the equipment is shipped from the factory, so it is the responsibility of the installer of each system to provide additional warranty coverage from the manufacturer to cover the additional time of warranty up to the CO date plus one year.

D. Service calls. During the warranty period the installer shall support the system when called by owner/contractor for service. All equipment/software service shall be done by personnel with the same qualifications as the personnel who installed the system and as indicated in each technology system specification section. Service calls shall be taken during business hours

(same time zone as the project) for normal service and twenty (24) hours three hundred and sixty-five (365) days in the year for emergency service. Emergency Service shall be defined as the loss or failure of any critical component necessary to maintain the overall integrity and operation of the system. Normal service shall be defined as the loss or failure of a system component that does not compromise the complete operation of the system and allows the owner to operate the system at a minimum of 90% of its capacity. See individual specification sections for delineation on critical components and normal service.

E. Response time for service. The maximum allowed response time after a service call for emergency service shall be four (4) hours and for normal service twenty-four (24) hours.

F. Equipment registration. All equipment/software part of the technology system shall be registered to the owner with the manufacturer of the equipment/software for warranty and support. Equipment/software registered with the manufacturer to the name of the Contractor or installer shall be removed from the project and replaced with equal equipment registered to the owner at no additional cost to the owner.

G. Periodic preventive maintenance visits. During the warranty period the installer of the system shall provide no less than two (2) preventive maintenance services. These services shall be provided at 6 months from start of the warranty period and a few weeks before the end of the warranty period. The installer of the system shall coordinate with the owner the precise dates for this type of service. During these visits the following task shall be perform:
   1. Clean up of any active equipment that shows visible accumulation of dirt, dust of debris of any kind.
   2. Replacement of any consumable parts in the system that require replacement per manufacturer's instructions during the warranty period, such as filters.
   3. Oiling/greasing of any mechanical parts that require period maintenance as per manufacturer's instructions during the warranty period.
   4. Run manufacturer's recommended test for each piece of equipment installed. The installer shall provide at the end of the service a report of such test.
   5. Visual observation of all devices in the system to spot any anomalies.
   6. Review of error logs from any system components and analysis of such logs with explanation to owner on the cause of those errors.

H. Extended service agreement. Prior to final acceptance testing, and within thirty 30-days of project completion, the installer of each technology system shall submit to the Owner an option to purchase extended service coverage. This proposal shall provide for the purchase option of 1, 3, or 5, year coverage. Coverage shall include, at a minimum, the same provisions as during the warranty period.

3.6 ENGINEER'S FINAL ACCEPTANCE TEST

A. The technology systems shall be tested during installation by the installer as frequently as required to solve any installation issues and noncompliance of system specifications. Technology systems will not be considered delivered to the owner until final acceptance test is passed. The final acceptance test shall be done in presence of the A&E and/or the owner. The installer shall request in writing with (2) two weeks' notice in advance the presence of the A&E and/or owner for the final acceptance test.

B. In order for the installer of the system to request final acceptance the following task shall be completed:
   1. All components shall be inspected to ensure they have been properly installed by the installer, securely attached, and remain clean and unmarred
   2. All equipment shall be properly adjusted, clearly labeled, and fully operational.

3. The installer shall have tested the system previously to ensure the final acceptance test will be successful. Detailed proof of test shall be sent to the A&E with the request for final acceptance
4. All permanent and final labels as requested in the identification and tagging section of this specification are completed.
5. No temporary conditions shall be present in the system.
6. All batteries on all system components shall be connected.
7. All system programming shall be completed as indicated in the specification for each technology system.

C. All test equipment required for the Final acceptance shall be provided by the installer of the system unless specifically indicated by the A&E.

D. The A&E shall define the scope of the testing, but the installer shall be prepared for testing every single component of the system. During the day of the test the A&E will indicate the testing process and procedures for each system. Test could include operation of the system during power outages. The installer of the system shall be available during the complete testing process to answer questions from the Engineer and to demonstrate specific parts of the system. If personnel form the installer or test equipment is not available, the test will be considered and marked as a failure.

E. A punch list of the items to be corrected will be prepared by the A&E during the final acceptance test. The installer shall correct all items and request a second day for verification of all punch-list items by the A&E and Owner. During the second test, no additional punch list items shall be expected, and only the items in the punch list will be tested.

F. If during the testing process the A&E and/or Owner consider that the rate of failure of the test is too high (more than 5 failures or non-compliance with specifications in one hour of test), the test will be cancelled unilaterally by the A&E and/or owner. The installer shall correct all items and re-schedule the final acceptance test again. The new test will start over from the beginning and nothing previously tested will be accepted. The installer shall not be entitled to additional compensation for the additional effort to test the system during this condition. To the contrary, the Contractor/Installer shall reimburse the owner of the project with the cost of the additional hours of testing required to be spent by the A&E and owner's team. The rate to be used for this reimbursement will be $150 per hour per person required by the A&E and Owner to complete the test.

G. Upon successful completion of the final acceptance test the installer of the system will receive a written notice by the A&E and/or Owner acknowledging the acceptance of the test

H. See individual specification sections for system specific requirements for testing.

3.7 TRAINING AND INSTRUCTION

A. Training for each technology system shall be provided as indicated in this specification and in the individual specification section for each system.

B. The following training guidelines shall be followed for all technology system
1. Training shall not be scheduled in a way that no attendee or presenter shall be required to attend more than 6 hours of training per day.
2. Prior to starting all training, the training submittal shall be approved. See section one of this specification for details on the training submittal
3. No training shall be scheduled prior to the system being completed and accepted by the A&E.

4. Training shall be conducted during normal business hours of the client, at a date and time of mutual convenience to the Owner and installer. All training sessions need to be scheduled by the installer at least 2 weeks in advance. The Owner shall be notified in writing by the installer on when are the possible dates for each session.
5. All different types of training shall be videotaped and delivered to the owner as part of the close out information in digital copy. All tapes shall be recorded in hi-quality MPEG2 or HD recorders, and the media turned to the owner shall be in electronic format viewable through QuickTime or Windows Media Player.
6. The installer is responsible for completing list of attendants for each session of training. All these sheets shall be submitted as part of the close out information

3.8 AS BUILT DOCUMENTS

A. Production: During the course of this project the contractor shall maintain record "as-built drawings". One set shall be maintained at the site and at all times and it shall be accurate, clear, and complete, showing the actual location of all equipment as installed. The "As-Built" drawings shall show all technology systems work installed complete to the present stage of progress. These drawings shall be available for review by the A&E's field representatives at all times.

B. Completion: At the completion of the Work, transfer onto the second set of drawings all changes marked in colored and submit to the A&E.

C. Final: Upon installer's completion of the Engineer's final punch list, transfer all "As-Built" conditions and all requirements by the Engineer to a reproducible set of drawings. Submit full size drawings and one (1) set of CAD/Autodesk Revit© disks for review and acceptance.

D. Additional documents. At project completion, the installer of the technology system shall provide, as part of the as-built documents, updated tables, equipment schedules, configuration worksheets and labeling system used. See individual system specification section for more details on these documents.

E. See individual specification sections for each system for additional requirements for As-Built documents.

3.9 CLOSE OUT DOCUMENTS

A. Closeout information shall be provided to the owner in electronic format at the end of the project. The file shall be organized by each system and shall follow this organization:
   1. PART 1 – OPERATION AND MAINTENANCE MANUALS. Operation and Maintenance manuals as issued by the manufacturer of each system's component. Such manuals shall include all maintenance procedures required to be done by the owner. Also, when required by each individual specification section, a short form operation guide, prepared by installer) for the system.
   2. PART 2 – INVENTORY OF EQUIPMENT INSTALLED. A detailed list of all relevant active equipment (equipment with electronic components with a market value over $200 installed in the project including the following information and presented in electronic format (Microsoft Excel):
      a. Make
      b. Model
      c. Serial number
      d. Room location
      e. Warranty period, including manufacturer's extended warranties.

3. PART 3 – PROOF OWNERSHIP, DELIVERY AND ACCEPTANCE. The following letters/documents shall be attached in this part:
   a. Acceptance letter signed by A&E for each of the technology systems installed.
   b. Proof of training by submitting sign in sheets for each training session done
   c. Signed transmittal for all training videos and training material.
   d. Signed transmittal for all spare parts and consumables delivered to the owner.
   e. A list of all the user-names and passwords for all the different software programs used by the technology systems and any equipment with password codes. All levels of passwords shall be provided, from the lowest hierarchy to the highest.
   f. At least four (4) copies of all physical keys to different devices part of the technology systems. Each key shall be individually tagged in a key ring. All keys shall be included and organized inside a key ring management enclosure.
   g. A list of all software modules and licenses delivered to the owner. The list shall include part numbers, serial numbers, license certificate of authenticity, hardware key (dongles) numbers and software version. This list shall have a clear signature, name and date on person that received this software by the Owner.
   h. A copy of all official equipment and software registrations with manufacturer.
4. PART 4 – AS BUILT DOCUMENTS. All as-built documents as indicated in this specification section

END OF SECTION 270010

ATTACHMENT 1 – SUBSTITUTION REQUEST FORM

Substitution Request Form **Request No.:** **Date:**

Project:	**Specified Manufacturer:**	**Proposed Manufacturer:**
Spec Section:	**Specified Model No.:**	**Proposed Model No.:**
Item(s):	**Reason(s) for not providing specified item:**	
***Please attach product description, drawings, photographs, performance and test data, samples, and other information necessary for side-by-side evaluation. Fill in all blanks.**		

Provide substantiated reason for requested substitution below.
Does the requested substitution affect dimensions, locations, or configurations? (Yes/No) **Please explain below (attach drawings if necessary).**
What are the differences between the specified item and the requested item? Please list below.
Will the Contractor pay for any changes to the building design, including engineering and detailing costs caused by the approval? (Yes/No) **If no, explain below. Describe modifications required to install or accommodate the requested change.**
Will approval affect the work of other trades, including the Construction schedule? (Yes/No) **If yes, please explain below.**

Manufacturer's guarantees of the proposed and specified items are: (Same/Different) **If different, please explain below.**
Does the proposed item meet all applicable codes, ordinances, and regulations for this specific application? (Yes/No) **If no, please explain below.**
Has the proposed item been used locally in similar applications? (Yes/No) **If yes, please explain below and give nearest location.**
Will maintenance and service parts be locally available for the requested item? (Yes/No) **Please explain below. If not locally available, give nearest location.**
Will the requested item require waiving of any qualifications or other requirements? (Yes/No) **If yes, please explain below.**
Are there any license fees or royalties associated with the requested substitution? (Yes/No) **If yes, please explain below.**

If approved, will the Owner receive a credit for the proposed alternate material? (Yes/No) **If no, please explain below.**
Does the proposed alternate material meet the same applicable standards (ASTM, ANSI, UL, FS) as the specified item? (Yes/No) **If no, please explain below (attach drawings if necessary).**
Identify the recycled materials or components or features that lead to the claims to being "Green":
Has the required line-by-line comparison been included? (Yes/No) **If no, please explain below.**

The following Purchase Order or billing number is to be used for billing the Contractor for costs incurred in evaluating and if applicable accommodating the requested substitution:

The undersigned agrees to pay for the Designer's review time and for changes to the building design, including review, re-design, engineering, drawings, and other costs caused by the requested substitution.

Signature

Name (please print)

The Engineer will not be required to approve any product that is not equal or suitable for the specific application and functionality of this project.

ATTACHMENT 2 – NETWORK CONNECTIONS PROGRAMMING PLAN

TLC ENGINEERING SOLUTIONS

NETWORK CONNECTIONS PROGRAMMING PLAN

PROJECT NAME	
DATE	

SUBCONTRACTOR	
TRADE	

TYPE OF DEVICES FORM (Fill one column per device type provided)

DEVICES CHARACTERISTICS	DEVICE NAME / DEVICE CODE	A	DEVICE NAME / DEVICE CODE	B	DEVICE NAME / DEVICE CODE	C
Manufacturer						
Part Number						
Firmware version						
Is a fixed address required or can device work with a dynamic address (DHCP)?						
Does device require an address from a DNS server?						
Does device support Layer 3 traffic (IP)?						
Does device needs access to the internet?						
Number of physical network ports per device?						
Does device require IPv6 to work or IPv4?						
Does device support SNMP?						
Does device need specific TCP ports open? Please list						
Is this device connecting to existing network devices (Yes/no) Server/client application						
If yes to above, please describe to what device, located where.						

TLC ENGINEERING SOLUTIONS

NETWORK CONNECTIONS PROGRAMMING PLAN

PROJECT NAME	
DATE	

SUBCONTRACTOR	
TRADE	

LIST OF DEVICES FORM (Fill one entry in form per each device being provided

DEVICE PHYSICAL LOCATION BUILDING AND ROOM #	DEVICE CODE FROM PREVIOUS FORM	DEVICE NETORK NAME	IP ADDRESS	SUBNET	GATEWAY	DNS SERVER	VLAN NAME

Filled out by Network administrator

SECTION 27 05 26
GROUNDING AND BONDING FOR TELECOMMUNICATIONS SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. General: Drawings and general provisions of the Contract, including General and Supplementary

B. General: For grounding electrode system and equipment grounding system for Telecommunications refer to specification section 260526. In all cases the applicable electrical codes for grounding and bonding for telecommunications shall be met.

C. Supplemental: Refer to the specification sections identified below for additional requirements, which are supplemented by this section.
1. 270010 Technology General Provisions
2. 270528 Raceways for Technology
3. 260526 Grounding and Bonding for Electrical Systems

D. General. For a bonding diagram for telecommunications refer to T Drawings.

E. General. The bonding approach required herein is intended to work in concert with the cabling topology as specified in Specification section 271000 and installed in accordance with specification section 270528.

F. Reference Standards:
1. TIA-607-D
2. TIA-568.0-E
3. TIA-606-C
4. UL 1863 Communication Circuit Accessories
5. NFPA 70 – NEC
6. IEEE Std. 1100-1992, Powering and Grounding Sensitive Electronic Equipment.
7. BICSI TDMM, Telecommunications Distribution Method Manual.
8. NFPA 780

1.2 MATERIALS ALTERNATES AND SUBSTITUTIONS

A. General: Substitutions are allowed for all components of the systems under this specification sections as long as all requirements for substitutions indicated in specification section 270010 are followed.

1.3 SHOP DRAWINGS AND SUBMITTALS

A. See additional requirements for shop drawings and submittals in specification section 270010.

B. The installer of the Telecommunications Grounding systems shall provide the following information in the shop drawings phase of the project:

1. Manufacturer's cut sheets for all proposed equipment as described in Part 2 of this specification section. Cut sheets shall bear the printed logo or trademark of the manufacturer for each type of product being provided. Mark each copy of the data sheets for the specific product being provided with an identifying mark, arrow, or highlighting.
2. A spreadsheet indicating telecommunications ground bar information selection for each telecommunications room indicated in the design drawings, including the following information:
   a. Room Name or number
   b. Quantity of ground bars
   c. Height of each ground bar
   d. Length of each ground bar
   e. Number of holes in each ground bar
   f. Label for each ground bar
3. A drawing indicating the following information:
   a. Location of all telecommunications ground bars and routing of all telecommunications grounding backbones.
   b. Wire size charts for all telecommunications grounding backbones in the project.
   c. All labels to be used in telecommunications backbone cables, bonding conductors and telecommunications ground bars.
4. A detailed drawing layout of the Mesh Common Bonding Network (MCBN) for all spaces with raised floor in the project, indicating bonding conductor spacing and bonding ground bars.

1.4 ABBREVIATONS

A. General: The following abbreviations are used in this specification section:
   1. TBB - Telecommunications Bonding Backbone
   2. BC - Bonding Conductor
   3. EMT - Electrical Metallic Tubing
   4. RMC - Rigid Metal Conduit

PART 2 - PRODUCTS

2.1 TELECOMMUNICATIONS MAIN GROUNDING BUSBAR (TMGB)

A. The TMGB serves as the dedicated extension of the building grounding electrode system for the telecommunications infrastructure. The TMGB shall be located and provided in the Main Telecommunication Room in each building. The TMGB must also be listed by a nationally recognized testing laboratory (NRTL).

B. The TMGB shall have the following specifications:
   1. Material: Copper with a thin platted finish.
   2. Thickness: ¼" thick
   3. Width: No less than 4"
   4. Length: The installer of the grounding system shall estimate the length of the bar as to have enough pre-drilled holes for all BCs in the room. The bar shall be no less than 14" long. The installer shall follow the following criteria in estimating the amount of pre-drilled holes required in the TMGB:
      a. Two holes required for each TBB termination.
      b. Two holes for each cabinet or rack row in the room
      c. Two holes for each protector block in the room

d. Two holes for each layer of ladder tray above the rack.
e. Two holes for each set of conduit sleeves entering the room
f. 20% of spare capacity shall be available after all terminations are done.
g. If quantity of holes exceeds the maximum available by a manufacturer, multiple bars shall be provided as to match the criteria indicated above.

5. Pre-drilled holes: All pre-drilled holes shall have a diameter of 5/16”
6. Hole spacing: All pre-drilled holes shall have a minimum spacing matching the spacing of the holes in the long barrel ground lugs.

C. The TMGB shall be installed in the wall with stand offs and isolators. Isolators shall be rated at 600V.

D. Approved manufacturers:
1. Erico
2. Panduit
3. Approved equal.

2.2 TELECOMMUNICATIONS GROUNDING BUSBAR (TGB) FOR INTERIOR USE

A. The TGB serves as the dedicated extension of the building grounding electrode system for the telecommunications infrastructure. The TGB shall be located and provided in each telecommunication room (except the main telecommunication room) in each building and any other additional locations as indicated in the drawings. The TGB must also be listed by a nationally recognized testing laboratory (NRTL).

B. The TMGB shall have the following specifications:
1. Material: Copper with a thin platted finish.
2. Thickness: ¼” thick
3. Width: No less than 4”
4. Length: The installer of the grounding system shall estimate the length of the bar as to have enough pre-drilled holes for all BCs in the room. The bar shall be no less than 12” long. The installer shall follow the following criteria in estimating the amount of pre-drilled holes required in the TMGB:
a. Two holes required for each TBB termination.
b. Two holes for each cabinet or rack row in the room
c. Two holes for each protector block in the room
d. Two holes for each layer of ladder tray above the rack.
e. Two holes for each set of conduit sleeves entering the room
f. 20% of spare capacity shall be available after all terminations are done.
g. If quantity of holes exceeds the maximum available by a manufacturer, multiple bars shall be provided as to match the criteria indicated above.
5. Pre-drilled holes: All pre-drilled holes shall have a diameter of 5/16”
6. Hole spacing: All pre-drilled holes shall have a minimum spacing matching the spacing of the holes in the long barrel ground lugs.

C. The TMGB shall be installed in the wall with stand offs and isolators. Isolators shall be rated at 600V.

D. Approved manufacturers:
1. Erico
2. Panduit
3. Approved equal.

2.3 TELECOMMUNICATIONS GROUNDING BUSBAR (TGB) FOR OUTDOOR USE

A. When TGB are located outdoors, all specs for indoor used TGB shall be followed with the exception of the construction material. The TGB for outdoor use shall be made of galvanized steel.

2.4 FLEX CONDUCTOR, ONE-HOLE, LONG BARREL WITH WINDOW LUG

A. All BCs shall be terminated in a flex conductor, one-hole, long barrel with window lug when a two-hole connector is not possible to be used because receiving equipment does not support the two holes. All lugs shall be selected to match the size of the conductor being used. Other types of terminations such as screw type connectors are not accepted. A flex conductor, one-hole, long barrel with window lug shall never be used to terminate TBB

B. The flex conductor, one-hole, long barrel with window lug shall have the following specification:
   1. Finish: Thin platted
   2. Cable types: designed to work with Flexible, Extra-Flexible, and Code Stranded Copper Conductors.
   3. Stud hole size: ¼”
   4. Barrel type: Long barrel > 1”
   5. Termination type: crimp type
   6. Angle: straight or angled if installation space is limited.
   7. Listing: UL listed and tested to 35 KV and 90ºC

C. Approved manufacturers:
   1. Panduit
   2. Thomas & Betts
   3. Approved equal.

2.5 FLEX CONDUCTOR, TWO HOLE, LONG BARREL WITH WINDOW LUG

A. Flex conductors, two-hole, long barrel with window shall be used with TBB and BCs to provide a good bond. All lugs shall be selected to match the size of the conductor being used. Other types of termination are not accepted.

B. The flex conductor, two-hole, long barrel with window lug shall have the following specification:
   1. Finish: Thin platted
   2. Cable types: designed to work with Flexible, Extra-Flexible, and Code Stranded Copper Conductors.
   3. Stud hole size: ¼”
   4. Hole spacing to match spacing of pre-drilled holes in ground bar or equipment.
   5. Barrel length: long barrel > 1”
   6. Termination type: crimp type
   7. Angle: straight or angled if installation space is limited.
   8. Listing: UL listed and tested to 35 KV and 90ºC

C. Flex conductors, two-hole, long barrel with window shall be used with BCs in the following cases:
   1. Bonding two sections of pathways such as sections of tubular runways or cable trays.
   2. Bonding a BC or a TBB to a TGB or TMGB
   3. Bonding to equipment that requires two holes for bonding.

D. Approved manufacturers:
1. Panduit
2. Thomas & Betts
3. Approved equal

2.6 HTAP CONNECTOR

A. When a BC is required to be bonded to another BC of same or different size the only approved method of bonding is with HTAP style crimp connectors. Screw type connectors, wire nuts or any other method are not acceptable. The specifications of the HTAP connectors are:
1. Finish: Thin platted
2. Cable types: designed to work with Flexible, Extra-Flexible, and Code Stranded Copper Conductors.
3. Tap grooves: installer to select HTAP connector based on size of BCs and quantity of BCs to be bonded.
4. Slots: The HTAP connector shall have a lot to support the unit to the bonding conductors with nylon cable ties for initial support before crimping.
5. Termination type: crimp type
6. Listing: UL listed and tested to 600V

B. Approved manufacturers:
1. Panduit
2. Thomas & Betts
3. Approved equal

2.7 TELECOMMUNICATIONS BONDING BACKBONE (TBB)

A. Telecommunications bonding backbones shall be provided as indicated in the design documents. TBBs shall be insulated copper stranded conductors with a wire gauge dictated by the length of the cable. The TBB shall be sized according to the table below:

TBB LENGTH LINEAR M (FT)	**TBB SIZE (AWG)**
Less than 4 (13)	6
4- 6 (14 – 20)	4
6 – 8 (21 – 26)	3
8– 10 (27 – 33)	2
10– 13 (34 – 41)	1
13 – 16 (42 – 52)	1/0
16 – 20 (53 – 66)	2/0
20-26 (67-84)	3/0
26-32 (85-105)	4/0
32-38 (106-125)	250 kcmil
38-46 (126-150)	300 kcmil
46-53 (151-175)	350 kcmil
53-76 (176-250)	500 kcmil
76-91 (251-300)	600 kcmil

Greater than 91 (300)	750 kcmil

B. Once a TBB has been sized with a particular gauge, any extensions of such backbone shall not be done with a wire gauge smaller than the previous run regardless of distance.

2.8 BONDING CONDUCTOR (BC)

A. Boding conductors shall be used to bond equipment and raceways to the telecommunications grounding infrastructure. The specifications of the BC are:
   1. Conductor Size: use the chart above for TBB to estimate the size of the bonding conductor. BC shall be no smaller than an AWG-6. For projects with R56 Grounding compliance, BC shall be no smaller than AWG-2.
   2. Material: copper stranded conductors.
   3. Insulation: Use non-insulated conductors only under raised floor spaces. Insulation color shall be green with a yellow stripe.

B. Pre-fabricated BCs or field made BCs are acceptable.

C. Both ends of a BC shall be terminated in long barrel lugs.

2.9 LABELS FOR TELECOMMUNICATIONS GROUNDING INFRASTRUCTURE

A. Installer shall follow labeling materials indicated in specification section 270010.

PART 3 - EXECUTION

3.1 INSTALLATION PRACTICES.

A. General: Specification section 260526 applies to work of this section. Installation requirements specified herein takes precedence over specification section 260526.

B. General: All installation requirements indicated in specification section 270010 shall be followed.

C. PROTECTION. The TBBs and BCs shall be installed and protected from physical and mechanical damage.

D. GALVANIC CONTINUITY. The TBBs and BCs shall be continuous and routed in the shortest possible straight-line path.

E. BONDING SECTIONS OF TUBULAR RUNWAY OR CABLE TRAY. A bonding jumper with a two-hole long barrel lug with window at both ends shall be used to bond adjacent sections of cable tray or tubular runway. The jumper cable shall be no less than 8 inches in length and shall be made of stranded copper cable AWG-6.

F. CRIMPING. All lugs shall be crimped with the proper die for the size of lug being used.

G. PAINT REMOVAL. Paint shall be removed before attaching any BC to an equipment with paint in the surface, such as tubular runway and racks, if no ground lug is available in the equipment.

H. SPLICING. The TBBs and BCs shall be installed without splices. Where splices are necessary, the number of splices should be a minimum and they shall be accessible and located within telecommunications spaces. Joined segments of a TBB or BC shall be connected using exothermic welding, irreversible compression-type connectors, or equivalent. All joints shall be adequately supported and protected from damage.

I. BONDING TO ELECTRICAL PANELS. The TGB or TMGB shall be as close to the electrical power panel as is practicable and shall be installed to maintain clearances required by applicable electrical codes. The electrical power panel bus or the panel enclosure feeding telecommunications equipment racks/cabinets shall be bonded to the TGB or TMGB.

J. BONDING TO BUILDING STEEL. All connectors used for bonding to the metal frame of a building shall be listed for the intended purpose.

K. LUG SCREWS. All connections from lugs to ground bars or grounding equipment shall be done with metal screws with nuts and compression washers. Connections made with metal self tapping screws will not be allowed.

L. BONDING PROTECTOR BLOCKS. All primary or secondary building entrance protectors' blocks shall be bonded to the nearest TMGB or TGB with a BC. A minimum of 300 mm (1 ft) separation shall be maintained between this insulated conductor and any dc power cables, switchboard cable, or high frequency cables, even when placed in rigid metal conduit or EMT.

M. BONDING OUTSIDE PLANT CABLES. When the outside plant cables in the Telecommunications Entrance Facility room incorporate a cable metallic shield (armor) isolation gap, the cable metallic shield on the building side of the gap shall be bonded to the TMGB or TGB or the rack/cabinet or the rack's vertical ground bar (if available).

N. BONDING BACKBONE CABLES. Where backbone cables (fiber or copper) incorporate a shield (armor) or metallic member, this shield or metallic member shall be bonded to the TMGB or TGB or rack/cabinet or the rack's vertical ground bar (if available).

O. BONDING HORIZONTAL CABLES. When shielded horizontal cable is used and terminated in patch panels, each patch panel needs to be bonded to the telecommunications grounding systems. A BC shall be used between each patch panel and the rack rails of the rack/cabinet or the rack's vertical ground bar (if available).

P. INTENDED USE OF TBB OR BC. The TBB or BC is not intended to serve as the only conductor providing a ground fault current return path. The intended function of the TBB or BC is to equalize potential differences between telecommunications systems.

Q. INSTALLATION OF TBBs INSIDE TELECOMMUNICATIONS SPACES. When TBBs are run inside telecommunications spaces they shall be protected from damage by running them inside conduit. Conduit to protect TBBs inside telecommunications spaces can be made of PVC and shall be sized and supported as required by NEC.

R. INSTALLATION OF TBBs OUTSIDE TELECOMMUNICATIONS SPACES. When TBBs are run outside of telecommunications spaces they shall be protected from damage by running them inside conduit. Conduit to protect TBBs outside telecommunications spaces shall be EMT or RMC. To avoid an electromagnetic choke effect in this conductor, each end of the conduit used to protect the TBB shall be bonded to the TMGB or TGB at each end. Conduit used for protection of TBBs shall be sized and supported as required by NEC.

S. HALO GROUND SYSTEM. For room with R56 grounding requirements, a halo ground shall be provided around the room. This halo ground is composed of a AWG-0 uninsulated stranded copper conductor, installed 6" below the ceiling, going around the complete perimeter of the room and one end bonded to the TGB in that room. This conductor shall be separated from the wall with 6" plastic stand offs. All metal structures or parts around the room, such as door frames and windows, mechanical cooling equipment, conduit sleeves, etc. shall be bonded to this conductor with a compression connector.

T. RACK/CABINET BONDING. All racks/cabinets in the project shall be bonded to the nearest TMGB or TGB inside the room. All rows of rack/cabinets shall be bonded together by a single AWG-2 conductor coming from the nearest TMGB or TGB inside the room. This bonding conductor shall be insulated and run above the racks in the side of the cable tray system, going above the racks, supported by a hanger external to the cable tray. At each rack a bonding jumper (AWG-6) shall be provided and terminated to the rack manufacturer's recommended lug for bonding the rack/cabinet. The bonding jumper shall be connected to the AWG-2 conductor by means of an HTAP connector, protected with heat shrink material. When the project requires R56 grounding compliance, the bonding jumper shall be upsized to an AWG-2 and a vertical ground bar shall be provided for each rack/cabinet from top to bottom of each rack/cabinet. This ground bar shall be the termination point for the bonding jumper for each rack and shall also bond the manufacturer's approved grounding lug in the rack/cabinet to the ground bar.

U. RACK/CABINET BONDING OUTSIDE OF TELECOM ROOMS. Racks/cabinets outside of telecom rooms shall be bonded to the nearest electrical ground with a BC.

V. LABELING: All labeling systems for telecommunications grounding infrastructure shall be in compliance with the ANSI/TIA-606-C standard. At a minimum, the following elements shall be labeled in the telecommunications grounding system:
1. All TMGB or TGB, with a unique identifier located in the wall near the unit, not on the ground bar.
2. All TBBs in the project with a unique identifier at each termination point of each TBB. The label in one side of the cable shall indicate the termination location of the other side of the cable.
3. BC for rows of racks with a unique identifier at both ends of the cable
4. BC for surge protectors with a unique identifier at both ends of the cable

W. ADDITIONAL LABELING. All BCs boding rows of racks/cabinets and TBBs shall have additional to the identification marker a yellow printed wrap around tag installed close to the bonding point strap to the cable jacket with a flame retardant cable tie. This tag shall have the following wording in green letters: "IF THIS CONNECTOR OR CABLE IS LOOSE OR MUST BE REMOVED, PLEASE CALL THE BUILDING TELECOMMUNICATIONS MANAGER".

3.2 AS BUILT DOCUMENTS AND CLOSE OUT INFORMATION

A. See specification section 270010 for as built and close out information requirements.

END OF SECTION 27 05 26

SECTION 27 05 28
RACEWAYS FOR TECHNOLOGY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. General: Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

B. Section 26 05 33 - Raceway Systems, apply to work of this Section. Specifications described herein take precedence over Section 26 05 33.

C. Supplemental: Refer to the specification sections identified below for additional requirements, which are supplemented by this section.
1. 27 00 10 Technology General Provisions
2. 27 05 26 Grounding and Bonding for Telecommunications Systems

1.2 DESCRIPTION

A. General: Furnish and install complete with all accessories a Pathways and Spaces infrastructure for supporting of Structured Cabling System (SCS) and housing of technology equipment. The goal of the project is to provide a reliable architecture of the building that shall serve as a support for transport of data, voice telephony, security, and audio/visual cabling throughout the building from designated demarcation points to places located at various wall, floor, ceiling, column, room, and other locations as indicated on the contract drawings and described herein.

B. General: For pathways the system shall utilize a combination of conduit, cable tray and supports for vertical and horizontal cabling support. Pathways shall be provided and located as shown and, in the quantities, indicated on the drawings. Pathways shall terminate in rooms or closets using approved fasteners and termination hardware and bushings and shall be reamed to eliminate sharp edges. All Pathways shall be identified at all locations.

C. All installers should anticipate that all products and installation procedures shall comply with the ANSI/TIA-569-E requirements at a minimum.

D. General: Installation of the raceways for communications shall be a complete system including all supports and hangers as required per contract documents and manufacturer's installation guidelines.

E. Support: All items shall be supported from the structural portion of the building. Supports and hangers shall be of a type approved by Underwriters' Laboratories. Wire shall not be used as a support. Boxes and conduit shall not be supported or fastened to ceiling suspension wires or to ceiling channels. Do not install any devices supported by ceiling tiles.

F. Installation: The Installer shall layout and provide his work in advance of the laying of floors or walls, and shall provide all sleeves that may be required for openings through floors, walls, etc. Where plans call for conduit to be run exposed, provide all inserts and clamps for the supporting of conduit.

G. Pull Strings: Provide pull strings in all raceways. Pull strings shall be nylon and shall be impervious to moisture. Pull strings installed in one (1) inch and smaller conduits shall have a tensile strength of not less than 30 lbs. Pull strings installed in conduits larger than one (1) inch shall have a tensile strength not less than 200 lbs.

H. Directional boring might be required in the drawings, or the installer might choose this method as the way to install underground conduit on this project. In either case, the installer shall comply with the requirements indicated here for directional boring.

I. If at the time of bid and underground locate survey is not available, the installer shall include in the pricing the cost of this survey. No directional boring will be allowed without such survey being completed.

1.3 INSTALLER QUALIFICATIONS

A. General: The installer selected for the Project must be BICSI certified installer and certified by the manufacturer for the products, adhere to the engineering, installation and testing procedures and utilize the authorized manufacturer components and distribution channels in provisioning the Project.

B. General: The Installer directly responsible for this work shall be a " Pathways and Spaces for Structured Cabling System Installer (PS-SCS) " who is, and who has been, regularly engaged in the providing and installation of commercial and industrial pathways and spaces for telecommunications wiring systems of this type and size for at least the immediate past five years. Any sub-Installer who will assist the PS-SCS installer in performance of this work, shall have the same training and certification as the PS-SCS installer.

C. Certification: The installer's Project Manager shall possess a current and in good standing BICSI Registered Communications Distribution Designer (RCDD) certificate. All shop drawings submitted by the installer shall bear the RCDD's seal.

D. Experience: The Installer shall be experienced in all aspects of this work and shall be required to demonstrate direct experience on recent systems of similar type and size. The Installer shall own and maintain tools and equipment necessary for successful installation and have personnel who are adequately trained in the use of such tools and equipment.

1.4 MATERIALS ALTERNATES AND SUBSTITUTIONS

A. General: Substitutions are allowed for all components of the systems under this specification sections as long as all requirements for substitutions indicated in specification section 270010 are followed.

1.5 SHOP DRAWINGS AND SUBMITTALS

A. See additional requirements for shop drawings and submittals in specification section 270010.

B. General: The PS-SCS installer shall provide no later than 30 days after contract award the following information:
1. Proof of Installer’s qualifications per paragraph 1.03.

2. Cut sheets of all products to be used for the project, highlighting in particular the precise product to be used in each case, when multiple devices are indicated in the cut sheet. At a minimum the following devices shall be submitted with this specification section:
   a. Supporting devices (j-hooks) if allowed in the project. See part 3 of this specification.
   b. Cable tray system with accessories
   c. Runway cable tray system with accessories.
   d. Plywood
   e. Trough wall/floor firestop system
   f. Innerduct
   g. Detectable tape
   h. Communications vaults
   i. Conduit waterfalls
   j. Fire stop system (for small penetrations)
3. Drawings indicating precise location and type of all support for cable tray or ladder tray systems in all areas where they will be used.
4. For all communication vaults, drawings shall be prepared indicating conduit penetrations on each side of each vault. Vaults shall be labeled to indicate their correct location in the site plan.
5. Pre-cast communications vaults shall be submitted with load calculations signed and sealed by a professional engineer.
6. For any directional boring runs, the installer shall provide a drawing indicating all underground locate surveys and the proposed routing of the conduit as well as proposed depth.

1.6 WORK EXTERNAL TO THE BUILDING

A. General: Any work external to the confines of this building as shown on the drawings shall be governed by provisions of this specification.

PART 2 - PRODUCTS

2.1 CONDUIT

A. All conduits as indicated in Division 26.

2.2 TELECOMMUNICATIONS OUTLET BOX

A. Telecommunication outlet electrical boxes shall be used to make terminations to limited energy systems described in Division 27 and Division 28 specifications. Telecommunications outlet boxes shall have the following specifications:
   1. Material: Steel, 0.6858mm. thickness (minimum) with galvanized zinc coating, 0.013mm. (minimum) thickness on both sides of bracket
   2. Construction: Cleanly punched knockouts, welded at 8 points (minimum) with softened edges (no sharp edges).
   3. Size (HXW): 4”X4”
   4. Depth: 2-1/8”
   5. Knock outs: 1”
   6. Listing: UL or ETL

B. Telecommunications outlet electrical boxes shall be provided with the appropriate 1 gang, or 2 gang rings selected for the proper thickness of the drywall in all areas. Standard telecommunications outlets shall use 1-gang ring, but design documents might indicate the use of 2 gang rings in selected areas.

C. Knockouts in telecommunications outlet boxes shall not be field punched.

D. Approved Manufacturers:
1. Raco
2. Randal Industries Inc.
3. Steel City
4. Approved equal

2.3 HIGH DENSITY POLYETHYLENE (HDPE) PIPE

A. HDPE pipe shall be used for all directional boring applications, or it can also be used for open trench applications. HDPE pipe shall comply with the following manufacturing standards:
1. ASTM D 3035 Polyethylene (PE) Plastic Pipe (SDR) Based on Controlled Outside Diameter.
2. ASTM D 2239 Polyethylene (PE) Plastic Pipe (SIDR) Based on Controlled Inside Diameter.
3. ASTM F 2160 Solid wall High Density Polyethylene (HDPE) Conduit based on Controlled Outside Diameter (O.D.)
4. NEMA TC-7 Smooth Wall Coilable Polyethylene Electrical Plastic Conduit.

B. HDPE pipe shall be manufactured from a suitable thermoplastic polymer conforming to the minimum standard of PE334420E/C as defined in ASTM D3350. The resin properties shall meet or exceed the values listed below for HDPE pipe:

ASTM Test	Description	Values HDPE
D-1505	Density g/CM 3	0.941 - 0.955
D-1238	Melt Index, g/10 min Condition E	0.05 - 0.50
D- 638	Tensile strength at yield (psi)	3000 min.
D-1693	Environmental Stress Crack Resistance Condition B,F 20	96 min.
D-790	Flexural Modulus, MPa (PSI)	80,000 min.
D-746	Brittleness Temperature	-75°C

C. Design selection: The HDPE pipe used in this project shall be Rib/Smooth – Ribbed Interior and Smooth Exterior wall. Pipe shall be available in multiple colors, non lubricated and shall include a factory installed 1,800 lbs polyester pull tape. HDPE pipe walls shall be in compliance with SDR 7 - ASTM D3035 specifications and shall have footage markings.

D. Approved manufacturers:
1. Carlon Industries
2. Approved equal.

2.4 WIREWAYS

A. General: Wireway shall be sized as shown on drawings, NEMA 1, lay-in type. Wireway sides and bottom shall contain no knock-outs unless shown otherwise on the drawings. The Installer shall punch holes required. The cover shall be hinge type with quarter turn fasteners to hold cover shut. Covers and bodies shall be 16-gauge steel.

B. Approved manufacturers:
1. Hoffman Engineering Company
2. Square "D"
3. Steel City
4. Approved equal

2.5 SUPPORTING DEVICES

A. Hangers: Hangers shall be made of durable materials suitable for the application involved. Where excessive corrosive conditions are encountered, hanger assemblies shall be protected after fabrication by galvanizing, or approved suitable preservative methods.

B. Non-continuous cable supports (j-hooks) shall provide a bearing surface of sufficient width to comply with required bend radii of high-performance cables; UL Listed.

C. Non-continuous cable supports shall have flared edges to prevent damage while installing cables.

D. Non-continuous cable supports sized 1 5/16” and larger shall have a cable retainer strap to provide containment of cables within the hanger. The cable retainer strap shall be removable and reusable and be suitable for use in air handling spaces.

E. Non-continuous cable supports shall have an electro-galvanized or G60 finish and shall be rated for indoor use in non-corrosive environments.

F. Stainless Steel non-continuous cable supports are intended for indoor and outdoor use in non-corrosive environments or where only mildly corrosive conditions apply.

G. Anchoring: Insert anchors shall be installed on concrete or brick construction, with hex head machine screws. Recessed head screws shall be used in wood construction. An electric or hand drill shall be used for drilling holes for all inserts in concrete or similar construction. Installed inserts, brick, shall be near center of brick, not near edge or in joint. Drilled and tapped, and round head machine screws shall be used where steel members occur. All screws, bolts, washers, etc., used for supporting conduit or outlets shall be fabricated from rust-resisting metal, or accepted substitution. Gunpowder or lead set anchors are not permitted.

H. Accessories: Non-continuous support systems shall be provided with the adequate mounting accessories depending on the location where the support will be installed, like beam clips, flange clips, C and Z purlin clips.

I. Approved manufactures:
1. Erico
2. Panduit
3. Approved equal

2.6 CABLE TRAY AND FITTINGS (BASKET TYPE)

A. General Description: Basket type cable tray system is to be constructed of welded steel wire mesh with continuous safety edge wire lip. Provide mesh system permitting for continuous ventilation of cables and maximum heat dissipation.

B. Materials: Carbon Steel: Cable management system to be manufactured from high strength minimum 6-gauge steel wires. Wire to be welded and bent prior to surface treatment.

C. Finishes: Electro-plated zinc Galvanizing: Electrodeposited zinc coating applied to an average thickness of 0.7 mils to 0.8 mils. Hot Dip Galvanizing: Hot dip galvanizing in molten zinc bath providing an average coating thickness of 2.4 mils to 3.2 mils.

D. Fittings: Cable tray fittings to be field manufactured from straight sections through use of hardware and instructions recommended by Manufacturer. Provide drop-off, 90° kits and tees as required using manufacturer fabricated products and installation guidelines.

E. Installation: Cable tray system to be installed using splice connectors, and support components as recommended by the Manufacturer.

F. Loading Cable tray system to be installed and supported per NEMA VE-2 and Manufacturer's suggested span load criteria.

G. The cable tray system shall be UL listed and classified as a continuous bonded tray system providing a continuous grounding path. Cable tray system is required to be tested for grounding adequacy per NFPA 70B, Chapter 18 with a maximum allowable resistance of 1 ohm.

H. Approved Manufacturers:
1. B-Line
2. Cablofil
3. Chatsworth
4. Snake Tray
5. WBT
6. Wiremold
7. Approved equal

2.7 TUBULAR RUNWAY CABLE TRAY AND FITTINGS

A. Materials: ASIM A36 steel bar.

B. Finish: Baked Powder painted surface treatment using Polyester coating.

C. Finish color: to match equipment cabinet finish color. See specification section 271000.

D. Cable management tray width: as shown on the drawings.

E. Fittings: Cable management fittings and hardware recommended by Manufacturer. Provide drop-off, 90° and tees as required for the equipment served and support of the cable. Provide at least one large radius drop off for each rack/cabinet in the project.

F. Installation: Cable management system to be installed using support components as recommended by the Manufacturer.

G. Loading: Cable management system to be installed and supported per Manufacturer's suggested span load criteria.

H. Approved Manufacturers:
1. B-line
2. Chatsworth
3. Wiremold
4. Approved equal

2.8 PLYWOOD BOARDS IN TELECOMMUNICATION ROOMS

A. Plywood Backboard: Backboards shall be installed in each TR and the MTR on walls to a height of 8' AFF or as shown on the drawings. Rooms shall have walls covered as shown on the drawings

B. Acceptable options for plywood boards are:
1. 3/4-inch AC Grade fire rated plywood painted with two coats of fire retardant paint in both sides and on the edges.
2. Pre-manufactured plywood system for telecommunications such as Ready-Spec by Pathways and Spaces Inc.

C. Other specifications:
1. All imperfections and voids shall be filled, sealed and sanded prior to being primed and painted.
2. Fire retardant coating shall be tested to UL723, "Test for surface burning characteristics of building materials."
3. Paint color shall be grey, white, or light blue.
4. Fire retardant plywood shall be clearly labeled with the name of the Backboard Manufacturer, UL Classification of the Fire-Retardant Coating, NFPA 255 Coating Flame Spread Index Class and the APA Grade of the plywood.
5. Plywood shall be installed with best side ("A" side) out.

2.9 THROUGH WALL/FLOOR FITTING FIRE STOP SYSTEM

A. General. These devices covered under this specification are firestop devices for use in through-penetration firestop systems, which are used to maintain the fire rating of the wall or floor, as well as to route and protect power and/or communications cable distribution for commercial, educational, healthcare, government, institutional, industrial, and utility needs.

B. Classification and use: The firestop device for use in through-penetration firestop systems shall have been examined and tested by Underwriters Laboratories Inc. to UL1479 (ASTM E 814) and bear the U.S. and Canadian UL Classification Mark. The device shall be classified for use in one-, two-, three-, and four-hour rated gypsum, concrete and block walls and provide a maximum L rating of 3.3 cfm. The device shall be classified for use in one-, two-, and three-hour rated concrete floors having a minimum 4 1/2" (114mm) thick reinforced lightweight or normal weight (100-150 pcf) (1600-2400 kg/m3). The devices shall also be tested by Underwriters Laboratories Inc. to UL2043 and determined to be suitable for use in air handling spaces.

C. Materials:
1. Box: The fire stop device box shall be constructed of 16 gage G90 steel.
2. Intumescent block: The fire stop device intumescent block shall be constructed of a graphite base material with expansion starting at 375º F and an unrestrained expansion

between 6 to 12 times. The intumescent block shall be held securely by the box in order to prevent tampering and damage during installation.

3. Adjustable doors: the fire stop device shall have doors or other system which can be adjusted to prevent materials from penetrating the device if the device is empty or completely full. The doors shall be constructed of 16-gauge G90 steel with no. 10-32 screws use to adjust opening size.
4. Heat shield: For retrofit applications where an existing in-wall conduit extends out from the wall more than 7/8-inch, a UL listed Heat Shield must be used in order to maintain UL Fire Classification. The firestop device is then installed onto the heat shield
5. Split conduit and wall plate: For retrofit applications where no conduit is installed in the wall to protect existing cables, a split conduit assembly should be used to protect cables. After installing the split conduit within the wall, a wall plate should be installed to cover any irregularly shaped hole cut in the wall. The firestop device is then installed onto the conduit.

D. Retrofit: For retrofit applications the unit shall be a split case system that allows the unit to be installed over existing cables.

E. Sizes: the fire stop device shall be available for two (2) inch and four (4) inch trade size EMT conduit.

F. Finish: the fire stop device shall be available in safety yellow or orange powder coat, custom colors, and an unpainted galvanized finish.

G. Approved manufacturers:
1. STI EZ-path
2. Wiremold Flame-Stopper
3. Approved equal

2.10 INNERDUCT (REGULAR)

A. Flexible raceway system also referenced in the design documents as regular innerduct or innerduct shall be provided in locations indicated in design drawings. The innerduct type shall be selected according to the environment where it will be installed, use HDPE innerduct only outdoors, use plenum or riser rated innerduct indoors. The installer is responsible for determining the proper selecting of the innerduct when used in air handling spaces. If at the time of bidding the installer is not sure what kind of environment is present in the project, the installer shall price plenum rated materials.

B. For plenum rated applications, the specifications of the innerduct shall be:
1. Material: White or orange Kynar PVDF Resin, a fluoropolymer compound.
2. Listing: Innerduct shall be listed to UL 2024, listing shall be printed in the product.
3. Marking: Footage shall be sequentially marked.
4. Configuration: corrugated type.
5. Pull line: built in 900 lb rated tape.
6. Size: Shall be available in ¾" through 2" diameters.

C. For riser rated applications, the specifications of the innerduct shall be:
1. Material: Orange polyvinyl chloride (PVC).
2. Listing: Innerduct shall be listed to UL 2024, listing shall be printed in the product.
3. Marking: Footage shall be sequentially marked.
4. Configuration: corrugated type.
5. Pull line: built in 900 lb rated tape.
6. Size: Shall be available in ¾" through 2" diameters.

D. For outdoor applications, the specifications of the innerduct shall be:
   1. Material: High Density Polyethylene (HDPE).
   2. Listing: None.
   3. Marking: Footage shall be sequentially marked.
   4. Configuration: corrugated type.
   5. Pull line: built in 1,800 lb. rated tape.
   6. Size: Shall be available in ¾" through 2" diameters.

E. All inner ducts shall be provided with couplings and accessories suitable for the environment where they will be installed.

F. Approved manufacturers:
   1. Carlon Industries
   2. Approved equal

2.11 INNERDUCT (FABRIC TYPE)

A. When indicated in the design drawings, high capacity innerduct made of fabric shall be used inside telecommunication raceways to facilitate the pulling of telecommunication wires in those raceways. The fabric type Innerduct (also referenced as textile innerduct) shall have the following specifications:
   1. Material: White Polyester and Nylon resin polymer
   2. Standard Outdoor Textile Innerduct: Micro (33mm), 2-inch, 3-inch, and 4-inch single or multi-cell polyester/nylon textile innerduct containing 1250lb polyester flat woven pull tape.
   3. Indoor Textile Innerduct (Riser-listed): Micro (33mm), 2-inch, 3-inch, and 4-inch single or multi-cell nylon textile innerduct containing 1250lb polyester flat woven pull tape which meets UL2024A for flame propagation and smoke density values for general applications.
   4. Plenum-Listed Textile Innerduct: Micro (33mm), 2-inch and 3-inch single or multi-cell nylon textile innerduct containing 200lb nylon-resin flat woven pull tape which meets UL2024A for flame propagation and smoke density values for use in air handling spaces.

B. The installer is responsible for determining the proper selecting of the innerduct when used in air handling spaces. If at the time of bidding the installer is not sure what kind of environment is present in the project, the installer shall price plenum rated materials.

C. Approved manufacturers:
   1. The Maxcell Group
   2. Approved equal

2.12 DETECTABLE TAPE

A. A detectable tape shall be installed above all underground conduit at a minimum depth of 18-inch or as shown on the drawings. The detectable warning tapes shall be constructed with a solid aluminum foil core with a minimum thickness of 5 mils and 3-inch wide. The detectable warning shall have printed diagonal warning stripes conform to APWA color recommendations and bold, black legends identify what type of utility line is buried below. All detectable tapes used for this shall be labeled "fiber optics buried below".

B. Approved Manufacturers:
   1. Carlon Industries
   2. Stranco, Industries
   3. Terra Tape

4. Approved equal

2.13 COMMUNICATIONS VAULT (POLYMER CONCRETE)

A. In ground communication boxes also referenced in this document as communications vaults (polymer concrete) shall have the following specifications:
   1. Construction Material: Precast Polymer Concrete.
   2. Listing: UL listed enclosure, tested to ANSI/SCTE 77
   3. Box vertical design load: 22,500 lbs.
   4. Box vertical test load: 33,750 lbs.
   5. Box lateral design load: 800 lbs/sq. ft.
   6. Box lateral test load: 1,200 lbs/sq. ft.
   7. Box dimensions: as indicated in design drawings.
   8. Box bottom: open bottom
   9. Holes for conduit: holes for conduit shall be cut at the factory and shall not cover more than 25% of the side of the enclosure. All sides of the box shall have holes for conduits, even though conduits might not be shown for all sides in the floor plans. No less than two holes for standard 4" conduit shall be at all sides. All unused holes shall be plug with plastic caps.
   10. Cover ANSI TIER: 22
   11. Cover logo: "Communications"
   12. Cover screws: two (2) tamper-resistant penta-head screws
   13. Cover accessories: two (2) 7-inch-long cover hooks made of electroplated steel.

B. Approved manufacturers:
   1. Hubbell Quazite PG style box with HH series cover and accessories
   2. Approved equal, approved equals shall comply with all specifications listed above including construction material.

2.14 COMMUNICATIONS VAULT (PRECAST CONCRETE)

A. In ground communication boxes also referenced in this document as communications vaults (precast concrete) shall have the following specifications:
   1. Construction Material: concrete 5000 psi @ 28 days
   2. Rebar: ASTM A 615 grade 60 rebar
   3. Mesh: Welded wire fabric ASTM A185 grade 65
   4. Size: As indicated in design drawings
   5. Design: comply with local building code for reinforced concrete
   6. Loads: Dead load: concrete 150 PCF
      Earth cover – 120 PCF
      Lateral Earth pressure on walls: Equivalent fluid pressure above water table + 36 PSF per foot of depth. Equivalent pressure below water table + 81.4 PSF per foot of depth.
   7. Live load: AASHTO HS20-44. 32,000 lbs. rear axle loading.

B. The cover and frame for the communications vault shall have the following specifications:
   1. Style: Hatch type galvanized cover.
   2. Cover design (for hatch type or galvanized cover): Hot dip galvanized after fabrication built to an H20 rating for non roadway applications with dual doors.
   3. Cover design (for concrete lid with ring): 30-inch diameter cast or ductile iron, built to an H20 rating up to 150 KIO.
   4. Lettering: Covers shall be label as "Telecommunications"

C. All communications vault shall be provided with the following accessories:
   1. Embedded lifters made of galvanized steel
   2. All communications vaults with a concrete lid and ring shall be provided with a grade ring or riser made of concrete to bring the cover up to grade level. Precast concrete grade rings and cones shall comply with ASTM C 478, except that the wall thickness shall be 6 inches minimum. Provide interlocking keyways on rings and cones. Provide cones with cast in place inserts for the vault frame.
   3. Embedded pulling irons made or carbon steel galvanized.
   4. Two lengths of embedded Unistrut (galvanized) for bolting equipment on 2 opposite walls of the vault.

D. Precast vault construction shall be in the form of monolithic walls or horizontal wall sections. Do not use panel walls.

E. Minimum wall thickness shall be 6 inches. Design knockout wall panels to accommodate loading pressures defined above.

F. Design and construct vaults to be watertight when subjected to groundwater over the entire height of the vault.

G. Provide openings in precast vaults for piping and access. Provide cast in place inserts in the roof slab and end walls at the locations as shown on the Drawings. No field coring of openings is allowed.

H. When communications vaults are made of different sections, they shall be sealed and bonded with a double layer of plastic sealing compound and make watertight. Plastic sealing compound shall comply with Federal Specification SS-S-00210. Fill with mortar all recesses, lifting inserts, or other cavities not filled with plastic sealing compound. Mortar shall comply with ASTM C 387, Type S.

2.15 CONDUIT WATERFALLS

A. All 4-inch EMT terminations with communication cable entering/exiting the conduit from a cable tray (or tubular runway) system and the vertical separation between raceways is larger than 7-inch shall be fitted with a device to control the bend radius of the communication cable to a minimum of a 4-inch radius. The device to control the bend radius shall be called a conduit waterfall and must comply with all National Electrical Code requirements and ANSI/TIA Standards. In addition, the product must be RoHS compliant to meet environmental requirements, be UL 94V-0 approved to reduce the spread of flame and be approved by UL for use in air handling spaces. The device to provide bend radius control must support a static load of 40 lbs. (177.9 N) and have a fastening device that allows for incremental adjustments to conform to variances in conduit diameters.

B. Device quantities are not indicated in the drawings, but the PS-SCS shall use all 4-inch conduits and sleeves indicated in the drawings to estimate the quantities of waterfalls to be used in the project.

C. Approved manufacturers:
   1. Panduit CWF 400
   2. Approved equal

2.16 FIRE STOP SYSTEMS (FOR SMALL PENETRATIONS)

A. General: Fire stop system shall be selected by the PS-SCS installer as to comply with the following requirements:
   1. Selected system shall be UL listed for the condition on which it will be installed. These conditions include wall/slab type (masonry, drywall, etc.), hour rating, and accessibility type.

B. Approved manufacturers:
   1. caulk-based products or firestop grommets by STI
   2. Approved equal

2.17 EXPANSION FITTINGS

A. Installation: Provide expansion fittings in each conduit run wherever it crosses an expansion joint. Install the fitting on one side of the joint with its sliding sleeve end flush with joint, and with a length of bonding jumper in expansion equal to at least three times the normal width of joints.

B. Location: Provide expansion fittings in each conduit run which is mechanically attached to separate structures to relieve strain caused by shift on one structure in relation to the other.

C. Length: Provide expansion fittings in straight conduit runs above ground which are more than one hundred (100) feet long.

D. Flex conduit is not allowed to be used as expansion fittings.

PART 3 - EXECUTION

3.1 INSTALLATION PRACTICES

A. See additional requirements indicated in part 3 of specification section 270010.

3.2 INDOOR CONDUITS BELOW GRADE AND ABOVE GRADE

A. BEND RADIUS. Conduits shall utilize long radius sweeps at all 90-degree transitions. The inside radius of a bend in conduit shall be at least six (6) times the internal diameter. When the conduit size is greater than two (2) inches, the inside radius shall be at least ten (10) times the internal diameter of the conduit. For fiber optic cable, the inside radius of a bend shall always be at least ten (10) times the internal diameter of the conduit

B. ENCLOSURES USED AS CONDUIT BENDS. Enclosures such as junction boxes, handholes or communications vaults shall not be used to change direction of conduits, unless the enclosures are large enough to preserve the bend radius of the conduit as indicated in the point above. As an example, a junction box with 4” conduits entering in two adjacent sides of the enclosure should preserve a minimum of 40” radius between the closest conduits in the adjacent sides of the enclosure. It is required, that if the enclosure sizes don’t meet these criteria, the conduit bends shall be done before entering the enclosure.

C. ENCLOSURES FOR STRAIGHT PULLS. Enclosures such as junction boxes, hand-holes or communications vaults used in straight pulls, shall have a minimum length to allow for proper

cable pulling. Enclosures with terminating conduits from 2-inch to 3-inch in size shall use enclosures with a minimum length of 24-inches. Enclosures with terminating conduits of 4-inch in size shall use enclosures with a minimum length of 36-inches. It is acceptable to use metallic wireways as junction boxes for straight pulls as long as they are installed with the cover accessible to the end user.

D. MAXIMUM DISTANCE BETWEEN JBOXES. For indoor installation no section of conduit shall be longer than one hundred (100) ft or contain more than two (2) 90-degree bends between pull points or pull boxes are required. For outdoor installation no section of conduit shall be longer than six hundred (600) ft. or contain more than two (2) 90-degree bends between pull points or pull boxes are required.

E. LABELING. All indoor conduits 2-inch or larger shall be labeled at both ends when these conduit runs are continuous between two rooms and going through multiple walls or slabs. Labeling materials shall be as indicated in specification section 270010. Conduit sleeves 2-inch or larger penetrating just one wall is not required to be labeled.

F. PULL STRINGS: All conduits for technology systems shall be installed with pull strings.

3.3 UNDERGROUND TELECOMMUNICATIONS DUCT LINES

A. Description: Underground duct lines shall be of individual conduits. Conduits shall be encased in concrete where indicated on the plan drawings and duct bank sections. The conduit shall be of plastic, PVC Schedule 40, unless indicated or specified otherwise. The conduit used shall not be smaller than four (4) inches in diameter, inside, unless otherwise noted on the drawings.

B. The concrete encasement surrounding the duct bank shall be reinforced as shown and rectangular in cross-section, having a minimum concrete thickness of two (2) inches. Conduit shall be separated by a minimum concrete thickness of two (2) inches. The concrete work shall conform to Section on "Concrete". The top of the concrete envelope shall be not less than eighteen (18) inches below grade. Concrete shall be installed in a continuous pour to eliminate joints in the duct run.

C. Duct lines shall have a continuous slope downward toward communication vaults and away from buildings with a pitch of not less than 0.125-inches per foot. Changes in direction of runs exceeding a total of ten (10) degrees either vertical or horizontal shall be accomplished by long sweep bends having a minimum radius of curvature of twenty-five (25) feet, except that manufactured bends may be made up on one or more curved or straightened sections or combinations thereof. Manufactured bends shall have a minimum radius of forty-eight (48) inches.

D. Conduits. Conduits shall terminate in end-bells where duct lines enter manholes or communications vaults. Provide four (4) to six (6) inch reducers as required. Separators shall be of pre-cast concrete, high impact polystyrene, steel, or any combination of these. The joints of the conduits shall be staggered by rows so as to provide a duct line having the maximum strength. During construction partially complete duct lines shall be protected from the entrance of debris, such as mud, sand, and dirt by means of suitable conduit plugs. As the duct line is completed, a testing mandrel not less than 13 inches long with a diameter 1/4 inch less than the size of the stiff bristles shall be drawn through until the conduit is clear of all particles of earth, sand, or gravel; conduit plug shall then be immediately installed.

E. Conduit. Plastic conduit, fittings and joints shall not have been stored in the sun or weather, in any excessively heated space, or unevenly supported during storage. Use and installation shall

be in accordance with the National Electrical Code requirements for the installation of non-metallic rigid conduit. Plastic conduit shall be protected against the direct rays of the sun prior to installation. Conduit shall be Carlon Type EB, Queen City Plastics, or accepted substitution. Conduit shall be U.L. listed and conform to NEMA Standard TC6 1972.

F. Trench: Trenches for duct banks shall be completely dry before setting conduits or pouring concrete. Well pointing as required shall be provided if necessary to keep trench dry.

G. Excavation: Backfilling shall be in layers not more than eight (8) inches deep and shall be thoroughly tamped. The first layer shall be earth or sand, free from particles that would be retained on a 1/4-inch sieve. The succeeding layers shall be excavated material having stones no larger than would pass through a four (4) inch ring. The backfill shall be level with adjacent surface, except that in sodded or paved areas, a space equal to the thickness of the sod or paving shall be left.

H. Finish: The surface disturbed during the installation of duct shall be restored to its original elevation and condition if not refinished in connection with site work.

I. Plugging: All unused conduit openings shall be plugged or capped with a suitable device designed for the purpose; caulking compound shall not be used for plugging conduit openings.

J. Stubs: Spare conduit stubs shall be capped and marked in the field and accurately dimensioned on the as-built drawings.

K. Spacers: All conduit run underground or stubbed above floor shall be separated with plastic interlocking spacers manufactured specifically for this purpose, or shall be strapped to Kindorf channel supported by conduit driven into ground or tied to steel.

L. Minimum burial depth: All underground raceways (with exception of raceways installed under floor slab) shall be installed in accordance with Section 300 5 of the NEC except that the minimum cover for any conduit or duct bank shall be two (2) feet, unless otherwise indicated.

M. Directional boring. For all applications requiring directional boring the following installation practices shall be followed.
1. The installer shall select the directional boring equipment based on the length of the pulls, soil conditions, pipe size and pipe quantities.
2. When multiple pipes are run, each pipe shall be a different color.
3. Any pipe run less than 1,500 ft, shall be run as a single pull without splices.
4. Any splices done to HDPE pipes shall be done with manufacturer's approved methods.

3.4 INSTALLATION OF COMMUNICATIONS VAULTS

A. Excavating and backfilling for vaults. Perform earthwork as specified in Division 2. Provide 6-inch minimum thickness 3/4-inch crushed rock over the full width of the vault base and extend 12-inches beyond the edges of the vault. After repairing the waterproofing, backfill and compact around the vault with structural backfill material. Excavated material may be used for structural backfill provided it conforms to the Standard Specifications for structural backfill material.

B. Installing vaults and risers. Set each concrete vault section or riser plumb on a double layer bed of sealant at least 1/2-inch thick to make a watertight joint with the preceding unit. Point the inside joint and wipe off the excess sealant.

C. Waterproofing. Waterproofing shall be factory applied to all exterior surfaces of vaults and risers. This includes the bottom of the vault to be coated as an exterior surface. Apply two coats at a rate of 65 square-feet per gallon per coat. Prior to backfilling, field apply waterproofing material on joints and damaged surfaces. Protect coating from damage during backfilling and compacting.

3.5 CUTTING AND PATCHING

A. Core Drilling: The installer shall be responsible for all core drilling as required for work under this section, but in no case shall the installer cut into or weld onto any structural element of the project without the written approval of the A&E. Any post tension slabs or slabs with embedded electrical raceways shall be X-rayed prior to coring by the installer.

B. Cutting and Patching: All cutting, rough patching and finish patching shall be provided as specified in the contract documents. All cutting and patching shall be performed in a neat and workmanlike manner.

C. Openings and Sleeves: Locate all openings required for work performed under this section. Provide sleeves, guards, or other accepted methods to allow passage of items installed under this section.

D. Roof Penetration: All roof penetrations for raceways part of technology systems shall be approved by A&E prior to executing this work. All roof penetrations shall be as accepted by the roof manufacturer.

3.6 IDENTIFICATION OF BOXES

A. Tags: During installation of pull strings all pull strings shall be marked with waterproof vinyl tags indicating where the opposite end may be found.

3.7 BLANK PLATES

A. Plates: Unless otherwise noted all unused outlet boxes shall receive blank plates matching the finish of plates for electrical devices in the same room.

3.8 RACEWAY INSTALLATION

A. SUPPORT. All raceways shall be run in a neat and workmanlike manner and shall be properly supported and in accordance with the latest edition of the NEC code and BICSI guidelines. Supporting conduit and boxes with wire is not acceptable. Exposed raceways where allowed, shall be supported with clamp fasteners with toggle bolt on hollow walls, and with no lead expansion shields on masonry. All conduits shall be securely fastened in place with at least one support per eight-foot section. Support within one foot of changes in direction. All required hangers, supports and fastenings shall be provided at each elbow and at no more than one foot from the end of each straight run terminating at a box or cabinet. The use of perforated iron for supporting conduits shall not be permitted. The required strength of the supporting equipment and size and type of anchors shall be based on the combined weight of conduit, hanger, and cables. Horizontal and vertical conduit runs may be supported by one-hole malleable straps, clamp-backs, or other accepted devices with suitable bolts, expansion shields (where needed) or beam-clamps for mounting to building structure or special brackets.

B. HANGER INSTALLATION. Where two (2) or more conduits one (1) inch or larger run parallel, trapeze hangers may be used consisting of concrete inserts, threaded solid rods, washers, nuts, and galvanized "L" angle iron, or Unistrut cross members. These conduits shall be individually fastened to the cross member of every other trapeze hanger with galvanized cast one-hole straps, clamp backs, bolted with proper size cadmium machine bolts, washers, and nuts. If adjustable trapeze hangers are used to support groups of parallel conduits, U-bolt type clamps shall be used at the end of a conduit run and at each elbow. J-bolts, or approved clamps, shall be installed on each third intermediate trapeze hanger to fasten each conduit.

C. NON-CONTINUOUS CABLE SUPPORTS INSTALLATION. When j-hooks are allowed in the project by this specification (See USE OF CONDUIT FOR DIFFERENT SYSTEMS) non-continuous cable supports (j-hooks) shall be installed only as recommended by manufacturer not exceeding the load ratings of the devices. Install non-continuous cable supports in spans no longer than 4'. Whenever there are changes in elevation additional supports shall be required to avoid having stress on cable or sharp bends.

D. PENETRATIONS IN FIRE RATED PARTITIONS. Installation of electrical boxes or equipment backboxes in fire rated walls and smoke barriers shall follow the following requirements:
1. Electrical boxes and or technology system backboxes can be installed in 1 or 2 hour rated walls as long as all requirements indicated in the proper Building Code, National Electric Code and nationally recognized testing laboratories are met for this type of installation.
2. As a summary, some of the requirements indicated by the codes listed above are:
    a. Boxes shall be metallic or listed for that purpose
    b. The area of the boxes shall not exceed 16 square inches, provided the aggregate are of the openings through the membrane does not exceed 100 square inches in any 100 square feet of wall area.
    c. The spacing between the wall membrane and the box shall not exceed 1/8 of an inch.
    d. Boxes on opposite sides of the walls shall be separated by no less than 24-inches, or boxes shall be covered by listed putty pads, or a listed material and method used.
3. Electrical boxes or technology systems backboxes shall not be installed in a 3- or 4-hour fire rated walls.

E. ROUTING: Conduits shall be run parallel to building walls wherever possible, exposed or concealed as specified, and shall be grouped in workmanlike fashion. Crisscrossing of conduits shall be minimized.

F. PROTECTION DURING CONSTRUCTION. All raceway runs, whether terminated in boxes or not, shall be capped during the course of construction until wires are pulled in and covers are in place. No conductors shall be pulled into raceways until the raceway system is clean and complete.

G. PROTECTIVE BUSHINGS: All un-terminated conduits shall have an insulated protective bushing to avoid cable damage at the edge of the conduit.

H. AVOIDING EMI: To avoid EMI for Telecommunications cabling and/or conduit containing cabling, all raceways shall provide clearances of at least four (4) feet from motors or transformers; one (1) foot from conduit and cables used for electrical-power distribution; and five (5) inches from fluorescent lighting. Raceways shall cross perpendicular to fluorescent lighting and electrical-power cables and conduits. The Installer shall not place any raceway alongside power lines

I. COORDINATION. All raceways shall be kept clear of mechanical equipment and plumbing fixtures to facilitate future repair or replacement of said fixtures without disturbing wiring. Except where it is necessary for control purposes, all raceways shall be kept away from items producing heat.

J. MASONARY INSTALLATION. All raceway runs in masonry shall be installed at the same time as the masonry so that no face cutting is required, except to accommodate boxes.

K. USE OF CONDUIT IN DIFFERENT AREAS. When low voltage cables (any technology system) have to be run above ground in a space with no type of accessible ceiling (interior or exterior), all cable runs shall be in conduit completely, continuing the raceways all the way to the nearest accessible ceiling (in the direction of the telecom closet) or grouping the raceways into a single larger diameter conduit with the same or larger cross sectional area than the sum of all the conduits coming into it. The use of j-hooks to support low voltage cables in areas with no ceiling or inaccessible ceiling (i.e., hard ceilings) shall not be allowed. This type of condition is usually not indicated in the drawings because design drawings don't show conduits smaller than 2", nevertheless it shall be provided as indicated herein.

L. USE OF CONDUIT FOR DIFFERENT SYSTEMS: The following paragraphs indicate the design intent for raceways system for all technology systems.
1. For all systems under division 27: Conduit stub up from the outlet to the nearest accessible ceiling, non-continuous support system to the nearest cable tray system to the telecommunications room.
2. For all systems under Division 28 with the exception of Fire Alarm and Security Voice Communication system: Conduit stub up from the outlet to the nearest accessible ceiling, non-continuous support system to the nearest cable tray to the telecommunications room.
3. Non-continuous support systems (J-hooks) are allowed in this project as a horizontal support system for cables above ceilings. J-hooks shall not replace the cable tray system shown in the drawings.

3.9 CABLE TRAY INSTALLATION

A. Inspection: Examine area for clearances, to allow proper installation of the tray according to the routing indicated on the drawings. Check existing building steel and other supporting structures to establish the type of tray hangers to be used and at the proper spans.

B. Installation Criteria: Installation shall be in accordance with equipment manufacturer's instructions, and with recognized industry practices to ensure that cable tray equipment comply with requirements of NEC and applicable portions of NFPA 70B. Reference NEMA-VE2 for general cable tray installation guidelines

C. Support: Cable tray support shall be by means of welded angle brackets to structural components, brackets shall be as manufactured by the Cable tray manufacturer. Complete straight section of cable tray shall have at least 1 support at a 1/4 of the length of the section. Additional supports are required at tray ends, offsets, bends, and changes of elevation.

D. Grounding: All conduits terminating within 12-inches of a cable tray shall be bonded with a grounded in accordance with the National Electric Code.

E. Coordination: Wherever possible, install horizontal cable trays above water and steam piping. Coordinate installation of tray with other trades for clearances, to avoid conflicts. A minimum of 12-inch access headroom shall be provided and maintained above the cable tray system or cable runway. A minimum of 6-inch access headroom shall be provided and maintained at both

sides (one side if tray is supported at the wall. Care shall be taken to ensure that other building components (i.e., air conditioning ducts, pipes, structural elements) do not restrict access. The cable tray must be installed with at least 3-inches of clear vertical space above the ceiling tiles and support channels (T-bars) to ensure accessibility. When crossing other building components with the cable tray or runway the above specified clearances shall be maintained.

3.10 RUNWAY CABLE TRAY OR CABLE TRAY SYSTEM INSTALLATION INSIDE TR.

A. GENERAL. Runway cable tray systems or cable tray systems being installed inside telecom rooms shall be installed following manufacturer's recommendations for installation and all the following requirements indicated in this specification section.

B. SUPPORT LOCATIONS. Supports shall be provided as recommended by the manufacturer, but as a minimum support shall be located as follows:
1. Before each 90 deg turn.
2. No continuous section shall have more than 3ft of span without a support.
3. At each 2-post rack or 4-post rack
4. At each change in elevation

C. SUPPORT TYPE. When the runway/cable tray is to be installed against the wall, the only support type to be used is a wall bracket supporting from the bottom of the tray. For sections of runway/cable tray to be installed over racks, the preferred support system is to the racks themselves. Trapeze style support brackets shall only be used when no other method of support is possible. Center hung support systems shall never be used.

D. VERTICAL SECTIONS. Runway/cable tray system shall be installed continuously vertically in all telecommunications rooms in the project from sleeves coming from the ground (or floor below) to the sleeves going to the floor above, whether or not indicated in the drawings. The runway/cable tray installed shall have the same width as the total width of the sleeves coming into the telecommunications room, although multiple sections installed together are acceptable. If the sleeves from the floor below to the floor above don't line up in a straight line, two vertical sections are accepted, one to the horizontal runway cable tray and one from the horizontal runway cable tray to the sleeves above. Runway/cable trays installed vertically shall have supports to the floor, wall, and slab above.

E. VERTICAL SECTIONS TO CONDUITS. Runway/cable tray shall be installed continuously vertically in all telecom rooms in the project when conduits larger than 2-inch terminate in the telecom room at the height higher than 4-feet from the highest vertical runway/cable tray installed above the racks. The runway/cable tray installed shall have the same width as the total width of the sleeves coming into the telecommunications room, although multiple sections installed together are acceptable. The length of these sections of runway shall be the complete length from the vertical runway/cable tray to the conduits stubbing in the room. The idea for these runway/cable tray sections is to provide support for the cables coming out of the conduit to the vertical runways/cable trays. Runways/cable tray installed vertically shall a standoff of no less than 1" from the wall to allow for proper lacing of the cables.

F. CABLE DROP OUT. At each rack or cabinet that has runway/cable tray system running on top of it, a cable dropout shall be installed to protect the bend radii of the cable. This dropout accessory shall have a bend radius of no less than 4-inches.

G. BONDING. Any two continuous sections of runway/cable tray system shall be bonded together with a #1 bonding jumper (600A) 15-inches long. All bonding jumpers shall be made of steel with yellow, zinc-dichromate finish. All fasteners shall be made of steel with zinc-plated finish. See specification section 270526 for more details.

H. PROTECTIVE END CAPS. All end sections of runway cable tray sections shall be protected with plastic protective end caps.

3.11 INSTALLATION OF INNERDUCT

A. PROTECTION. Protect products from the effects of moisture, UV exposure, corrosion, and physical damage during construction.

B. SUPPORT. When inner duct is laid on a cable tray, it shall be strapped to cable tray with nylon ty-wraps at periodic intervals of no less than 4-feet.

C. COLOR CODING. When multiple inner ducts are in a single conduit, and innerduct are of the same size, they shall be different colors for identification or have different color electrical taped wrapped on the ends to identify them at the end of each conduit.

D. USE OF INNERDUCT. Any continuous conduit installed below grade or above grade with a size of 3-inches or larger shall have innerducts inside, along the complete conduit run. In particular for 4-inch conduits, a minimum of three (3) innerducts shall be installed inside each conduit, regardless of cables are being run as part of this project or not. One of those innerducts shall be a 1-1/2-inch, the other two (2) innerducts shall be 1-inch innerducts.

3.12 USE OF FIRE STOP SYSTEMS

A. CABLE TRAYS. Cable trays or tubular runways shall not be allowed to pass continuously through a fire rated partition or smoke barrier. The following guidelines shall be followed to seal those openings:
1. Use only UL listed methods per the wall rating.
2. Pillow type or brick type systems are not allowed.
3. For cable trays 12-inch in width or less, use only 4-inch through wall fitting fire stop systems. The quantity of systems shall be dependent on the cross-sectional area of the cable tray system installed. The total cross-sectional area of the fittings installed shall match the cross-sectional area of the cable tray system installed. As an example, a 12-inch-wide cable tray, 4-inch high shall have four (4) through wall fitting fire stop systems regardless of how many cables are being run on the cable tray system.
4. For cable trays wider than 12-inch, use a combination of 4-inch EMT sleeves with fire caulk-based systems and through wall fittings fire stop system. The total cross-sectional area of the sleeves/fittings installed shall match the cross-sectional area of the cable tray system. To determine the quantity of sleeves and fittings for each case, the following method shall be used. All cables installed as part of this contract can be run through 4-inch sleeves with fire caulking and remaining sleeves, but no less than 1/2 of all sleeves required shall be through wall fitting fire stop systems. So, as an example an 18-inch wide, 4-inch-high cable tray, requires a total of six (6) 4-inch sleeves. Out of those six (6), there shall be no less than three (3) 4-inch through wall fitting fire stop systems with no cables installed inside and no more than three (3) 4-inch sleeves with fire caulking with all cables installed as part of this contract, regardless of how many cables are being run on the cable tray.

B. SMALL CONDUIT SLEEVES. When J-hooks are allowed in the project and small cable bundles are required to go through a rated partition, it is acceptable to use fire caulk. A small bundle of cables is defined as a bundle than can fit on a sleeve that is 1-1/2-inch size or less. For larger bundles, requiring 2-inch sleeves or larger, use only through wall fitting fire stop systems.

C. CONTINUOUS CONDUITS RUNS. Continuous horizontal conduit runs or conduit entering a rated telecom room shall be fire stop with caulk-based fire stop systems, regardless of the size of the conduit.

D. ELECTRICAL BOXES. Installation of electrical boxes or equipment backboxes in fire rated walls and smoke barriers shall follow the following requirements:
   1. Electrical boxes and or technology system backboxes can be installed in 1- or 2-hour rated walls as long as all requirements indicated in the proper Building Code, National Electrical Code and nationally recognized testing laboratories are met for this type of installation.
   2. As a summary, some of the requirements indicated by the codes listed above are:
      a. Boxes shall be metallic or listed for that purpose
      b. The area of the boxes shall not exceed 16 square inches, provided the aggregate are of the openings through the membrane does not exceed 100 square inches in any 100 square feet of wall area.
      c. The spacing between the wall membrane and the box shall not exceed 1/8-inch.
      d. Boxes on opposite sides of the walls shall be separated by no less than 24-inches, or boxes shall be covered by listed putty pads, or a listed material and method used.
   3. Electrical boxes or technology systems backboxes shall not be installed in a 3- or 4-hour fire rated walls.

E. VERTICAL SLEEVES. Fire stop system shall be used for all 4” vertical sleeves used inside telecom rooms to run from one floor to the next. Half the sleeves indicated in the design drawings shall be protected with caulk-based fire stop systems and the other half with through floor fittings fire stop systems.

3.13 AS BUILT DOCUMENTS AND CLOSE OUT INFORMATION

A. See specification section 270010 for as built documents and close out information these requirements.

END OF SECTION 27 05 28

SECTION 27 10 00
STRUCTURED CABLING SYSTEM

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. General: Telecommunications Drawings apply to work of this section. The overall and detailed Structured Cabling System (SCS) design shown on the drawings, selected materials, device locations, installation details, mounting details, cabling routing, and supporting and all technical specifications if provided on the drawings apply to work of this section.

B. General: Furnish, install, test, and certify complete with all accessories an ANSI/TIA 568D SCS with a minimum 25-year performance warranty for the entire system from the manufacturers and a minimum of 3 years warranty for materials and labor from the SCS installer for all components not covered under the manufacturer's 25-year warranty. The goal of the project is to provide an enhanced SCS that shall serve as a vehicle for the transport of voice telephony, data, audio, video, security and low voltage devices for building controls and management, throughout the building and from building to building from designated demarcation points to outlets located at various desk, workstation and other locations as indicated in the contract drawings.

C. Coordination with other trades: It is the responsibility of the installer of the SCS to verify and advise the installer of the raceway infrastructure (conduit, boxes, cable tray, in ground boxes, etc.) for this system on raceway routing to minimize the wiring distances to the telecommunication room. When J-hooks are acceptable for the use in structured cabling system, all J-hooks and supports for these devices shall be in the scope of work of the SCS installer.

D. All patching and cross connect to owner provided equipment shall be included under the scope of work of this project.

E. During the execution of the work, all required relocation, demolition, temporary connections, rerouting, etc., of existing cabling, equipment, and systems in the existing building areas where the work is required, shall be performed by the SCS installer, as indicated on the drawings, or as required by job conditions and as determined by the Architect in the field, to facilitate the installation of the new systems. The Owner shall require continuous operation of the existing systems, while demolition, relocation work or new tie-ins are performed.

F. WAP installation. The scope of work includes the installation of the Wireless Access Points (WAPs) provided by the owner. The scope includes the labor and installation materials (supports, anchors, etc.) to properly fasten the WAPs to the structure.

1.2 RELATED DOCUMENTS

A. General: Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section

B. Supplemental: Refer to the specification sections identified below for additional requirements, which are supplemented by this section:

1. 270010 – Technology General Provisions
2. 270526 – Grounding and Bonding for Telecommunications Systems
3. 270528 – Raceways for Technology

C. Owner standards: Comply with the document “Requirements for all Communication Cabling at Clients name” prepared by the Clients applicable office.

D. Standards: All work related to the SCS shall be in compliance with the following industry codes and standards latest edition:
1. ANSI/TIA-568.0-D “Generic Telecommunications Cabling for Customer Premises” with addendums and errata.
2. ANSI/TIA-568.1-D, “Commercial Building Telecommunications Cabling Standard” with addendums and errata.
3. ANSI/TIA-568.2 - D, “Balanced Twisted- Pair Cabling Components Standard” with addendums and errata.
4. ANSI/TIA-568.3-D, “Optical Fiber Cabling Component Standard” with addendums and errata.
5. ANSI/TIA-569-D, “Telecommunications Pathways and Spaces” with addendums and errata.
6. ANSI/TIA-606-C, “Administration Standard for Telecommunications Infrastructure” with addendum and errata.
7. ANSI/TIA-607-D, “Generic Telecommunications Bonding and Grounding (earthing) for Customer Premises” with addendum and errata.
8. ANSI/NECA/BICSI 607-2011, Standard for Telecommunications Bonding and Grounding Planning and Installation Methods for Commercial Buildings.
9. ANSI/TIA 758-B, “Customer-Owned Outside Plant Telecommunications Infrastructure Standard” with addendum and errata
10. ANSI/TIA 862-B, “Structured Cabling Infrastructure Standard for Intelligent Building Systems” with addendum and errata.
11. ANSI/TIA-1152-A, “Requirements for Field Test Instruments and Measurement for Balanced Twisted Pair Cabling” with addendum and errata.
12. ANSI/TIA-526-7-A, “Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant”.
13. ANSI/TIA-526-14-C, “Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant”.
14. TIA-598-D, Optical Fiber Cable color coding.
15. IEC/TR3 61000-5-2 - Ed. 1.0 and amendments. “Electromagnetic compatibility (EMC) - Part 5: Installation and mitigation guidelines - Section 2: Earthing and cabling”
16. ANSI/TIA-942-B, “Telecommunications Infrastructure Standard for Data Centers” with addendum and errata
17. ANSI/BICSI 002-2014, Data Center Design and Implementation Best Practices
18. ANSI/NFPA 70 “National Electrical Code”, CSA C22.1.
19. BICSI Telecommunications Distribution Methods Manual (TDMM)
20. BICSI Telecommunications Cabling Installation Manual (TCIM)
21. BICSI Customer Owned Outside Plant Manual (COOPM)
22. Local County/City Codes, Ordinances and Regulations.
23. Underwriters Laboratories (UL)
24. FCC -Federal Communications Commission
25. ADA Requirements
26. Occupational Safety and Health Regulations (OSHA)
27. National Fire Protection Association (NFPA)
28. ANSI/TIA-1179, Healthcare Facility Telecommunications Infrastructure Standards
29. Florida Statutes and Administrative Rules
30. Manufacturers Product Cabling Catalogs
31. Manufacturers Training Manuals (Design and Installation).

E. General: Installation practices for SCS as describe herein take precedence over any other section in the construction documents set.

1.3 STRUCTURED CABLING SYSTEM INSTALLER QUALIFICATIONS

A. General: The installer selected for the project must be certified by the manufacturers of the products, adhere to the engineering, installation, and testing procedures, and utilize the authorized manufacturers components and distribution channels in provisioning the Project.

B. General: The installer directly responsible for this work shall be a Structured Cabling System (SCS) Installer who is, and who has been, regularly engaged in the providing and installation of commercial and industrial telecommunications wiring systems of this type and size for at least the immediate past five years. Any other company working for the SCS installer of this system shall have the same training and certification as the SCS installer.

C. Certification: The SCS installer's Project Manager shall possess a current and in Good Standings BICSI Registered Communications Distribution Designer (RCDD®) certificate. All shop drawings submitted by the SCS Installer shall bear the RCDD's stamp.

D. The SCS Installer shall have a (BICSI) RCDD on Staff. Third party RCDD's shall not be acceptable.

E. The Installer team leader assigned for the project shall be BICSI registered Level II installer or proven and qualified equal.

F. Experience: The SCS Installer shall be experienced in all aspects of this work and shall be required to demonstrate direct experience on recent systems of similar type and size. The SCS Installer shall own and maintain tools and equipment necessary for successful installation and testing of SCS and have personnel who are adequately trained in the use of such tools and equipment. The Owner or engineer may elect to request submittal of additional financial, operational, and administrative information of the SCS installer to demonstrate the required experience.

G. The SCS Installer shall possess a State of Florida Low Voltage License.

H. The SCS Installer shall maintain a permanent office within 150 miles of the project site.

1.4 MATERIALS ALTERNATES AND SUBSTITUTIONS

A. SCS Installer shall follow all requirements for materials alternates and substitutions indicated in specification section 270010.

B. Substitutions are only allowed for the SCS when the substitutions do not change the warranty of the SCS system as indicated in this specification section

1.5 SHOP DRAWINGS AND SUBMITTALS.

A. See additional requirements for shop drawings and submittals in specification section 270010.

B. Proposal Submittals: The SCS Installer shall submit the following information with the proposal to execute the work:

1. A list of five (5) recently completed projects of similar type and size with contact names and telephone numbers for each.
2. A list of test equipment proposed for use in verifying the integrity of the installed SCS. Test equipment list shall include manufacturer part number, serial numbers and a copy of the last calibration report done by the manufacturer of the equipment of the unit, indicating the date when the calibration was done. Calibrations shall not be older than one year. Test equipment includes, cable certifiers, OTDRs, fiber splicers, etc.
3. A technical resume of experience for the installer's engineer/RCDD and on-site foreman who will be assigned to the project, including RCDD license number.
4. Similar documentation for any company working for the SCS Installers who will assist in the performance of this work.
5. A copy of a current and valid Low voltage License for the State of Florida.
6. Location of office from which installation and warranty work will be performed.

C. Construction submittals: Once all proposal submittals have been received and approved by the Architect and Engineer (A&E) of the project, the SCS Installer shall provide all construction submittals. Construction submittals are composed of the following items.
1. Manufacturer's cut sheets for all proposed equipment as described in Part 2 of this specification section. Cut sheets shall bear the printed logo or trademark of the manufacturer for each type of product being provided. Mark each copy of the cut sheets for the specific product being provided with an identifying mark, arrow, or highlighting.
2. Faceplate color selection.
3. Detail explanation of the labeling scheme to be used for all components of the system. This explanation shall include examples of all types of labels to be used, like labels for cables, patch panels, outlet jacks, etc.
4. AutoCAD® or Revit drawings in sheets matching the size of the design documents with the following information:
    a. Floor plans with all outlets in the project. All outlets shall have the label to be used during identification and tagging process described in this specification section.
    b. Enlarged telecommunication rooms with all equipment components and rack layouts for each room. All racks shall have the label to be used during identification and tagging process described in this specification section.
    c. Drawings indicating rack elevations for all cabinets or racks in the project, identifying the precise quantity of patch panels, fiber distribution centers and wire managers and accurate RU heights based on equipment selection. All equipment shall have the label to be used during the identification and tagging process described in this specification section.
    d. A spreadsheet indicating all patch cords (fiber and copper) to be provided in the project. The spreadsheet shall indicate the quantity, color of the jacket, cable type, length, and connector termination on each side.

D. Construction submittals received before proposal submittals are received or approved will be rejected.

1.6 ABBREVIATIONS

A. General: The following abbreviations are used in this specification section:
1. A&E - Architect and Engineer. The Architect is the legal entity that holds a contract for the design the project. The Engineer is the consulting engineer firm or engineer of record for the project who prepared this specification.
2. APC - Angle physical contact connector. Reference to the polish style of the ferrule in fiber optic connectors.
3. Array connector - a multi-strand fiber connector user for high density applications, such as the MPO connector

4. BICSI - Building Industry Consultant Services International
5. CCTV - Close circuit television system (surveillance video system)
6. FCC - Federal Communications Commission.
7. FTP - Foiled Twisted pair. One foiled screen around each cable pair.
8. IDC - Insulation Displacement Connector
9. NEC - National Electric Code. ®
10. NEMA - National Electrical Manufacturers Association.
11. OM1 - ISO 11801 designation for multimode 62.5/125µm glass fiber optics.
12. OM2 - ISO 11801 designation for multimode 50/125µm glass fiber optics.
13. OM3 - ISO 11801 designation for multimode laser optimized 50/125µm glass fiber optics.
14. OM4 - TIA designation for multimode laser optimized 50/125µm glass fiber optics in compliance with TIA-492-AAAD.
15. OS1 - ISO 11801 designation for single mode 9/125µm glass fiber optics.
16. OS2 - ISO 11801 designation for single mode 9/125µm glass fiber optic with performance criteria identical to ITU-T G652.
17. OTDR - Optical Time Domain Reflectometer.
18. RU - Rack units. Height dimension for rack mounted equipment. 1 RU equivalent to 1.75”.
19. SCS - Structured Cabling System
20. ScTP - Screened twisted pair. One foiled screen around all cable pairs
21. TIA - Telecommunications Industry Association.
22. TR - Telecommunications Room.
23. UPC - Ultra physical contact connector. Reference to the polish style of the ferrule in fiber optic connectors.
24. UTP - Unshielded twisted Pair
25. UV - Ultraviolet
26. VAC - Volts alternating current.

PART 2 - PRODUCTS

2.1 MODULAR SCS JACKS

A. Structured cabling system outlets indicated in design drawings are composed of modular SCS jacks, mounted in a faceplate on an electrical box. Modular SCS jacks shall be 8-pin modules (RJ-45) that meet or exceed the following electrical and mechanical specifications:
   1. Electrical Specifications:
      a. Insulation resistance: 500 MΩ minimum.
      b. Dielectric withstand voltage 1,000 VAC RMS, 60 Hz minimum, contact-to-contact and 1,500 VAC RMS, 60 Hz minimum from any contact to exposed conductive surface.
      c. Contact resistance: 20 M Ω maximum.
      d. Current rating: 1.5 A at 68 º F (20 º C) per IEC publication 512-3, Test 5b
      e. ISO 9001 Certified Manufacturer
      f. UL verified for ANSI/TIA electrical performance
      g. Comply with FCC Part 68
      h. Cable termination: IDC type universal T568A or T568B.
   2. Mechanical Performance:
      a. Plug Insertion Life: 750 insertions
      b. Contact Force: 3.5 oz (99.2 g) minimum using FCC-Approved modular plug.
      c. Plug Retention Force: 30 lb. (133 N) minimum between modular plug and jack.
      d. Temperature Range: -40º to 150ºF (-40 º to 66 º C)

B. Design selection: modular SCS jacks shall be selected according to the following criteria:

1. Performance requirement: CAT 6
2. Style: Rear loading front loading with adapter panel
3. Mounting orientation: straight mounting
4. Color: To match cable
5. Dust cover required: No
6. Shielding: use shielded modular jacks only with ScTP cable.

C. Approved manufacturers:
1. Belden
2. CommScope
3. Hubbell
4. Leviton
5. Ortronics
6. Panduit
7. Siemon
8. Approved equal

2.2 FIELD TERMINATABLE 8 POSITION MODULAR PLUG

A. When indicated in the design drawings to use Direct Attach connection for any field devices, field terminatable 8 positions modular plugs shall be used. This device shall be 8-pin modules (RJ-45) plugs that meet or exceed the following electrical and mechanical specifications:
1. General Specifications:
   a. Shall include an IDC type of termination for the cable. Crimp type terminations not acceptable.
   b. Shall support cable gauges from 22 to 26 AWG
   c. Shall include a rubber boot
2. Electrical Specifications:
   a. ISO 9001 Certified Manufacturer
   b. UL verified for ANSI/TIA electrical performance
   c. Comply with FCC Part 68
   d. Cable termination: IDC type universal T568A or T568B.

B. Design selection: modular SCS jacks shall be selected according to the following criteria:
1. Performance requirement: Match performance of Modular SCS jacks

C. Approved manufacturer:
1. Match selection for modular SCS jacks.

2.3 OTHER MODULAR JACKS

A. Whenever indicated in the design drawings SCS outlets could have terminations for other media types like fiber optic cables, coaxial cables, or audio cables. Whenever those type of media are identified in the drawings, the following specifications shall be meet for modular jacks mounted in SCS outlets:
1. Style, mounting orientation and color: match design selection for modular SCS jacks.
2. Broadband distribution system connector: Use modular jack with F connector bulkhead rated at 75Ω.
3. Fiber optic connectors: use modular jack with adapter plate for ST simplex/duplex connector.
4. For line level audio signals: use modular jack with RCA connector bulkhead. Use different color-coded insulators for different audio channels.

B. Approved manufacturer:
   1. Match selection for modular SCS jacks.

2.4 FACEPLATES

A. Faceplates shall be used for all flush mounted telecommunication outlets to house modular jacks. Faceplates shall have the following specifications:
   1. Construction material: High impact thermo Plastic or Stainless Steel. Material shall match Division 26 wiring devices.
   2. Size: use single gang faceplates only unless specifically noted in the design drawings.
   3. Capacity of modular jacks per faceplate: faceplate shall be selected as to accommodate the number of cables in each telecommunication outlet. No more than one unused opening shall be present on each faceplate.
   4. Color: submit color to A&E for approval.
   5. Labels: faceplate shall have two (2) recesses for labels, top and bottom, and shall have transparent label snap-on covers.
   6. Faceplate style: Direct modular plug rear loading style.

B. All faceplates shall have a tamper resistant cover to access the modular jacks

C. Approved manufacturer:
   1. Match selection for modular SCS jacks.

2.5 FACEPLATES WITH SUPPORT STUDS

A. Telecommunication outlets indicated in the design drawings as to be wall mounted telephone outlets shall be composed of one modular SCS jack and one faceplate with support studs mounted on an electric box. Faceplates with support studs shall have the following specifications:
   1. Construction material: Stainless Steel.
   2. Size: use single gang faceplate with two support studs.
   3. Capacity of modular jacks per faceplate: One.
   4. Faceplate style: Direct modular plug rear loading style.

B. Approved manufacturer:
   1. Match selection for modular SCS jacks.

2.6 SURFACE MOUNTED BOXES

A. Telecommunication outlets indicated in the design drawings as to be surface mounted outlets shall be composed of modular jacks mounted in a surface mounted box inside an electrical enclosure. Surface mounted boxes shall have the following specifications:
   1. Construction material: High impact thermo Plastic.
   2. Capacity of modular jacks per surface mounted box: size of surface mounted box shall be selected as to accommodate the number of cables in the surface mounted telecommunication outlet. No more than one unused opening shall be present on each box.
   3. Color: Material and color shall match Division 26 wiring devices.
   4. Labels: surface mounted boxes shall have at least one (1) recess for labels, and shall have transparent label snap-on covers

B. Approved manufacturer:
   1. Match selection for modular SCS jacks.

2.7 MOUNTING FRAMES

A. All telecommunication outlets shall be properly mounted in the electrical raceway system provided for the outlet. The SCS installer shall select the proper mounting frame and/or bezel to mount the modular plugs in the raceway system. Raceway systems include furniture systems, floor boxes, poke-thrus, power poles, surface raceways system, etc.

B. Whenever design drawings indicate a telecommunication outlet to be mounted in a furniture system the SCS Installer shall select the proper mounting frame to hold the modular jacks in the furniture system selected by the owner. Color of the mounting frames shall match the color of the furniture system.

C. If owner provided furniture system does not have a raceway system for telecommunication, and design drawings indicate outlet to be mounted in the furniture system, SCS installer shall provide a plastic surface mounted box that allows the mounting of the modular plugs in a standard telecommunication faceplate.

D. SCS installer shall provide all mounting frames and bezels to mount modular jacks inside floor boxes or poke-thrus.

E. All un-used ports in mounting frames shall be covered with blank inserts.

F. Approved manufacturer:
   1. Match selection for modular SCS jacks.

2.8 HORIZONTAL 4-PAIR CABLE

A. General: Horizontal 4-pair cables shall be extended between the telecommunications outlet location and its associated equipment inside the TR. The cable shall consist of 4 pair cable solid copper conductors, certified to the specified performance standard. All horizontal 4-pair cables shall be terminated in modular jacks and patch panels with IDC type connectors and shall have the following specifications:
   1. Cable Gauge: minimum 23 AWG
   2. Performance standard: ANSI/TIA CAT6
   3. Cable type: UTP
   4. Performance characterized: 600 MHz
   5. Time delay skew: Maximum 45 ns/100m
   6. Input impedance (1-100MHz): 100Ω
   7. Cable diameter: ≤ 0.295 inch

B. Cable jacket colors for 4-pair horizontal cables shall be selected according to the following criteria:
   1. Voice cables: Orange
   2. Data cables: Blue
   3. Wireless access points: Green
   4. Surveillance cameras: Yellow

C. Performance verification: All performance of horizontal 4-pair cable shall be verified by a Nationally Recognized Testing Laboratory (NRTL) for ANSI/TIA electrical performance and comply with FCC Part 68.

D. Jacket: Cable jacket for inside premise cables shall comply with Article 800 NEC for correct use in the environment in which they will be used. If at the moment of the bid the SCS installer does not know the environment, in which cables will be used, the SCS installer shall assume plenum rated is required for the project. At a minimum all cables shall have a flame retardant PVC jacket riser rated.

E. OSP Jackets: All horizontal 4-pair cables run in conduits below the floor slab shall have a water-resistant flooding compound and a jacket made of UV resistant polyethylene. Cables with PVC jackets are not acceptable for this application.

F. Jacket marking: All horizontal 4-pair cables shall have at least two types of markings imprinted in the jacket, transmission performance marking and NEC rating for environment to be used.

G. Approved manufacturers:
1. Belden
2. Berk-Tek
3. CommScope
4. Corning
5. General Cable
6. Panduit
7. Siemon
8. Superior Essex
9. Approved equal

2.9 PATCH PANELS FOR HORIZONTAL CABLING

A. All 4-pair horizontal cables shall be terminated in rack mounted path panel located in the telecommunication rooms rack. These patch panels shall have the following specifications.
1. Connector type: 8-position modular plug (RJ-45)
2. Cable termination: IDC type universal T568A or T568B.
3. Performance requirement: CAT6
4. Maximum connectors per path panel allowed: 48
5. Patch panel type: factory preloaded panels
6. Patch panel shape: straight (flat)
7. Permanent marking: All connectors shall be labeled in sequential numbers
8. Field labels: patch panels shall have a space for field labels covered with transparent protectors.
9. Shielding: use shielded patch panels only with ScTP cable.

B. Approved manufacturers.
1. Match selection for modular SCS jacks

2.10 HORIZONTAL WIRE MANAGERS

A. Horizontal wire managers shall be mounted in racks to route cables from patch panels to vertical wire managers and to equipment. Horizontal wire managers shall have the following specification:

1. Style: Finger duct style with hinged cover multiple rings finger duct style with removable cover
2. Sides: front of rack front and back of rack
3. Minimum height: two RU

B. Approved manufacturers:
1. Match selection for modular SCS jacks.

2.11 FOUR (4) PAIR PATCH CORDS

A. Four (4) pair patch cords are required at the work area side and at the patch panel side to complete the connectivity path to the equipment. All 4-pair patch cords shall be factory tested and shall have molded boots to the cable jacket. Field made patch cords are not acceptable. Four pair patch cords shall have the following specifications:
1. Connectors: 8-pin modular plugs at both ends
2. Conductors: 4-pair stranded conductors.
3. Wire gauge: 23AWG for patch cords in the field site and 28 AWG for patch cords in the telecom room side.
4. Wiring map: See section 3 of this specification
5. Performance requirement: To match horizontal 4-pair cable performance
6. Cable type: UTP.

B. Approved manufacturers:
1. Match selection for modular SCS jacks

2.12 SINGLE STRAND FIBER OPTICS CONNECTORS

A. All fiber optic cables (horizontal or backbone cables) shall be terminated on fiber optic connectors at both ends of the cable with either single strand fiber optic connectors or array connectors. Single strand fiber optic connector shall be compliant with industry standard ANSI/TIA-568-C.3 and the applicable ANSI/TIA Fiber Optic Connector Intermateability Standard (FOCIS) document, ANSI/TIA 604 series. Single strand fiber optic connectors shall have the following specification:
1. Physical contact type: use UPC type connector for all application with the exception of applications of Broadband TV distribution systems or DAS systems. For those applications use APC type connectors.
2. Connector type: ST
3. Security level: non-keyed connector
4. Pairing style: simplex or duplex
5. Acceptable connector attachment types:
    a. Epoxy type connectors, field polished
    b. Epoxy-less (Crimp) type connector, field polished.
    c. Splice on connectors. Fusion spliced connectors with factory polished finish.
    d. Fusion spliced pig tail with factory polished connector. Mechanical splices for pig tails are not acceptable.
6. Fiber type: SCS installer shall select the connector according to the fiber type where connector will be installed. As an example, use OM1 connectors only in OM1 fiber optic cables.
7. Fusion spliced pig tails. When using fusion spliced pig tails the SCS installer shall make sure the fiber type of the pig tail and the actual cable have the same optical characteristics, such as back scatter, core diameter, etc.

8. Ferrule construction: use ceramic ferrule connectors only, plastic ferrules are not acceptable.

B. All single strand fiber optic connectors shall include boots to protect the fiber optic cable. The SCS installer shall select the boot according to the fiber optic type selected. As an example, use 900µm boots in 900µm coated fiber, use 250µm boots on 250µm coated fiber and use 2mm boots on 2mm jacketed fiber. All boots shall be color coded to identify the type of fiber connector used. Boots shall be beige for OM1 fiber, black for OM2, aqua for OM3 and OM4 or green.

C. Single strand multimode fiber optic connectors shall have the following performance requirements:
1. The maximum insertion loss shall be 0.75 dB (maximum) when installed in accordance with the manufacturer's recommended procedure and tested in accordance with FOTP-171.
2. Connector reflectance shall be less than or equal to -26 dB when installed in accordance with the manufacturer's recommended procedure.
3. Connectors shall sustain a minimum of 500 mating cycles without violating specifications.
4. Connectors shall have an optical axial pull strength of 2.2 N (0.5lbf) at 90º angle, with a maximum 0.5dB increase in attenuation for both tests when tested in accordance with ANSI/TIA-455-6B.

D. Single strand single mode fiber optic connectors shall have the following performance requirements:
1. Maximum insertion loss shall be 0.75 dB per each mated connector pair when installed in accordance with the manufacturer's recommended procedure and tested in accordance with FOTP-171.
2. Connector reflectance shall be less than or equal to -40 dB (UPC) when installed in accordance with the manufacturer's recommended procedure.
3. Connectors shall sustain a minimum of 500 mating cycles without violating specifications.
4. Connectors shall have an optical axial pull strength of 2.2 N (0.5lbf) at 90º angle, with a maximum 0.5 dB increase in attenuation for both tests when tested in accordance with ANSI/TIA-455-6B.
5. Connectors shall meet the following performance criteria:

Test	Procedure	Maximum Attenuation Change (dB)
Cable Retention	FOTP-6	0.2 dB
Durability	FOTP-21	0.2 dB
Impact	FOTP-2	0.2 dB
Thermal Shock	FOTP-3	0.2 dB
Humidity	FOTP-5	0.2 dB

E. Approved manufacturers. Ortronics, Corning, Belden, Panduit, Siemon, Leviton, CommScope or 3M

2.13 FIBER OPTICS SPLICES

A. When fiber splicing is required in the project because of the use of pigtails or field splicing, only fusion splicing will be acceptable. Mechanical splices shall not be used unless specifically indicated in the contract documents.

B. All fiber splices shall be terminated with heat shrink sleeves and organized in splice trays. Splice trays sizes shall be selected to match the quantity of fiber strands in the cable bundles.

Splice trays shall be organized in Fiber Optics Distribution Centers when inside a telecom room or in outdoor rated splice closures when done outdoors.

C. Fusion splice equipment to be used in this project shall have the following specifications:
1. Alignment system: Automatic Core Detection system (ACD). V-groove splicers are not allowed.
2. Typical splice loss for single mode fibers: 0.02 dB
3. Splice loss result: Estimated (ACD) Measurement (LID)
4. Unit shall have a fast heat shrink oven, maintenance free electrodes, built in cleaver and graphical user interface to display alignment condition.
5. Cleaver blade type: diamond.

2.14 INSIDE PREMISE FIBER OPTICS BACKBONE CABLES

A. Whenever design drawings indicate fiber optics backbone cables to be run inside premises, the following specification shall be followed for those cables:
1. Strand Count: As indicated in design drawings
2. Fiber type: As indicated in design drawings
3. Fiber coating: 900µm coating color coded. 250µm coating is acceptable for loose buffer cables but they shall be protected with break-out kits with color coded 900µm buffers at both ends of the cable.
4. Fiber protection: aramid yarn around all strands for cables under 24 strands, and aramid yarn and jacket around each subunit (6 or 12 strands) for cables above 24 strands.
5. Interlock requirement: Interlock aluminum armor is required.
6. Jacket type: Flame-retardant PVC jacket or materials with superior performance.
7. Color jacket: jacket shall be orange for OM1 or OM2 fiber, aqua for OM3 or OM4 fiber and yellow for OS1 or OS2 fiber.
8. Fiber termination: fibers shall be field terminated.
9. Buffer type: tight buffer required.
10. Center strength member material: dielectric material

B. Jacket: Cable jackets for fiber optic cables shall comply with Article 770 NEC for correct use in the environment in which they will be used. If at the moment of the bid the SCS installer does not know the environment, in which cables will be used, the SCS installer shall assume plenum rated is required for the project. At a minimum all cables shall have a flame retardant riser rated jacket. Rating shall be printed in the cable jacket.

C. Approved manufacturers:
1. Match selection for horizontal 4-pair cable

2.15 OUTSIDE PLANT FIBER OPTICS BACKBONE CABLES

A. Whenever design drawings indicate fiber optics backbone cables to be run between building or outside premises, the following specification shall be followed for those cables:
1. Strand Count: As indicated in design drawings
2. Fiber type: As indicated in design drawings
3. Fiber coating: 250µm coating protected with break-out kits with color coded 900µm buffers at both ends of the cable when cables are terminated in conditioned spaces. When fibers are terminated in outdoor non-conditioned spaces break out kits shall be used with 3 mm tubes with aramid yarn for each fiber. Unprotected 900µm fibers in non-conditioned spaces are not allowed.
4. Rodent protection requirement: not required.

5. Buffer type: Loose tube.
6. Center strength member material: dielectric material

B. Jacket: All outside plant fiber optics backbone cables shall have UV resistant cable sheathing and a water blocking material to prevent water intrusion. All outside plant fiber optics backbone cables shall be tested and in compliance with following standards:
1. ANSI/TIA-568-C
2. Telcordia GR-20
3. ANSI/ICEA S-87-640

C. Approved manufacturers.
1. Match selection for horizontal 4-pair cable.

2.16 FIBER OPTIC DISTRIBUTION CENTERS

A. All fiber optic cables shall be terminated in fiber optic distribution centers. Inside premises horizontal fiber optic cables shall be terminated in one side (telecommunication room side) in a fiber optics distribution center (FODC). Backbone fiber optic distribution centers shall be terminated at both ends in a FODC. FODC are composed of an enclosure and snap on adapters. These are the specifications of the enclosures for the FODC:
1. Mounting: Use rack mounted FODC enclosures in all rooms where racks are available or any type of rack rails. Use wall mounted FODC enclosures only when racks are not available like in outdoor enclosures, or other spaces different than telecom rooms.
2. Size: SCS Installer shall size the FODC based on the amount of fiber strands to be terminated in the FODC.
3. Front locking doors are required.
4. Locking door shall be transparent doors and shall have labeling cards.
5. Whenever fiber splices are indicated in the design drawings next to an FODC, enclosures shall be selected by the SCS installer as to have spaces to hold splice trays. FODCs under these conditions shall be able to hold the amount of splice trays required for the fiber count indicated in the drawings.

B. These are the specifications of the snap on adapters for the FODC:
1. Style: plate style cassette style for array connector.
2. Connector type: ST to match fiber types of fiber optic cables
3. Maximum fiber strands allowed per adapter: 12
4. Security level: non-keyed connector keyed connector
5. Pairing style: simplex or duplex.

C. Approved manufacturers.
1. Match selection for fiber optic connectors.

2.17 FIBER OPTICS PATCH CORDS

A. Fiber optic patch cords shall be required for connections from active equipment to FODCs and/or to telecommunication outlets. Fiber optic patch cords shall be required at both ends of fiber optics backbone cables or horizontal fiber optic cables. Direct connection of backbone cables or horizontal fiber optic cables to active equipment shall not be allowed.

B. Fiber optic patch cords shall be all factory tested. Field made fiber optic patch cords are not acceptable. The specifications of the fiber optic patch cords shall be:
1. Strand Count: 2 strands

2. Fiber type: Match fiber type of backbone cable or horizontal cable.
3. Fiber connector in FODC or outlet side: match connector for each adapter
4. Fiber connector in active equipment side: the SCS installer shall coordinate with supplier of equipment the type of connector required in this side.
5. Fiber protection: aramid yarn
6. Jacket type: 2.9mm flame-retardant PVC jacket zip-cord type.
7. Color jacket: jacket shall be orange for OM1 or OM2 fiber, aqua for OM3 or OM4 fiber and yellow for OS1 or OS2 fiber.

C. Approved manufacturers. Match selection for fiber optic connectors

2.18 EQUIPMENT CABINETS

A. Whenever indicated in the design drawings equipment cabinets shall be provided as shown. Equipment cabinets shall be made of all welded steel frames and shall have a powder coat finish. Equipment cabinets shall have the following specifications:
1. Cabinet construction material: Welded and bolted steel frame.
2. Footprint: As indicated in design drawings 31”x42” ±1”
3. Height: Equipment cabinet shall provide a usable height between 44 and 45 RU.
4. Rack rails type: standards EIA/ECA 19” square holes with cage nut rail located in the front and back of cabinet. Rack rails shall be adjustable for depth and shall have RU marked and labeled.
5. Rack screw type: cage nuts clipped to rack rails. Nuts and screws shall be provided for all slots in rack rails and shall be made of steel threaded as #10-32.
6. Side panels (end of row cabinet sides): solid steel, removable and lockable side panels.
7. Side panels (between adjacent cabinets): solid steel, removable panels with openings for passing cables, covered with plastic removable caps, rubber caps or brush openings. No less than Eight (8) openings in total area of the side of the cabinet. Each opening shall be no less than 34 sq inches.
8. Top panel: solid steel with no less than four (4) brush protected openings for cables. Each opening shall be no less than 34 sq inches.
9. Bottom panel: solid steel with no less than two (2) brush protected openings for cables. Each opening shall be no less than 34 sq inches. For cabinets with top exhaust duct, a bottom air director shall be provided in the back side of the cabinets to force air up towards the exhaust duct.
10. Door hinge supports shall be provided at both sides of the racks and front and back to be able to reverse doors.
11. Grounding: Prepared location for ground lug at the top and bottom of the cabinet frame. Door shall include bonding jumper to cabinet.
12. Weight capacity: UL listed for 2500 lb.
13. Finish: Epoxy-polyester hybrid powder coat paint on frame, rails, panels, and metal accessories:
14. Finish color: Black for all parts of the cabinet

B. Equipment cabinets shall be provided with the following accessories:
1. Front 78% perforated panel hinged door with key lock.
2. Rear 78% perforated panel split hinged doors with lock.
3. Locking system: locks for front and rear doors shall be two-point latching locks and shall be keyed identically for front and rear lock. All locks for cabinets for each user ground shall be keyed alike but different between user groups.
4. Leveling feet and any accessories required to be able to bolt the cabinet to the floor with 1/2-inch screws or rods.
5. Vertical wire managers covering the full height of the rack rails. Two in the front. Vertical wire managers shall be selected as recommended by equipment cabinet manufacturer to

avoid obstructions to rack rails or doors. Vertical wire managers shall have brush openings to run cables between front and back of cabinet and shall have all openings sealed to avoid air leakage between front and back.

6. Steel top exhaust duct, made of two separate sections to allow adjusting the height. Installer shall confirm final ceiling height in the room and order these ducts in a length as to provide adjustment for no less than 2-inches above and below of the final ceiling height. Top exhaust section shall have a rubber gasket to allow for good seal in ceiling imperfections.
7. Filler panels: For all racks with SCS installer provided equipment, all un-used rack spaces shall be covered with filler panels to avoid any air flow between front and back of cabinet. For all racks with owner provided equipment, the installer shall provide no less than 50% of all rack spaces in all racks with filler panels to prevent air flow between front and back of cabinet. All cabinets with no equipment installed at the end of the project shall have the front door wrapped with plastic wrap to prevent any air flow through the cabinet.
8. Air dam: The cabinet shall be provided with an air dam blocks airflow around the sides and top of the equipment mounting space, so cold air passes through equipment and hot air does not re-circulate around equipment. Any other additional type of seal required to prevent air flow from the front of the cabinet to the back shall be provided.
9. PDU bracket: PDU brackets shall be provided in each cabinet according to the number of vertical PDUs programmed to be installed in each cabinet. See drawings for quantities. These brackets shall be selected by the SCS installer as to match the support holes of the PDU selection for each cabinet.
10. All cabinets with equipment installed with substantial number of cables terminating in the rear of the equipment, such as audio/visual systems and security systems shall be provided with enough cable lashing metal brackets to strap all cables to the frame for proper organization and support.
11. Ground bar: all cabinets shall be provided with a copper vertical ground bar covering the complete length of the rack rails. The ground bar shall be 1/8-inch thick and 1-inch wide with threated holes 1032 mounted to the cabinet using nylon insulation washers

C. Required equipment cabinet certifications: Complaint with ANSI/ECA 310-E and UL 2416 listed

D. Airflow re-director: The manufacturer of the equipment cabinet shall offer an air flow re-director kit for the type of cabinet selected for this project to allow for changing air flow direction of equipment designed for side-to-side ventilation. The SCS installer shall provide air flow re director kits for all cabinets in the plans with Core switches or network equipment.

E. Field cuts or openings. Any cabinets with field cuts or perforations will be rejected and the SCS installer shall provide a new cabinet to remedy the condition.

F. Approved manufacturers:
1. Belden
2. Chatsworth Products Inc.
3. Eaton
4. Great Lakes
5. Middle Atlantic Products
6. Ortronics
7. Panduit
8. Approved equal

2.19 QUAD POST RACKS

A. Whenever indicated in the design drawings quad post racks shall be provided as shown. Quad post racks shall be made of aluminum or welded steel frames and shall have a powder coat finish. Quad post racks shall have the following specifications:
   1. Depth adjustment: rack rails shall be adjustable from 12.5-inch to 36-inch in depth, independent of the structural members allowing racks rails adjustment after racks are anchored.
   2. Height: Equipment cabinet shall provide a usable height between 44 and 45 RU.
   3. Rack rails type: standards EIA/ECA 19” square holes located in the front and back of rack. Rack rails shall have RU marked and labeled.
   4. Rack screw type: cage nuts clipped to rack rails. Nuts and screws shall be provided for all slots in rack rails and shall be made of steel threaded as #10-32.
   5. Weight capacity: UL listed for 1200 lb. or more.

B. Quad post racks shall be provided with the following accessories:
   1. Base dust covers that prevent accumulation of dust and debris in rack base.
   2. Cable runway mounting brackets to support cable runway installed above racks
   3. Isolation pads.
   4. Grounding kit.
   5. Ground bar: all cabinets shall be provided with a copper vertical ground bar covering the complete length of the rack rails. The ground bar shall be 1/8" thick and 1" wide with threated holes 1032 mounted to the cabinet using nylon insulation washers
   6. End panels to support vertical wire managers at the end of each rack row.

C. Front vertical wire managers shall be provided in between all racks and at both ends of rack rows covering from top to bottom of each rack. The specifications of those wire managers shall be:
   1. Style: Metal cage with dual hinged door cover cage with latches.
   2. Sides: single sided wire manager (front only).
   3. Capacity: Usable cross-sectional area shall be minimum: 130 sq-in.
   4. Accessories: whenever cable manager supports the use of spools inside the unit, spools shall be provided at all locations in the unit.

D. Rear vertical wire managers shall be provided in between all racks and at both ends of rack rows covering from top to bottom of each rack. The specifications of those wire managers shall be:
   1. Style: Metal cage with dual hinged door cover cage with latches.
   2. Sides: single sided wire manager (rear only).
   3. Capacity: Usable cross-sectional area shall be a minimum of: 130 sq-in.
   4. Accessories: whenever cable manager supports the use of spools inside the unit, spools shall be provided at all locations in the unit.

E. Approved manufacturer:
   1. Match selection for Equipment Cabinets.

2.20 TWO POST RACKS (CHANNEL RACKS)

A. Whenever indicated in the design drawings two post racks shall be provided as shown. Two post racks shall be made of aluminum or welded steel frames and shall have a powder coat finish. Two post racks shall have the following specifications:
   1. Height: Equipment cabinet shall provide a usable height between 44 and 45 RU.
   2. Channel depth: 3-inches ± 1”

3. Rack rails type: standards EIA/ECA 19” located in the front and back of rack. Rack rails shall have RU marked and labeled.
4. Rack screw type: #12-24 threaded rack rails. Screws shall be provided for all openings in rack rails and shall be made of steel.
5. Weight capacity: UL listed for 1000 lb. or more.

B. Two post racks shall be provided with the following accessories:
1. Cable runway mounting brackets to support cable runway installed above racks
2. Isolation pads
3. Grounding kit.
4. Ground bar: all cabinets shall be provided with a copper vertical ground bar covering the complete length of the rack rails. The ground bar shall be 1/8" thick and 1" wide with threated holes 1032 mounted to the cabinet using nylon insulation washers
5. End panels to support vertical wire managers at both ends of each rack row.

C. Front vertical wire managers shall be provided in between all racks and at both ends of rack rows covering from top to bottom of each rack. The specifications of those wire managers shall be:
1. Style: Metal cage with dual hinged door cover cage with latches.
2. Sides: single sided wire manager or dual side wire manager.
3. Capacity: Usable cross-sectional area shall be minimum: 130 sq-in.
4. Accessories: whenever cable manager supports the use of spools inside the unit, spools shall be provided at all locations in the unit.

D. Rear vertical wire managers shall be provided in between all racks and at both ends of rack rows covering from top to bottom of each rack. The specifications of those wire managers shall be:
1. Style: Metal cage with dual hinged door cover cage with latches.
2. Sides: single sided wire manager (rear only) or if dual side wire front managers are included, no need for rear vertical wire managers.
3. Capacity: Usable cross-sectional area shall be minimum of: 130 sq-in.
4. Accessories: whenever cable manager supports the use of spools inside the unit, spools shall be provided at all locations in the unit.

E. Approved manufacturer:
1. Match selection for Equipment Cabinets.

2.21 WALL MOUNTED RACKS

A. Whenever indicated in the drawings, wall mounted racks shall be provided as indicated. Wall mounted racks shall be made of aluminum or welded steel frames and shall have a powder coat finish. Wall mounted racks shall have the following specifications:
1. Style: Swing out reversible cabinet frame with reversible swing out front panel.
2. Height: As indicated in design drawings.
3. Depth: it is the responsibility of the SCS installer to select a cabinet that will fit all equipment to be installed in the racks, either provided under this contract or by the owner. Approval of submittals by the A&E does not relief the SCS installer of the responsibility of verifying this requirement. Racks that will not fit the equipment shall be replaced at no additional cost to the owner.
4. Rack rails type: standards EIA/ECA 19-inch located in the front. Rack rails shall be adjustable and shall have RU marked and labeled.
5. Rack screw type: #12-24 threaded rack rails. Screws shall be provided for all openings in rack rails and shall be made of steel.

6. Weight capacity: UL listed for 200 lb. or more.

B. Wall mounted racks shall be provided with the following accessories:
1. Front perforated panel Plexiglas door with lock. Door shall be hinged and shall be reversible.
2. Fan kit composed of two (2) 4-inch fans and fan guards.
3. Additional rack rails shall be provided when equipment with a different of 2-inch in front depths are to be mounted in the rack. Front depth is defined as the distance between the front of the rack ears and the front of the equipment, including space for connectors or bend radius of cables.
4. Grounding kit.
5. Ground bar: all cabinets shall be provided with a copper vertical ground bar covering the complete length of the rack rails. The ground bar shall be 1/8" thick and 1" wide with threated holes 1032 mounted to the cabinet using nylon insulation washers.

C. Approved manufacturer:
1. Match selection for Equipment Cabinets.

2.22 MEDIA CONVERTERS

A. General. When telecommunications outlets exceed distance limitations to pass testing requirements, the SCS installer shall provide media converters and fiber optics connectivity to overcome this problem. The media converters shall have the following specifications:
1. Power: All power for media converters in the field end (i.e., camera or WAP side) shall be powered from the Telecom room side using a hybrid cable. Local power adapters for media converters are not acceptable in the field end.
2. Cabling: A composite cable shall be used for these devices. This composite cable shall have a minimum of 2 strands of fiber optics and 1 pair of copper cable AWG-12 for the remote end power. The quantity of fiber strands for this cable shall be as required by the type of media converter used. The fiber types shall be as required by the media converter. The cable jack for this composite cable shall be selected as required for the application. Any cables being pulled underground shall have a water blocking jacket.
3. Port count: Media converters with 1 port or 4 ports are acceptable.
4. PoE support: Media converters shall support PoE without the need of an external power adapter and the field end.
5. Fiber connection speed. Media converters shall support 1GB connections in the fiber port.
6. PoE capacity: Media converters shall support PoE+ (30W) for all outdoor cameras and all WAPs. Media converter shall support 15,4 W for all other PoE devices.
7. Power supplies: Media converters shall be provided with the corresponding power supplies at the telecom room.

B. Basis of design: Berk-Tek One Reach solution or similar.

2.23 CABLE TIES

A. Cable ties shall be used at different locations of the project but with the same goal of producing a neat and organized installation. Cable ties shall be used to support cables to j-hooks (when j-hooks are allowed in the project) to organize cables in ladder trays, D-rings, and cable trays, to support cables to wire managers including managers behind patch panels, to bundle cables, organize patch cords, etc.

B. To support and organize all horizontal cabling and inside premise backbone cables, only the following types of cable ties shall be used:
   1. Hook and loop style, re-usable with Velcro no smaller than 1/2-inch width.
   2. Pre-perforated rolls of re-usable ties with Velcro no smaller than 1/2-inch width.
   3. Straps of other soft materials with cinch rings that allow for re-use of the cable ties in widths no smaller than 0.85-inch.

C. Nylon based cable ties (re-usable or not) can only be used to support and organize the following types of cables:
   1. Outside plant fiber and copper backbone cables.
   2. Inside premise fiber optic backbone cables with interlock armors.
   3. Grounding conductors

D. Nylon based cable ties shall never be used to support or organize any type of horizontal cables or inside premise fiber optic backbone cable without armor.

E. All cable ties to be used in outdoor environments shall be made of weather resistant Acetal. Outdoor cable ties used for aerial cable lacing shall be in compliance with Telcordia TR-TSY-000789 standard.

F. All cable ties shall be selected in lengths as to properly secure the bundle of cable being supported.

G. All cable ties to be used in air handling spaces, such as above ceiling and under raised floor areas, shall be UL listed for the use in those environments.

H. Approved manufactures:
   1. Ortronics
   2. Panduit
   3. Approved equal

2.24 IDENTIFICATION AND LABELING TAGS

A. SCS installer shall follow labeling materials indicated in specification section 270010.

PART 3 - EXECUTION

3.1 INSTALLATION PRACTICES.

A. GENERAL. All installation requirements indicated in specification section 270010 shall be followed.

B. WORKMANSHIP. All work shall be completed by the SCS installer in a neat and workmanlike manner. The use of all BICSI standards and recommendations for installation shall be followed as the benchmark for workmanship.

C. CABLE LENGTHS. It is the SCS installer’s responsibility to plan the cable routing in the cable tray and other raceways as to minimize all cable runs to be able to stay under the 90-meter (295-feet) length limitation for Horizontal Cabling. All cable runs exceeding the wiring distance, due to raceways run in not the most efficient way to minimize distance, shall be re-run with horizontal fiber optic cables and with media converters, at no extra cost to the owner.

D. WIRE MAPPING. All terminations of 4-pair horizontal cabling in this project and terminations of all 4-pair patch cords shall be per T568B standard.

E. FIBER OPTICS TERMINATION POLARITY. All fiber optic cables (horizontal or backbone) terminated in duplex style adapter panels shall be connected in a cross-over polarity configuration. As an example, if fibers 1 and 2 are terminated in one end in positions A and B respectively in one side of the cable, the same strands shall be terminated in B and A positions in the other side of the cable.

F. POLARITY FOR FIBER OPTICS ARRAY CONNECTORS. Array connectors and cassettes for this project shall use Method C polarity system as outline in TIA-568.B.1.

G. LOCATION OF HORIZONTAL TERMINATIONS. In a multi-story facility with telecommunications room in every floor, all horizontal drops, whether terminated in the wall or in floor boxes shall be terminated in the same floor telecommunications room as the location of the final outlet.

H. CABLE BUNDLES. In suspended ceiling and raised floor areas if duct, cable trays or conduits are shown on the contract drawings, the SCS installer shall bundle, in bundles of 40 or less, horizontal wiring with cable ties snug, but not deforming the cable geometry. The cable bundling shall be supported via "CLIC" fasteners in TR's and non-plenum areas and J-hooks in ceiling spaces. The SCS installer shall adhere to the manufacturers' requirements for bending radius and pulling tension of all cables.

I. CLIC FASTENERS: Horizontal cables shall be suspended by "CLIC" fasteners with cable inserts in TR's on the plywood area where ladder tray or rack management is not available per the design documents. Listings: "CLIC" fasteners shall be in accordance with NEC and BICSI standards. Above the plywood area J-hooks or D-rings should be used.

J. FIRE STOP PROTECTION: Sealing of openings between floors, through rated fire and smoke walls, existing or created by the SCS installer for cable pass through shall be the responsibility of the SCS installer. Sealing material and application of this material shall be accomplished in such a manner, which is acceptable to the local fire and building authorities having jurisdiction over this work. Creation of such openings as are necessary for cable passage between locations as shown on the drawings shall be the responsibility of the SCS Installer's work. Any openings created by or for the SCS installer and left unused shall also be sealed as part of this work. Penetration rating shall equal structure rating.

K. NEW MATERIALS: All components, wiring and materials to be used for the installation of the SCS shall be new and free of defects. Used components, wiring and materials shall only be used when specifically indicated in the design drawings.

L. DAMAGE: The SCS Installer shall be responsible for any damage to any surfaces or work disrupted as a result of his work. Repair of surfaces including painting and ceiling tile replacement shall be included as part of this contract.

M. AVODING EMI: To avoid EMI, all pathways shall provide clearances of at least 4-feet from motors or transformers; 1-foot from conduit and cables used for electrical-power distribution; and 5-inches from fluorescent lighting. Pathways shall cross perpendicular to fluorescent lighting and electrical-power cables and conduits. The SCS installer shall not place any distribution cabling alongside power lines, or share the same conduit, channel, or sleeve with electrical apparatus.

N. WORK EXTERNAL TO THE BUILDING: Any work external to the confines of this building as shown on the drawings shall be governed by the provisions of this specification.

O. DEMOLITION. Any task part of the installation of the SCS requiring relocation, rerouting and/or demolition shall be done according to the following requirements:
1. Coordination: Prior to any deactivation and relocation or demolition work, arrange a conference with the Architect and the Owner's representative in the field to inspect each of the items to be deactivated, removed, or relocated. Care shall be taken to protect all equipment designated to be relocated and reused or to remain in operation and be integrated with the new systems.
2. Provisions: All deactivation, relocation, and temporary tie-ins shall be provided by the SCS installer. All demolition, removal, and the legal disposal of demolished materials of system designated to be demolished shall be provided by the SCS installer.
3. All Existing Voice/Data cables and connecting hardware not to be used after the new installation is complete and within the areas where work is required as part of this project shall be removed by the SCS installer. All existing cables to be left for future use if indicated by the owner shall be tagged for that purpose.
4. Owners Salvage: The Owner reserves the right to inspect the material scheduled for removal and salvage any items he deems usable as spare parts.
5. Phasing: The SCS installer shall perform all work in phases as directed by the Architect to suit the project progress schedule, as well as the completion date of the project.

P. ICONS. Faceplates, jacks, or patch panels with inserts for icons shall be filled with icons when unit capable of accepting icons. Icons in the work area side (outlet) shall match the color of the horizontal cabling. Icons for patch panels shall match the color of the horizontal cabling.

Q. BLANK INSERTS AND PANELS. All telecommunications outlets with faceplates or mounting frames with unused terminations shall be plugged with blank inserts or panels. Blank inserts shall match the color of the faceplate or mounting frame. No more than one blank module shall be required for each faceplate. All unused ports in the FODC enclosures for adapter panels shall be filled with blank adapter panels.

R. PATCH PANEL AND FODC SEPARATION: Horizontal cables shall be terminated in separate patch panels according to the use of the cable. Each series of patch panels or FODC for a specific use shall have at least 20% spare capacity of ports. Patch panels of the same use shall be mounted consecutive in the equipment cabinets or racks. The following separation for patch panels and FODCs shall be provided:
1. Cables for Wireless Access Points (WAPS) shall be separated from cables for any other purpose.
2. Cables for surveillance cameras shall be separated from cables for any other purpose.
3. Cables for voice drops shall be separated from cables for data drops.
4. Cables for any other specialty systems like security systems, nurse call systems or others shall all be terminated in separate patch panels from any other cables.
5. Horizontal fiber optic cables shall be terminated in separate FODC from fiber optics backbone cables.
6. Single mode fiber optic backbone cables shall be terminated in separate FODC from multimode fiber optic backbone cables.

S. SUPPORTS FOR REAR OF PATCH PANELS. All patch panels for horizontal cables shall be provided with a rear support bar to hold the cable and to provide strain relief. At a minimum one rear support bars shall be provided for each two (2) rows of twenty-four (24) connectors.

T. HORIZONTAL WIRE MANAGERS. Horizontal wire managers shall be provided following these criteria:
1. At least one above and below each straight (flat) patch panel.

2. At least one top and bottom of each series of angled or curved patch panels.
3. At least one above and below any network switches.
4. At least one below any rack mounted termination block.

U. CROSS OVER WIRE MANAGERS. Cross over wire managers shall always be used with angled or curved patch panels. One cross over wire manager shall always be installed in the middle of each rack at the same height on every rack.

V. PATCH CORD QUANTITY, COLOR AND LENGTHS. Copper and fiber optics patch cords shall be provided per following chart. All percentage calculations shall be rounded off to the nearest integer number.

TYPE	QTY	COLOR JACKET	LEGTH
4-pair at work area outlet	One for 90% of all 4-pair horizontal cables in the project	Match horizontal cable color jacket specified.	30% 8', 50% 10' and 20% 14'
4-pair at WAP location	One for 100% of all 4-pair horizontal cables for WAPS in the project + 10% spare	Match horizontal cable color jacket specified.	The SCS installer shall field verify all lengths to match location of WAPS selected by owner or wireless survey. For pricing purposes use 12'
4-pair at Surveillance camera	One for 100% of all 4-pair horizontal cables for cameras in the project +10%	Match horizontal cable color jacket specified.	The SCS installer shall field verify all lengths to match location of cameras. For pricing purposes use 12'
4-pair at patch panel side (excluding surveillance cameras and WAPS)	One for 90% of all 4-pair horizontal cables in the project	Match horizontal cable color jacket specified. .	For pricing purposes use: 40% 6', 40% 8', 20% 12'. SCS installer shall field verify these percentages to provide more accuracy.
4-pair at patch panel side (surveillance cameras and WAPS)	One for 100% of all 4-pair horizontal cables in the project +10%	Match horizontal cable color jacket specified. .	For pricing purposes use: 40% 6', 40% 8', 20% 12'. SCS installer shall field verify these percentages to provide more accuracy.
2-strand fiber optics at FODC.	One for 100% of all horizontal 2-strand fiber cables and one for 83% of all fiber strands of backbone cables in the project. For example, a 24-strand cable shall require 20-2-strand patch cords or 10 for each side of the cable	Per fiber type	For pricing purposes use: 20% 6', 60% 10'. 20% 14' SCS installer shall field verify these percentages to provide more accuracy.

W. CABLE SLACK. Cable slack shall be provided for all cables in the project following this guideline:
1. At each work area outlets, all horizontal cables shall have 12-inches of slack.
2. At the telecom room side all horizontal cables shall have at least 6-feet neatly organized on the wall using a figure 8 configuration or a non-loop shaped arrangement with Velcro straps.

3. Backbone cables at termination points shall have at least 15-feet of slack neatly organized on the wall using a standard loop and Velcro straps.
4. Outside plant backbone cables run through in-ground pull boxes greater than 24”x24” shall include one service loop inside the box.

X. BEND RADIUS. Installation of Fiber Optic Cables shall be in accordance with ANSI/TIA-568C guidelines and cable manufacturer specifications. Bend radius parameters shall be followed for load and no-load conditions. Cable installation and terminations that do not comply shall be replaced by the SCS installer. If no recommendation is specified by cable manufacturer, at least the following criteria shall be meet:
1. The bend radius for intrabuilding 2- and 4-fiber horizontal optical fiber cable shall not be less than 1-inch under no-load conditions. When under a maximum tensile load of 222 N (50lb. per foot), the bend radius shall not be less than 2-inches.
2. The bend radius for intrabuilding optical fiber backbone with fiber counts above four (4) shall not be less than 10 times the cable outside diameter under no-load conditions and no less than 15 times the cable outside diameter when the cable is under tensile load.
3. The bend radius for interbuilding optical fiber backbone shall not be less than 10 times the cable outside diameter under no-load conditions and no less than 20 times the cable outside diameter when the cable is under tensile load up to the rating of the cable, usually 2670 N (600lbf).

Y. INNERDUCT. Innerduct shall be provided from end to end of a raceway system under the following conditions:
1. Inside underground conduits as indicated in design drawings.
2. For horizontal fiber optic cable or inside premise fiber optics backbone cables without interlocking armor when routed through cable trays, ladder trays, vertical conduit sleeves or conduits larger than 3-inch. This requirement is usually not indicated in the drawings but indicated only in this specification.

Z. SCS PROTECTION DURING CONSTRUCTION. The SCS installer shall protect all SCS materials from damage during construction. Racks shall be covered with fabric or plastic after mounting to prevent dust, debris and other foreign materials having contact with SCS devices. The SCS installer shall protect at all times all fiber optic and copper cables from damage during installation. All cables shall maintain the physical integrity as manufactured for testing and delivery to the owner. All damaged cables shall be replaced at no additional cost to the owner.

AA. CABLE BONDING. Shielded cables or cables with metal strength or protection members (like interlocking armor) shall be bonded to the telecommunications grounding system as indicated in specification section 270526.

BB. RACK INSTALATION. All racks shall be installed leveled and plumbed. Four post racks and two post racks shall be anchored to the floor and shall be installed with isolation pads. Equipment cabinets shall be leveled using the leveling feet unless design drawings specifically indicate to leave them on the casters.

CC. RACK BONDING. All equipment cabinets and racks shall be bonded to the telecommunication grounding system as indicated in specification section 270526

3.2 IDENTIFICATION AND TAGGING

A. General: Identification and tagging of SCS components shall be executed by the SCS installer. At a minimum identification and tagging shall be provided for the following components of the system:
   1. All horizontal and backbone cables at both ends of the cable in the cable jacket. Labels on each side shall be different indicating the location of the other side of the cable
   2. All faceplates indicating all jacks terminated in the faceplate.
   3. All patch panels.
   4. All racks
   5. All termination blocks
   6. All telecommunication rooms and outdoor enclosures.
   7. All interbuilding backbone cables inside in ground pull boxes outside of the building shall have a visible label in each box they pass through.

B. The SCS installer shall follow the owner provided identification system. If owner does not have any preference or standard the SCS installer shall provide a system for approval of the A&E and the owner as indicated in the submittal paragraph of this specification. The identification system shall follow the ANSI/TIA 606-C standard.

3.3 TESTING OF COPPER CABLING

A. General: Horizontal and backbone cabling shall be verified in accordance with ANSI/TIA-568-C, Cabling Transmission Performance and Test Requirements.

B. For all 4-pair copper cabling terminated for the use of building systems or system provided under the contract, such as surveillance cameras, emergency phones, elevator phones, WAPs, Access control panels and building automation equipment, the required test shall be a Channel style test. This means copper test shall be done with patch cords that will be used for permanent installation of those devices.

C. For all 4-pair copper terminated for the use in work areas such as computers and phones, the test method selected for all 4-pair copper cabling is a permanent link style test. Permanent link test is defined as a test that does not include the patch cords to be used in the project.

D. General: In the event the A&E elects to be present during the tests, provide notification to the engineer two weeks prior to testing.

E. General: The installer’s RCDD shall sign off on all copper and fiber optic cable test results, indicating that he/she was in responsible charge of all cable testing procedures and that all cables were tested in compliance with the contract documents and met or exceeded the requirements stated herein.

F. Testing Equipment: Tester shall be as manufactured by Agilent, Fluke, IDEAL or Wavetek. Tester shall be 100% Level III compliant with ANSI/TIA 568C specifications for testing of the CAT6 cabling. No tester will be approved without meeting these requirements.

G. Each jack in each outlet shall be tested at a minimum to the manufacturer’s performance of the cable to verify the integrity of all conductors and the correctness of the termination sequence. Testing shall be performed between work-areas and the equipment rack patch panel. Prior to testing UTP runs, the tester shall be calibrated per manufacturer guidelines. The correct cable NVP shall be entered into tester to assure proper length and attenuation readings.

H. Documentation of cable testing shall be required. The SCS installer shall provide the results of all cable tests in electronic format (final results in PDF format and raw data). Each test page shall be separated by standard page break (one test per page). The test results shall include: sweep tests, continuity, polarity checks, wire map, Attenuation, NEXT, PSNEXT, FEXT, PSFEXT, ELFEXT, PSELFEXT, ACR, Return Loss, Delay Skew, and the installed length. Cables not complying with the ANSI/TIA 568C tests results shall be identified to the A&E for corrective action which may include replacement at no additional expense to the Owner. All identification names of the cables used in the test shall match the labeling system approved for the project and the corresponding shop drawings.

I. Any Fail, Fail*, Pass* or WARNING test result yields a Fail for the channel or permanent link under test. In order to achieve an overall Pass condition, the result for each individual test parameter must be passed. All test results shall come from a tester with the permanently enabled marginal reporting feature.

J. Test results shall show and comply with the margin claimed by the manufacturers over CAT6 permanent link specifications on all transmission parameters across the entire frequency range as shown on the manufacturer's cut sheets.

K. General: Copper multipair backbone cabling shall be tested for length, continuity, polarity checks and wire map. The SCS Installer shall provide the results of all Copper Riser cable tests in electronic format. The use of pigtails or special harness could be required to properly test these cables.

L. Trained technicians who have successfully attended an appropriate training program and have obtained a certificate as proof thereof shall execute the tests.

M. All 4-pair patch cords shall be factory tested only.

3.4 TESTING OF FIBER OPTICS CABLING

A. General: Horizontal and backbone cabling shall be verified in accordance with ANSI/TIA 568-C and the addendum for fiber optic testing.

B. General: In the event the Engineer elects to be present during the tests, provide notification to the engineer two (2) weeks prior to testing.

C. Cleanness: All fiber optics connector shall be cleaned properly before any testing and after testing. Proof of cleanness shall be required during the acceptance test for the SCS by the A&E. SCS installer shall have available during this test a 200X microscope or a video probe to demonstrate the cleanness of the randomly selected connectors by the A&E.

D. End to End Attenuation Test: The SCS installer shall perform end-to-end attenuation testing for each multimode fiber at 850 nm and 1300 nm from both directions for each terminated fiber span in accordance with ANSI/TIA-526-14A (OFSTP 14) and single-mode fibers at 1310 nm and 1550 nm from both directions for each terminated fiber span in accordance with ANSI/EIA-526-7 (OFSTP 7). A one jumper reference shall be used for all testing. For spans greater than 90 meters, each tested span must test to a value less than or equal to the value determined by calculating a link loss budget. For horizontal spans less than or equal to 90 meters, each tested span must be < 2.0 dB. When calculating the link loss budget for spans greater than 90 meters use the values listed below. End to end attenuation shall be done with a Level II meter using a meter and light source equipment (also known as main and remote unit):

E.

ATTENUATION DUE TO	FIBER TYPE	MAX. ATTENUATION
Terminating connectors. Field terminated options	All fiber types	0.75 dB per connector
Terminating connectors, pre-term fibers	All fiber types	No more than 0.2 dB additional to total dB loss measured at the factory in report sent by cable manufacturer.
Splices	All fiber types	0.3 dB per splice
Distance	OM1 (850nm/1300)	3.4 dB /1.0 dB per Km.
Distance	OM2, OM3 and OM4 (850nm/1300)	3.0 dB /1.0 dB per Km.
Distance	OS1, OS2, and OS3 (1310 nm/1383 nm/1550 nm)	0.65 dB /0.65 dB/ 0.5 dB per Km.

F. OTDR Test. Additional to end to end attenuation test, all fiber optic cables shall be tested with a Level III OTDR equipment for the following conditions:
1. Each known event (connector/splice) insertion loss at both windows for each fiber type (850/1300 nm for multimode and 1310/1550 nm for single mode). All events shall pass maximum allowed insertion loss for the event type as indicated in table above.
2. Reflective events (connections) shall not exceed:
   a. 0.75 dB in optical loss when bi-directionally averaged
   b. -35 dB Reflectance for multi-mode connections
   c. -40 dB reflectance for UPC single-mode connections
   d. -55 dB reflectance for APC single-mode connections
3. Non-reflective events (splices) shall not exceed 0.3 dB.
4. Estimated distance for multiple strands of the same cable shall not vary more than 1% between strands.
5. Cable signature in the form of traces along the complete distance of the cable. Unexplained cable reflections shown in the OTDR shall require the installer to submit letter explaining such events and pictures of cable conditions in the locations where the unexplained events are located to demonstrate cable has not been kinked or damaged during installation.

G. OTDR Test conditions. All OTDR testing shall be performed with the following conditions:
1. Use a launch cable and a tail cable in accordance with fiber type being tested and requirements indicated by OTDR equipment manufacturer.
2. Launch and tail cables shall be products sold by testing equipment manufacturer and not field made cables.
3. Launch and tail cables shall be selected according to the type of connector being tested such as APC or UPC type connectors.
4. Use launch compensation mode during the test to subtract the effects of the launch and tail cables.
5. Test from one direction only, unless the presence of “gainers” are spotted during the test. In such case the installer shall test in both directions and adjust the test equipment to average measurements from both directions.
6. The SCS installer shall verify the backscatter coefficient use in the test to make sure it matches the coefficient of the cable being tested.

H. OTDR Testing Equipment used on this project shall have the specifications indicated in this following table:

SPECIFICATION	MULTIMODE	SINGLE MODE
Wavelengths	850 nm ±10 nm 1300 nm +35 / -15 nm.	1310 nm ±25 nm. 1550 nm ±30 nm.
Event Dead Zone. Measured at 1.5 dB below non-saturating reflection peak with the shortest pulse width. Reflection peak < -40 dB for mm and < -50 dB for sm.	850 nm: 0.5 m typical 1300 nm: 0.7 m typical	1310 nm: 0.6 m typical 1550 nm: 0.6 m typical
Attenuation Dead Zone. Measured at ± 0.5 dB deviation from backscatter with the shortest pulse width. Reflection peak < -40 dB for mm. and < -50 dB for sm.	850 nm: 2.2 m typical 1300 nm: 4.5 m typical	1310 nm: 3.6 m typical 1550 nm: 3.7 m typical
Pulse Widths (nominal)	850 nm: 3, 5, 20, 40, 200 ns. 1300 nm: 3, 5, 20, 40, 200, 1000 ns.	3, 10, 30, 100, 300, 1000, 3000, 10000, 20000 ns
Loss Threshold Setting	0.01 dB to 1.5 dB Adjustable in 0.01 dB increments	0.01 dB to 1.5 dB Adjustable in 0.01 dB increments

I. The Test Report for each fiber strand shall include the following information:
1. Calculated Loss Budget for each optical fiber link (see attenuation table above)
2. Cable/strand ID matching shop drawings labeling system.
3. Name of technicians who performed the test.
4. Date and time the test was performed.
5. Measurement direction (from/to)
6. Jumper reference set up date/time and attenuation value
7. Equipment model and serial number used and calibration date.
8. End to End Attenuation Loss Data for each optical fiber link
9. OTDR Traces, one page per strand. Expand chart to cover most of the page
10. Each event loss data and test limits used, including test limit file date used.

J. For fiber optic cables with factory terminated connectors or pre-terminated pig-tails, The SCS installer shall also provide the test results performed at the factory for fiber optic cables with factory terminated connectors to compare with the field test done by the SCS installer. No significant variation between the factory test results and the field test results shall be encountered.

3.5 SYSTEMS WARRANTY AND SERVICE

A. SCS Installer shall follow all warranty and service requirements indicated in specification section 270010.

B. Warranty: The SCS shall be required to be under the manufacturer's warranty program for a complete channel configuration including cable, jacks, patch cords and patch panels and include cabling specifically approved for the channel configuration with the manufacturer's components. Manufactures shall provide the warranty worst-case performance data for the installed cabling system, and the performance data indicated in the warranty documents/certificate.

C. A twenty-five (25) year warranty available for the Structured Cabling System (Fiber optics and copper infrastructure) shall be provided for an end-to-end channel model installation which covers applications assurance, cable, connecting hardware and the labor cost for the repair or replacement thereof.

D. Additional features of the warranty shall include:
   1. That the SCS installed system complies with the margin claimed by the manufacturer above the category 6 channel specifications on all transmission parameters across the entire frequency range of 1-600 MHz as shown on the manufacturers catalogs and literature.

3.6 SPARE PARTS

A. As part of this contract the SCS installer shall provide the following spare parts.
   1. Ten (10) modular SCS jacks.
   2. Five (5) faceplates
   3. Two (2) faceplates with support post.
   4. Ten (10) fiber optic connector of each type used in the project.

B. As part of this contract the SCS installer shall provide the following tools:
   1. Two (2) modular SCS jacks termination tools when modular SCS jacks required a manufacturer specific tool.
   2. One (1) punch down tool with a 110 blade and one 66 blade.
   3. One electric (1) cable finder.

3.7 ENGINEER'S FINAL ACCEPTANCE TEST

A. SCS Installer shall follow all requirements for final acceptance indicated in specification section 270010.

B. The Engineer's final acceptance test will not include testing of structured cabling components but could include verification of cleanness of fiber optic connectors.

3.8 TRAINING AND INSTRUCTION

A. Training shall only be done after all testing; identification process and commissioning have been completed and passed as indicated in this specification. Any training done prior to final acceptance will not be accounted for the formal training requested and the SCS installer shall re-do all training after the final acceptance test is passed, at no additional cost to the Owner.

B. SCS Installer shall follow all training requirements indicated in specification section 270010

C. The training for the SCS shall include the following topics:
   1. Detail explanation of the identification system.
   2. A walkthrough of all spaces and locations where terminations have been done in the project.

3.9 AS BUILT DOCUMENTS AND PROJECT CLOSE OUT

A. The SCS shall follow all requirements for as-build and close out documents indicated in specification section 270010

B. The following are additional requirements supplementing the information provided in specification section 270010:
   1. Provide the Warranty certificate issued by the manufacturer of the SCS infrastructure.
   2. The installer's RCDD shall affix his/her stamp to the as-built drawings, indicating that he/she has reviewed and approved the drawings as being complete, accurate, and representative of the system as actually installed.
   3. As built drawings inside each telecom room. The SCS installer shall plot all as-built drawings and locate them inside each of the telecom rooms in the project. Each telecom room shall have the as-built drawings of the areas being served from that room. Each drawing shall be placed inside a clear vinyl document protector the size of the actual design drawing and affixed to a wall/plywood in the telecom room. The document protector shall be re-usable and shall allow the owner to replace the drawings as changes are done to the SCS infrastructure in the future. Without this information, substantial use of the system will not be provided to the installer.
   4. The SCS installer shall provide Excel software spreadsheet that defines the telecommunications outlet number, location, number of voice, data and special jacks. This database shall also provide the outlet patch panel connection to the riser/inter-floor cable, equipment, and telephone company demarcation circuit pairs as part of the as-built documentation.
   5. Electronic copies of all test results (copper and fiber). Electronic copies shall include raw data files and PDF files with results. PDF files shall be organized the following way:
      a. All copper cables for cables terminating in one telecom room in a single PDF file with the name equal to the label used in the shop drawings for the telecom room where the cables are terminated.
      b. All attenuation and OTDR test for all strands of a single cable shall be in one PDF file with the name corresponding to the Cable ID used in the shop drawings.

END OF SECTION 27 10 00

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SECTION 27 41 00
AUDIO/VISUAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. General: The General Requirements, Conditions of the Contract, these Specifications, Drawings, Addenda and Contract Modifications (the Contract Documents), and definitions of legal entity (such as Contract, Installer, Engineer, Owner, etc.) shall apply to the work of this specification section.

B. Supplemental: Refer to the specification sections identified below for additional requirements, which are supplemented by this section.

1. 27 00 10 Technology General Provisions
2. 27 05 28 Raceways for Technology
3. 27 10 00 Structured Cabling System
4. 27 05 26 Grounding and Bonding for Communication Systems

1.2 SCOPE OF WORK (SOW)

A. General: Refer to the requirements of the related documents identified in Part 1.1 of this specification, for scope of work requirements, which are supplemented by this section. This shall constitute the basis for the “Scope of Work” for this specification.

B. System: The goal of the project is to provide a finished, complete audiovisual system with the functionality, capacity, and operability, as described in the Contract Drawings and specifications herein. The finished, complete system shall serve as a vehicle for the transport of associated system signals from designated origination points to equipment interfaces and/or identified distribution points per the Contract Documents. The scope of work for the AVS installer shall include, but not limited to the following tasks:

1. Preparation of shop drawings, submittals, training, and as-built information for the system.
2. Procurement, installation, and warranty of all AVS hardware including projectors, flat panel displays, mounts for displays, signal transceivers, players, switchers, servers, etc.
3. Procurement, installation, and warranty of all AVS cabling and wiring, including support system, and fire stopping for all low voltage cabling part of the AVS.
4. Programming labor of the AVS, including initial software set up, software registration, and initial data input, unless otherwise noted in this specification section.
5. Attend project plan meetings with the Owner and the Consulting Engineer (A&E) to fine tune data interchange details, network configuration and other user requirements:
6. Provide training and close out information as indicated in this specification.

C. It shall be understood by the AVS installers that this is an integrated system where multiple pieces of equipment from different manufacturers are required to be connected/interfaced together to make the AVS operational. To allow for competitive bidding multiple manufacturers are listed in the specifications for many devices and software, but it is the sole responsibility of the AVS installers to verify that their particular equipment and software selection integrate and

work seamlessly with other equipment and software from the pool of approved manufacturers. These specifications represent a design guideline and design intent but they are not intended to verify that all possible equipment and software listed in this specification work and integrate seamlessly with any equipment and software form the pool of acceptable manufacturers. Approval of submittals for the AVS by the A&E of the project does not relieve the responsibility for the AVS installers to deliver a working system. Any equipment changes required because of incompatibility between different devices of a particular system, even after the equipment has been approved by the A&E, shall be provided at no additional cost to the owner.

D. The following items are not part of this scope of work:
   1. Displays – Owner furnished and installed.

E. The following is a list of rooms where Audio Visual system shall be provided:
   1. Conference/Training Room – 101
   2. Sewer Collections Crew Room – 119
   3. Distribution Crew Room – 122
   4. Metering Crew Room – 125
   5. Field Ops Assistant Manager – 130
   6. Field Ops Manager – 131
   7. Crew Break Room (Combined) – 133

1.3 INSTALLER QUALIFICATIONS

A. General: The qualifications and requirements herein apply to the specific technology identified by this specification section. Refer to the specification sections identified in Part 1.1 “Related Documents”, of this specification, for additional requirements, which are supplemented by this section.

B. Installer Qualifications: The Installer directly responsible for the work described in this specification section is also referenced as the AVS Installer. The Installer shall be a licensed and registered contractor who is, and who has been, regularly engaged in providing the installation of audiovisual systems of similar size and complexity for at least the immediate past five (5)-years.

C. Project manager requirements: The project manager for each company participating in the installation of the AVS shall be a Certified Technology Specialist (CTS) by Avixa. Proof of current certification shall be provided with the submittal

D. Programmer-Installer: The AVS Installer must have a factory-trained programmer/installer, for the provided Project products, in full-time employment, as part of their staff. The AVS installer needs to provide certificates of completion of training for the staff that will be taking part in the execution of this project

E. Qualification Documentation: The Installer shall provide the following documentation with their bid package, as evidence that the requirements for the Installer qualifications have been satisfied:
   1. A list of not less than five (5) references for jobs of similar size and complexity including:
      a. Project Names
      b. Locations
      c. Contact Names
      d. Contact Telephone Numbers
   2. Location (specific street address) of the office from which this installation and warranty work will be performed. It is preferred that the Installer has established and maintains a permanent office within 150 miles of the project site.

3. Copies of Manufacturer certification certificates. It is required that the Installer possess the following certifications, at a minimum:
   a. Crestron systems certified dealer, installer, and programmer.
   b. Extron certified dealer, installer, and programmer
4. Copies of Licensure certificates.
5. Copies of Insurance and Bonding certificates.

1.4 MATERIALS ALTERNATES AND SUBSTITUTIONS

A. General: See details for alternates and substitution in specification section 270010.

B. Specific equipment: When the design drawings indicate a brand and a model number for a piece of equipment as part of the audio-visual system, the AVS Installer needs to provide the same device as indicated. Substitutions for this type of equipment are not acceptable.

C. Non-specific equipment: When the design drawings do not indicate a brand and a model number for a piece of equipment as part of the audio-visual system, the AVS installer is free to pick equipment that meets the minimum specifications indicated in this section. The AVS installer needs to submit the selected choice as part of the submittal process

1.5 SHOP DRAWINGS AND SUBMITTALS

A. The AVS installer shall follow all requirements for shop drawings indicated in specification section 270010.

B. Project Start Submittals: A maximum of 60 days after the AVS installer receives a notice to proceed with the project, but no sooner than a year before substantial completion, the following information shall be submitted.
   1. Cut sheets with all specifications of every device, cables, and connectors to be used in the project.
   2. One-line diagrams with all devices included in the systems. Each system in a different sheet.
   3. Rack elevations of all AV equipment for all rooms in the project.
   4. Conduit rough-in requirements of all wall and ceiling mounted devices for all equipment part of the AVS system.

C. Construction Submittals: During the construction process the AVS installer shall submit various documents for approval prior to continuing with the installation process. Here is some of the information the AVS installer needs to submit:
   1. Before starting the programming process, the AVS Installer shall provide the following information:
      a. A schematic presentation of the layout of all the user interfaces in the project. The AVS Installer needs to get approval of this submittal before starting any programming. These layouts shall include all graphics with all button sizes, shapes, colors, and wording to be used in all user interfaces. All keypads shall include working for engraving in the buttons.
      b. Completely fill out network configuration template provided by TLC Engineering upon request, to explain all network devices to be used in a project and to get IP addresses from the network administrator.
      c. A layout/presentation of any digital audio programming and user interfaces that are part of the project.
      d. CobraNet® map assignment. A list of all CobraNet® channels from all rooms and all the routing shall be provided.

2. Any design changes whether originated by the Owner, Designer or by the AVS Installer as a VE suggestion need to follow the same submittal process described in the previous paragraph for all equipment involved on the change.

1.6 PROJECT SPECIFIC SOURCE CODE OWNERSHIP

A. Definition of project specific source code: Project specific source code includes all source code created to generate an executable file to be intended to run in any equipment used in the installation of the AVS. Examples of project specific source code include source code used to generate executable files for control processors, DSP processors and touch panels. Project specific source code does not include source code used to create programming tools and compilers or source code used to generate operating systems or application programs running in PC based workstations.

B. Ownership: Any project specific source code used in this project shall remain the exclusive property of the Owner. By accepting the contract to perform the work included in this project, the AVS installer or designer and any other companies working creating project specific code during this project relinquish the right of ownership of this source code and waive any licensing fees or royalties for the use of source code by the Owner or any company authorized by the owner to perform changes in the source code after the project is substantially completed for an undefined period of time.

PART 2 - PRODUCTS

2.1 SYSTEM FUNCTIONS

A. System Signals for All Systems
1. General: The completed system shall be capable of receiving, processing, routing, and distributing the associated signals, noted herein, from and to the respective devices identified under Part 2 of this specification and the Contract Documents.
2. The system shall provide an audio signal response of ±6dB un-equalized (±3dB equalized) from 65Hz to 18KHz, throughout.
3. Analog video signals through the system shall be maintained to the minimum quality requirements as follows:
   a. The system shall provide a signal response of 0.7Vpp (nominal) @ 300Mhz RGB, throughout the system channel, for all visual content.
4. Digital video signals through the system shall be capable of delivering 1920X1080 resolutions at 24 fps from end to end.
5. Control signals through the system shall be maintained to the minimum level established by the control equipment manufacturer for the control protocol utilized. This level shall be correct at all connection points in the system.

B. Remote Asset Management Software
1. General: The Remote Asset Management Software (RAMS) is another tool that will be provided to the owner to control the AVS system. When referenced in this section within the room functionality, the RAMS shall be able to provide the functionality described in these paragraphs.
2. Capabilities of the RAMS. This software tool shall have the following features:
   a. Connect to all controllable rooms in the project through the owner's IP network.
   b. Fully compatible with the controllers installed in each room part of the AVS.
   c. Be able to support all the controllable rooms in this project plus 10% expansion capacity.

d. Be able to have at least two (2) simultaneous users on the system.
e. A customizable graphical user interface.
f. Unlimited Grouping features.
g. Real-time monitoring, control, and diagnostics of control systems in each room on the project.
h. Built-in event scheduler.
i. E-mail alerts.
j. Built-in logging, report, and chart generation.
k. SSL Authentication

3. Computer system. The AVS Installer shall provide and install a computer system capable of running the RAMS as required by the manufacturer of the software package.
4. Software customization: The AVS Installer shall customize the user interface of the RAMS according to the owner's request. The AVS installer shall meet with the Owner and Design engineer during the construction process and agree on the features that will be used by the owner from this tool. Once this step is done, the AVS Installer shall program the RAMS interface based on the conclusions of that meeting. At a minimum all AVS with control processors shall have the following monitoring features through the RAMS:
   a. All media players and recorders usage: start time, stop time and cumulative use.
   b. All sources connected to interface plate usage: start time, stop time and cumulative use.
   c. Projector lamp usage hours.
   d. Flat panel display usage hours.
   e. UPS monitoring, including automatic start, battery test and status, and internal temperature.
5. Database input: The AVS Installer shall fill the RAMS database with the correct information of all the rooms that have controllable AV equipment in the project.
6. Reporting capabilities: The AVS Installer shall provide at least five (5) different reports from the RAMS. The AVS installer shall meet with the Owner and Design engineer during the construction process and agree on the fields of each report that will used by the owner from this tool. Once this step is done, the AVS Installer shall program the RAMS reporting features to accomplish the conclusions of that meeting.
7. Training: The AVS installer shall provide two levels of training for the RAMS. Administration level training shall be provided for at least 4 hours. User level training shall be provided for 2 hours.
8. Design selection: Crestron Fusion, or approved equal

C. Computer Based User Interface
1. General: The computer-based user interface (CBUI) is another way for the Owner to control the AVS. This interface is in the form of a computer software program with the following requirements:
   a. Needs to be an executable file capable of running in any Windows based PC.
   b. One file per controllable room is required.
   c. Needs to have the same user functions available inside the room in touch screens and keypads.
   d. The "look" and layout of the interface shall be the same as the one in the room.
   e. Programs shall be password protected and have SSL.
2. Delivery: The AVS Installer shall provide two (2) DVD disks with all the programs in executable and source code format inside. Each file shall be properly labeled with the room description and the room number.

D. Owner Provided Input Sources and Destination Devices
1. General: Design drawings could indicate AV equipment, part of the AVS, to be provided by owner (as OFE or owner furnished) or third parties. Such equipment is explicitly indicated as such in design drawings to distinguish it from all other equipment to be

provided by the AVS installer. When such equipment is indicated in the drawings the AVS Installer shall interface with it. Refer to the design drawings for audio, video and control lines required for owner provided equipment.

2. Scope of work: It is in the scope of work of the AVS Installer to run, terminate and connect the audio, video and control lines to owner provided devices as shown in the design drawings. When control lines are indicated in the design drawings, the AVS installer shall program all control features described in each system functions per controllable room, including all features related to owner provided equipment or third-party equipment.

2.2 CONFERENCE ROOM (101)

A. General: The AVS Installer shall provide a complete and operable system with the minimum functional requirements noted herein.

B. Input sources: The AVS described for this room shall have multiple audio and video sources. Audio and video sources can be provided by a device part of the AVS or by owner provided equipment through an interface plate. The AVS Installer shall provide all source equipment except when noted in the design documents as provided by Owner or under a different division. Refer to design drawings to determine what and how many signal types will be used for each source. The AVS for this room shall have the following audio and video input sources:
1. Wall plates with connectors and quantities as indicated in the design drawings.
2. One (1) owner provided computer

C. Output devices: The AVS described for this room shall have multiple audio and video output devices. Audio and video output devices can be provided by a device part of the AVS or by owner provided equipment through an interface plate. The AVS Installer shall provide all output devices except when noted in the design documents as provided by Owner or under a separate division. Refer to design drawings to determine what and how many signal types will be used for each output device. The AVS for this room shall have the following audio video output devices:
1. Wall plates with connectors and quantities as indicated in the design drawings.
2. Two (2) Flat panel displays (Owner provided, Contractor installed)
3. Program speakers as indicated in design drawings.
4. Infrared audio transmission system.

D. Controllable devices: The AVS described for this room shall have a microprocessor-based controller as indicated in the design drawings. This controller shall be capable of managing all input sources, output devices and other devices part of the AVS. Refer to design drawings to determine what and how many signal types will be used for each controllable device. The following is a list of other controllable devices to be provided by this room.
1. One (1) Audio/video switcher
2. One (1) DSP audio processor.
3. One (1) set of electric shades.
4. One (1) videoconference soft codec.
5. One (1) dimming multizone module

E. User Interfaces: The Owner shall be able to operate and receive system status information from the AV system through the following user interfaces:
1. A wall mounted touch screen
2. Computer based user interface.
3. Remote Asset management software

F. User control: The Owner shall be able to use the above-mentioned user interfaces to operate the AV system. All user interfaces shall be able to perform all tasks unless otherwise noted in

the design drawings or this specification. The Owner shall be able to perform the following tasks and get the following status indication from the user interfaces:

1. System On-Off with status indication
2. Individual display device on/off control and video mute.
3. Select and route any audio and video source to any of the available audio and video output devices. Each output device shall provide indication in the user interface of the current source selected for that output.
4. TV channels selection. TV channel selection shall be provided by the following methods:
   a. Manual entering channel number
   b. Pick from a list of ten (10) favorite channels. Favorite channels shall be labeled by the name of the network and the channel number. The owner will provide list of favorite channels for this room.
   c. Channel up and down, by moving up or down in the list of available channels.
5. Selected audio output device(s) volume control. Volume level should always be set to an acceptable user level during power up. Status indication of volume level shall be provided for each controllable output device.
6. Selected audio output device(s) volume mute. Mute status indication shall be provided at user interfaces.
7. Audio settings control. Manual equalization control per band and selection from five (5) equalization presets.
8. Individual control and status indication of all features for all controllable devices
9. Lighting control: User shall be able to recall all light scenes programmed in the dimming panel as well as manual controls of all the zones.
10. Individual light zone control: User shall be able to use faders for each individual light zone in the room and to save those light pre-sets in the system.
11. Shade controls: All on, all off, and 50% From either touchscreen

G. Special Features: The AVS shall allow the owner to perform certain automated task by means of using the user interfaces. Those tasks will be available only on the user interfaces mentioned within this paragraph:
   1. Room combine: The room combine mode shall allow the owner to select the operation mode of the rooms from the following options:
      a. Each room independently.
      b. Rooms A and B as a single room. (A+B)
   2. Once a room combine mode is selected the grouped rooms shall operate as a single room for audio mode and lighting mode. Dimming, volume control, muting and source destination shall affect all grouped rooms equally.
   3. A video combine mode is also required while in room combine mode. In this mode, the owner shall be able to select what source goes to the secondary screen, from the user interfaces. Video combine mode could be turned on and off. While off the second screen will follow the screen where the podium is connected at all time.
   4. Automatic source detection. When a video source is detected in any of the inputs, one of the projectors shall be turned on automatically. When there is no video signal detected in any of the inputs for more than 10 minutes and the projector on/off button has not been pressed, the system shall be set to off. If the projector on/off button has been pressed at any time the projector shall be turned off, but the audio portion of the system shall be kept on until the system is manually turned off by the user.
   5. Automatic preset recall. When the owner selects to turn on one display devices the control system shall send a command to the lighting control panel to select the appropriate scene more suitable for the presentation mode selected. Shade control shall be part of this light setting. The AVS installer shall coordinate with the electrical installer of the project all the light commands for the light scenes
   6. Display automation. Motorized Screen shall follow the operation status of the projector, regardless of if the manual switch to the screen has been used to operate the screen.

When the projector is on the screen shall be down and when the projector is off the screen shall be pulled up

H. DSP Features: The AVS shall program the DSP audio processor to provide at least the following features, additional to the functionality described above:
1. All inputs and outputs shall be labeled at the physical input/output and by text blocks within the software.
2. All inputs and outputs shall be monitored by RMS metering. Metering shall also be provided throughout the audio chain where appropriate.
3. If audio or video conferencing are not part of the system, microphones shall be input to a standard mic input. Each microphone channel shall have an adjustable HPF (High Pass Filter), compressor/limiter and a 3-band parametric equalizer in its path.
4. If audio or video conferencing are part of the system, microphones shall be input to an Acoustic Echo Cancellation (AEC) input. Noise reduction shall be enabled for reduction of room background noise. Prior to being fed into an Automatic Mixer (AM) with direct outputs, each microphone channel shall also have an adjustable HPF (High Pass Filter), compressor/limiter and a 3-band parametric equalizer in its path.
5. Program audio: Prior to being fed into a matrix mixer, each program channel shall also have an adjustable HPF (High Pass Filter), compressor/limiter and a 3-band parametric equalizer in its path.
6. For all audio outputs there shall be 5-band parametric equalization and 12dB of gain control (+6dB to -6dB).
7. All inputs/outputs shall be connected to a matrix mixer, which will allow for flexibility in routing, gain adjustment and presets.
8. Audio test signal generators (tone, pink noise, white noise) shall be input to the matrix mixer as well.
9. VTC (CODEC) out shall be comprised of a stereo signal mix of all program audio sources with a mix of all microphone inputs.
10. The signal to a capture system, if specified, shall be comprised of a stereo compressed signal mix of all program audio sources combined with a mix of all microphone inputs.
11. The AVS Installer shall create a user monitoring and control interface utilizing Biamp DaVinci software. DaVinci software and interface shall be demonstrated to the owner, developed, and presented to the owner and after approval be provided, loaded and tested on an owner furnished computer.
12. Audio mix: When program audio is used in the system, sound reinforcement speakers shall play a mixed (left and right) audio from program material at 50% of the level of the program material sent to the program speakers. Volume control adjustments including volume mute shall affect equally the program speakers and the sound reinforcement speakers when program audio is used in the system.
13. The assisted listening output shall be a mono signal compressed a mix of all microphones in the system plus a mix of all program audio, left and right summed
14. Audio output to wall plates shall be a mix of any program audio being played and all microphones in the system mixed unless microphones are muted by user selection.
15. Videoconference out, shall be a compressed stereo signal mix of all program audio sources with a mix of all microphone inputs at 50% level to each channel (left and right)
16. The signal to the recording system shall be a stereo compressed signal mix of all program audio sources with a mix of all microphone inputs at 50% level to each channel (left and right).
17. Mix-minus for sound reinforcement speakers, tied to the microphones in the conference table.

2.3 WIRE, CABLE, CONNECTORS, AND ACCESSORIES

A. General: The AVS Installer shall provide the system components and materials necessary to properly install, support, and terminate all audiovisual cabling, in accordance with the related documents identified in Part 1.1 of this specification. Where the Project Electrical Installer has provided a raceway designated for use by this system, the AVS Installer shall coordinate and install all required cables into the provided raceway. The AVS Installer shall also provide and attach all required cable connectors.

B. Cable: The AVS Installer shall provide all cabling associated with, and required to, provide a complete, operable system in accordance with the Contract Documents. All cable provided by the AVS Installer shall be of a manufacture and quality consistent with the design intent, and shall be reviewed by the Engineer prior to installation.

C. Cabling in air handling spaces. The AVS Installer is responsible for determining the rating of the cables to be used for the AVS, as per current version of the National Electrical Code. If, at the bidding point the AVS Installer is not certain about the type of cables to be used in the project, the AVS Installer shall assume that all cables need to be plenum rated cables.

D. Cabling below grade: When cable part of the AVS have to be run in conduits below slab and grade level, the AVS Installer shall use only cables with water-blocking jackets.

E. Cable signals: The following is a list of signal types and the cables to be used for those signals:
1. Line level audio signal cable: Provide one (1) twisted pair cable for mono signals and two (2) twisted pair cables for stereo signals. Twisted pair cables to be 22 AWG stranded (7X30) tinned copper conductors with overall foil shield (100% coverage), with 22 AWG stranded tinned copper drain wire.
2. Microphone level audio signal cable: Provide one (1) twisted pair cable, 20 AWG stranded (7X28) tinned copper conductors, overall foil shield (100% coverage) with a 20 AWG stranded tinned copper drain wire.
3. Analog video, audio, and control over twisted pair cable: Provide one (1) 4-pair 24 AWG twisted pairs solid bare copper conductors with polyolefin insulation. If equipment manufacturer supports the use of standard UTP Category (5e, 6 or 6A) for this application, the AVS installers shall provide cables in compliance with specification section 271000 and all cables part of the AVS shall be included in the same warranty as all cables provided under specification section 271000. If equipment manufacturer recommends the use of low skew cables, only low skew cables shall be used.
4. Proprietary Control cable (i.e., Cresnet® Signal): Provide one (1) cable with 1 twisted pair 22 AWG stranded bare copper conductors with overall aluminum/polyester foil (100% coverage) and a 24 AWG tinned copper drain wire, and one (1) unshielded twisted pair, 18 AWG stranded bare copper conductors.
5. Control cable (i.e., RS-232, RS-485 Signal): Provide one (1) cable with 1 or 2 twisted pair 22 AWG stranded bare copper conductors with overall aluminum/polyester foil (100% coverage) and a 24 AWG tinned copper drain wire. Pair count depends on manufacturer's specifications.
6. Digital video, audio, and control over twisted pair. Provide one, two or more cables UTP or STP as required by transceiver equipment manufacturer to ensure the digital signal is transported properly up to 328 ft, at maximum resolution indicated in part 2.01 of this specification. If equipment manufacturer supports the use of standard UTP Category (5e, 6 or 6A) for this application, the AVS installers shall provide cables in compliance with specification section 271000 and all cables part of the AVS shall be included in the same warranty as all cables provided under specification section 271000. If equipment manufacturer requires the use of proprietary cables, only these cables shall be used in the project. The color jacket for these cables shall be different from voice/data cables. AVS installer to coordinate color jackets with structured cabling installer.

7. UTP Category cables. Provide UTP category cables for all Ethernet connection part of the AVS as indicated in design drawings, including horizontal cables, patch cords and station cables. All cables part of the AVS shall have all specifications and shall be included in the same warranty as all cables provided under specification section 27100. The color jacket for these cables shall be different from voice/data cables. AVS installer to coordinate color jackets with structured cabling installer.
8. Speaker Cable: Provide two (2) unshielded bare high conductivity ETP copper 16 AWG stranded conductors, with overall jacket.
9. IR control signal cable. Provide one (1) pair, unshielded twisted pair cable with 22 AWG solid copper conductors.
10. Contact closure signal cable. Provide one (1) or more unshielded twisted pair cable with 22 AWG solid conductors. Quantity of pairs as required by the application.
11. HDMI Cables. All HDMI cables longer than 10 meters (32.8 ft.) must include an adaptive cable equalizer capable of providing not less than +40 dB of cable compensation @ 825 MHz. Such device must be capable of operating automatically without the need for human intervention and must include an external AC to DC power converter that can accept 100-240VAC @ 50/60 Hz. Furthermore, such device must also include I2C correction circuitry to mitigate the effects of long cable runs on the DDC clock and DDC data signals. HDMI cables shall have the following requirements:
    a. Support HDMI v2.1 with resolutions up to 8K60 and 4K120 with 12-bit color depth
    b. Support HDMI v2.1 Category 2 data rates (3.4 Gbit/sec.) lengths up to 7.5 meters
    c. Support HDMI v2.1 data rates up to 2.25 Gbit/sec. lengths up to 40 meters
    d. Support PC data rates up to 1.65 Gbit/sec. lengths up to 60 meters
    e. Supports PC resolutions up to 1600x1200 / 60 Hz and 1920x1200 / 60 Hz
    f. Made of AWG 22-gauge wires
    g. Triple shield for noise immunity
    h. Cable jacket shall have dual UL Ratings: UL13 (CL2) and UL758 (AWM20276) for non-plenum spaces. In plenum environments cables shall have a CL2P rating or CMP rating.
    i. RoHS compliant.
    j. Gold plated connectors
12. DVI Cables. All cables carrying DVI signals through conduit, floor slabs or longer than 10 ft. shall be HDMI cables as described in previous section with HDMI to DVI adapters in both ends.

F. Connectors and plates: The AVS installer shall provide connector and plates to terminate all wiring part of the AVS, regardless of if shown or not in the design drawings. As a general guideline the AVS Installer shall follow these recommendations:
1. Only use crimp type BNC connectors on coaxial baseband video cables. Use crimp type F connectors on RF based coaxial cables. Use only connectors with the same impedance as the cable where they will be terminated.
2. When custom panels or plates are required in the project, the AVS Installer shall submit detail drawings of all plates for approval by the Design Engineer.
3. Whether shown in the design drawings or not all cables coming out of an outlet box into an equipment shall have a disconnect means at the outlet box with a face plate. Faceplates with grommets are not acceptable as pass-through connections to equipment.
4. All termination of UTP Category (5e, 6 or 6A) cables shall be done in accordance to specification section 271000.

2.4 DEDICATED COMPUTERS FOR AV SYSTEMS

A. General: The AVS Installer shall provide dedicated workstations for the AV systems as indicated in the design drawings. The specifications of those workstations are:
1. Intel processor (latest model) with no less than 2.8 MHz and 1000 MHz FSB.

2. Latest offering of Microsoft Operating system for professional environments.
3. Minimum of 8 GB of SDRAM
4. Minimum of 500 GB of SCSI hard drive 10,000 rpm.
5. One DVD+/RW unit
6. 512 MB video board with DVI-I output.
7. Line level audio output.
8. Keyboard and mouse: All workstation for AV systems shall include a keyboard and a mouse. When indicated in the design documents the workstations shall also include a wireless keyboard and a mouse. Wireless keyboards and mouse shall work with standard commercial batteries (AA or AAA) and shall operate at a frequency of 2.4 GHz and present a working range of at least 20 ft.
9. Rack mounted option or a shelf to mount the workstation. Workstation and shelf shall be no bigger than 2 RU.

B. Acceptable manufacturers for the computer system: Dell, Sony or HP.

2.5 FLAT PANEL DISPLAY MOUNT:

A. All flat panel displays, regardless of the type, shall be provided with a flat panel display mount.

B. Articulating wall mounts (AWM): all articulating wall mounts shall have the following specifications:
1. VESA pattern: Universal
2. Display orientation: landscape
3. Maximum extension: The articulating wall mount shall allow a maximum extension from the wall of 25 inches
4. Post installation lateral shift: required.
5. The mount shall have accessories to mount cameras, speakers (sound bar or side to side). These accessories shall be used when the design drawings indicate those devices to be mounted next to the display.
6. Weight and size capacity: The AVS installer shall select the specific model for the weight and size limits of the flat panel display selected.

C. All flat panel display mounts shall be UL listed.

D. For this project all displays shall be provided with articulating wall mounts unless otherwise noted.

E. Approved manufacturers: Legrand (Chief Manufacturing), Peerless AV, Premier Mounts.

2.6 NETWORKING EQUIPMENT

A. General: All networking equipment required for the AVS shall be provided by the owner unless otherwise note in the design documents. All networking equipment required for the AVS shall be provided in the scope of work of the system and it shall be in accordance this specification.

2.7 CABLE BOX (CABLE RECEIVER)

A. General: Cable boxes also referenced as cable receivers will be owner provided.

B. ATSC tuners to be provided shall have HDMI output and simultaneous composite video output, as well as line level audio, RS-232 control and IR control. ATSC tuner shall be Contemporary research 232-ATSC with rack mounted kit or approved equal.

2.8 IDENTIFICATION AND LABELING TAGS

A. The AVS installer shall follow labeling materials indicated in specification section 270010.

PART 3 - EXECUTION

3.1 INSTALLATION PRACTICES

A. General: The AVS installer shall follow all installation practices indicated in specification section 270010.

B. Workmanship: The AVS Installer shall adhere to, at a minimum, the following installation practices:
1. Securely mount equipment plumb and square in place. Where equipment is installed in cabinets, provide mounting bolts in all equipment rack fastening holes. All rack mount equipment shall be secured with Rackmount Solutions HTX™ security screws (STAR-TYPE or similar) provided with nylon washers between bolt heads and equipment.
2. Where equipment (such as VHS players, monitors, DA's etc… and other system devices) is packaged by the manufacturer without rack mount ears or braces, as part of a regular manufacture process, the Installer shall provide all required, accessory ears, brackets, and shelves, which are necessary to properly mount the equipment within the designated cabinets and rack locations.
3. Provide appropriate ventilation panels, vents, and/or fans to assure sufficient ventilation for adequate cooling of all equipment.
4. Confirm the polarity and phasing of system components before installation. Connect to maintain uniform polarity and phasing.
5. Insulate all non-insulated, stranded conductors before making termination when connecting to equipment terminals.
6. "Wire", "wing" and "twist" NUT type connections are not permissible for any type of signal connection.
7. All wiring is to be free from grounds loops, shorts, opens, and reversals.
8. Neatly tie all cabling within equipment cabinets, housings, and terminal cabinets with nylon cable ties at not more than 12" intervals for cables different from 4-pair CAT cables. Use Velcro straps to tie all 4-pair CAT cables. Install in accordance with the latest EIA installation standards. Engineer approved wiring trough may be used in lieu of tie-wraps. Cable routing shall not braid or cross with other wires in parallel more than once.
9. Secure all cables in equipment cabinets and terminal cabinets to provide strain relief at all raceway exits in accordance with NFPA 70 including all supplements. All plugs and receptacles are to be the grounding type.
10. Connect all equipment power to surge/noise suppression outlet strips or associated power conditioning devices.
11. Where system cables are extended through an exposed umbilical connection, the Installer shall harness all associated cable within a common, manufactured, flexible, sheath (ex. Snakeskin™).
12. All racks and cabinets shall be bonded to a grounding system as required by NEC.

C. Raceways. All raceways for audio/visual devices shall have the following specifications:
1. Refer to specification section 270528 for all raceways specification.

2. All cables for speaker level signals, regardless of their level shall be run in separate raceways from other low voltage cables.
3. All cables for microphone level signals, regardless of their level shall be run in separate raceways from other low voltage cables.
4. Separation of Raceways: Cable tray supports can be used as supports for hangers for AVS distribution cables.
5. Raceways for AV outlets: Outlets for AV cables shall be composed of electrical boxes (sized for the number of connectors) and a conduit(s) to the nearest accessible ceiling space. All AV outlet boxes shall be at least 2.5" deep.
6. All indoor rated cables can be supported with j-hooks or cable hangers above accessible ceiling spaces. J-hooks shall be spaced no longer than 4. Ft.

D. Labeling System. The labeling system for all cables shall be a system that allows for unique identifiers for each cable. Each cable has to have an indicator from where it is coming from and an indicator to where it is going to.

E. Engraving: All push buttons interfaces and connection faceplates part of the AVS shall be engraved with descriptive wording of the use of the button/plate. The AVS Installer shall submit and receive approval for the proposed wording in each button/plate before doing the engraving. Failure to follow this step might cause the AVS installer to replace the buttons in interfaces and/or plates where the Owner is not satisfied with the wording of the label at no additional cost to the Owner. The color of the wording in the engraving shall have high contrast with the background color of the button.

F. Flat Panel Display Installation: The AVS Installer shall adhere to, at a minimum, the following installation practices for flat panel display devices
1. All anchors and supports whether pre-fabricated or customs, required to mount the displays where indicated in the design drawings are in the scope of work of the AVS installers.
2. All walls where flat panel displays will be installed shall be re-enforced with sheet metal behind the drywall. The extent of the re-enforcing shall be the contour of the flat panel display to be installed.
3. When flat panel displays are installed inside a wall niche, the AVS shall provide a wall mount with adjustable depth that allows the flat panel display to be installed flush with the exterior wall.
4. Power and AV outlets to be installed behind flat panel displays shall use an Wiremold Evolution Wall backbox or approved equal
5. For flat panel displays mounted on structures, the installer shall provide anchoring as approved by structure manufacturer.
6. For flat panel displays suspended from the structure above, the installer of this system shall provide all custom brackets and pipes properly secured to the structure to mount the displays

G. Speaker Installation: The Installer shall adhere to, at a minimum, the following installation practices for speakers:
1. All ceiling mounted speaker shall have a support wire tie to the building structure. Ceiling speakers shall not be supported from the ceiling grid.
2. All ceiling mounted speakers shall be installed with a backbox to prevent sound from dispersing into the plenum space and causing noise issues in adjacent rooms.
3. When ceiling speakers are mounted in fire rated partitions, the speakers shall have UL listed speaker back boxes with a fire rating no less than the rating of the partition.
4. All in-wall speakers shall be installed with pre-construction brackets.

H. Equipment Rigging: When speaker assemblies or arrays weight more than 100 lbs, the AVS installers shall follow all rigging instructions from the manufacturer and shall be done by an experienced rigger. The AVS installers shall also adhere to the following practices:
   1. Only the rigging equipment and method listed by the manufacturer of the equipment are approved for the installation No substitutions are accepted.
   2. Only the rigging points available in the speaker assembly are accepted as means of support.
   3. All anchors and supports whether pre-fabricated or customs, required to mount the displays where indicated in the design drawings are in the scope of work of the AVS installers.
   4. Shop drawings for rigging methods shall be signed and sealed by a licensed structural engineer.

I. Millwork Openings: When AV equipment like flip tops and plates will be mounted in millwork provided by the owner or third parties, the AVS installers shall provide cut out dimensions for all the AVS equipment listing location in the millwork where the cuttings need to be done. It is the AVS installer's responsibility to install those devices in the millwork once the openings have been done. All millwork opening shall be done by the furniture manufacturer.

J. Floor Boxes. Floor boxes used for connection to podiums, conference tables, or mixing boards shall have at least the following minimum requirements:
   1. Floor boxes shall be large enough to have at least 3 different compartments, one for power one for voice/data cables and one for AV.
   2. Each low voltage compartment shall have a separate raceway back to the accessible ceiling space. If speaker wires are run from the lectern, the AV compartment shall have one 1" and one ¾" conduit to the nearest accessible ceiling space. If no speaker wires are run from the lectern, at least one 1" conduit from the AV compartment to the accessible ceiling shall be provided. Additional conduits might be required depending on the application.
   3. There shall be no daisy-chaining of AV conduits between adjacent floor boxes. Floor boxes shall also allow to recess the connectors from the umbilical cord tied to the lectern.
   4. Floor boxes shall have a recessed compartment to hold connectors. Floor boxes that leave AV connectors flushed with the floor are not desirable since they become tripping hazards and could be easy broken with the lectern when moved.
   5. AV compartments shall have termination plates and connectors for all cables coming from the accessible ceiling space. Pass-through cables shall not be allowed in floor boxes. All connectors shall be properly secured to the plates in the floor box. All unused compartments shall have blank plates.

K. Structured Cabling Infrastructure: The AVS Installer shall adhere to specification section 271000 for all requirements of structured cabling components to be used as part f the AV system. The structured cabling components include but are not limited to:
   1. All unshielded twisted pair Category cables and fiber optic cables
   2. Termination devices like termination jacks, patch panels and faceplates.
   3. All UTP and fiber optics patch cords.
   4. All testing procedures for Category and fiber optic cables.

3.2 REQUEST OF IP ADDRESS

A. General: The AVS installer shall follow all requirements indicated in specification section 270010 for the request of IP addresses for devices part of the AVS.

3.3 SOFTWARE PROGRAMMING AND INSTALLER TESTING

A. The software programming and testing of the AVS system will be a multi-step process. The AVS Installer shall provision in the proposal for the time indicated in each of the steps:

B. Briefing Step: A maximum of 45 days after the AVS installer receives the NTP for this project, the AVS installer shall request one or more briefing sessions with the Owner and/or design engineer to go over the expectation of each room and clarify any points that might not be clear to the AVS Installer. Some important notes about this step are:
   1. The AVS installer shall allocate at least 8 hours of meeting time
   2. Travel time will not be counted as part of the meeting time.
   3. The quantity of staff required to attend these meetings by the AVS Installer is sole decision of the AVS Installer.
   4. Before the start of this step the AVS installer shall have software programming submittals approved as described in part 1 of this specification section.
   5. The AVS Installer shall prepare meeting minutes of the key decisions made during these meetings. The approval of these meeting minutes by the Owner and Design Engineer will be accepted as approval notice of this step.

C. Shop Programming Step: Once the briefing step has been completed and approved, the AVS installer shall allocate off-site programming time to accomplish all the requirements listed in this specification and the clarifications done in the previous step. It is the sole responsibility of the AVS Installer to estimate how many man hours are required for this step. This step does not require approval by the Owner and/or design Engineer.

D. Field Verification Step: After AVS equipment has been installed on site and the system has been programmed, the AVS Installer shall request one or more working sessions with the Owner and/or design engineer to verify in the field the functionality of the AVS system. Some important notes about this step are:
   1. The AVS Installer shall allocate at least 10 hours of working sessions.
   2. Travel time will not be counted as part of the working sessions.
   3. The AVS installer shall have different AV media and sources to test all features in the AVS system.
   4. The quantity of staff required to attend these meetings by the AVS Installer is sole decision of the AVS Installer.
   5. Physical installation of all devices will be checked by the Owner and/or the Design Engineer. Any deviations in the installation of the equipment part of the AVS from this specification and previous meetings will be noted by the Design Engineer in a “punch list”. This punch list will be sent to the AVS installer within the next 5 days of the meeting for immediate corrective action. One punch list will be prepared for each room with AVS.
   6. The AVS Installer shall prepare meeting minutes of the key decisions made during these meetings that affect the programming sequence. The approval of these meeting minutes by the Owner and Design Engineer will be accepted as approval notice of this step.

E. Final Adjustment Step: Once the previous step has been approved, the AVS Installer shall allocate time to make any corrections to the AVS system on site based on the conclusions of the previous step. It is the sole responsibility of the AVS Installer to estimate how many man hours are required for this step. This step does not require approval by the Owner and/or design Engineer.

F. Data Wiring and Fiber Optic Testing: Testing of UTP data wiring, copper patch cords, fiber optic cables and fiber optic patch cords shall be done as indicated in specification section 271000. Testing results shall be submitted as indicated in the same specification section.

G. Signal Adjustment: The AVS Installer shall ensure that the following adjustments, tests and measurements, at a minimum, have been completed:
   1. The system shall be measured and adjusted for optimum signal quality and minimum signal loss, to all audio and video signals, through the system channel, using appropriate test equipment and standardized testing procedures.
   2. The system shall be measured and adjusted for optimum signal-to-noise ratio and maximum headroom in the system electronics.
   3. The system shall be measured and adjusted to eliminate distortions or degradation of signal resulting from, but not limited to, clipping, hum, noise, and RFI interference.
   4. The Installer shall check the quality of each signal, at its source, and compare it against the quality of the signal at various points of its transmission through the system. The Installer shall correct the system for any significant (the lesser of 2dB or the manufacturers throughput requirements) signal distortion or loss.

3.4 SYSTEM WARRANTY AND SERVICE

A. General: The AVS installer shall follow all warranty and service requirements indicated in specification section 270010.

3.5 ENGINEER'S FINAL ACCEPTANCE TEST

A. General: The AVS installer shall follow all test requirements indicated in specification section 270010

B. As part of the Engineer's final acceptance all sources, inputs, outputs, and interfaces will be tested. Additional notes about the final acceptance test:
   1. It is the sole responsibility of the AVS system installer to estimate the time allocated for this step. It is assumed that at this point in time all the features of the AVS system are clear to the Owner and the AVS Installer, so this step is just to make sure that all the features are working properly as agreed.
   2. The AVS installer shall have different AV media and input signal generators to test all input plates and sources in the AVS system.
   3. The quantity of staff required to attend these meetings by the AVS Installer is sole decision of the AVS Installer.
   4. Failure to complete one or more of the previously issued punch list items or failure to correct any programming changes previously noted will revoke acceptance of the room or system being tested.
   5. Final acceptance will be granted on a room-by-room basis.

3.6 TEST EQUIPMENT REQUIRED.

A. Test Equipment: The AVS Installer shall supply all testing instruments required for the equipment programming and system tests. The AVS Installer shall use test equipment meeting the minimum specifications, identified herein, to perform system calibrations and adjustments. The AVS Installer shall make available the same test equipment available, for inspection by the Engineer, during Final Acceptance step.

   1. Direct reading Audio Impedance Meter.
      a. Minimum of three frequencies ranging from 250Hz to 4kHz.
      b. Range 1 ohm to 1M ohm.
      c. 10% accuracy.

d. Direct reading of dBm across 600-ohm load.

2. Digital Multimeter.
   a. DC to 20kHz bandwidth.
   b. 300V range.
   c. 100mV resolution.
   d. 10M ohms input impedance.
   e. DC resistance to 0.1 ohms.
3. Dual trace oscilloscope.
   a. 450MHz minimum bandwidth.
   b. 1mV/cm sensitivity.
   c. Dual time base capability.
4. Sine/Square Wave Generator.
   a. 5Hz to 5kHz bandwidth.
   b. Output level of 0dBm with less than 0.5%THD.
5. Sound Pressure Level Meter:
   a. Applicable Standards: IEC 61672-1, 60651 and 60804 Type 2, ANSI S1.4 Type 2
   b. Accuracy: ±1.5dB (ref 94dB@1KHz)
   c. Resolution: 0.1dB
   d. Digital Display: 4 digital LCD
   e. Measurement Parameters: SPL, SPL MIN/MAX, SEL, and Leq
   f. Measurement Range: 30dB to 130dB
   g. Linearity Range: 100dB
   h. Measurement Frequency Range: 31.5Hz to 8KHz
   i. Frequency Weighting: A and C
   j. Response Impulse: Fast and Slow
   k. Microphone: 1/2 " Electret condenser microphone
   l. Sampling time: updated every 0.5s
   m. Bargraph: 4dB steps, 100dB range, 125ms update
6. Digital Video Signal Test pattern generator with output for the following signal types:
   a. Composite Video
   b. Component Video
   c. RGBHV video
   d. HDMI video (1080p 24 fps)
   e. SDI

3.7 TRAINING AND INSTRUCTION

A. General: The AVS installer shall follow all training requirements indicated in specification section 270010. The AVS Installer shall provide the owner with different types of training as described herein.

B. System Administration Training. The AVS installer shall provide system administration training at the job site as described below:
   1. At least 8 hours of training shall be provided.
   2. Travel time will not be counted as part of the training sessions.
   3. Training will be broken down to a maximum of 2 sessions in different days.
   4. The objective of the system administration training will be to properly operate, trouble shoot, calibration and perform specific field repairs to AVS equipment.
   5. Field repair and calibration training will be limited to those repairs' notes by the manufacturer of the equipment as field repairs done by non factory trained personnel.
   6. Training shall be done at the job site with all the equipment operational after final acceptance.
   7. Training will be limited to a maximum of 5 attendees per session.
   8. Operation and Maintenance manuals shall be delivered at the beginning of this sessions.

C. User Training. The AVS installer shall provide system administration training at the Job site as described below:
   1. At least 10 hours of training shall be provided.
   2. Travel time will not be counted as part of the training sessions.
   3. Training will be broken down to a maximum of 3 sessions in different days.
   4. The objective of the user training will be to properly operate the AVS.
   5. Training will be limited to a maximum of 20 attendees per session.
   6. User short form guides shall be provided to all attendees of the sessions.
   7. Short form guides shall provide the users with quick finding ways to operate the system. If AVS operation is different from one room to the other, one separate short form guide shall be provided for each room.

3.8 AS BUILT DOCUMENTS AND CLOSE OUT INFORMATION

A. General: The AVS installer shall follow all as built and close out information requirements indicated in specification section 27 00 10.

B. The following information shall be included in the as built drawings:
   1. Drawings indicating final floor plan locations of all AV devices
   2. One-line diagrams with all devices connected in the system.
   3. Mounting details
   4. Any signed and sealed structural calculations required for the AVS

C. Additional close out information to be delivered by the AVS installer:
   1. All programming source code done by the AVS for this project for all pieces of equipment in digital format (no printed copies required).
   2. List of all IP addresses assigned to each equipment part of the AVS.
   3. Compiled executable files as requested for Computer based user interface.
   4. All printed test results.

END OF SECTION 27 41 00

Division 28

Electronic Safety and Security

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SECTION 28 05 37
SECURITY VOICE COMMUNICATIONS - DISTRIBUTED ANTENNA SYSTEM

PART 1 – GENERAL

1.1 SCOPE OF WORK (SOW)

A. The scope of work of this specification describes technical and performance criteria for deploying a Security voice communications systems Neutral-Host Distributed Antenna System (DAS) capable of supporting Public Safety Networks (PSN). The DAS components specified in this document include devices such as: Donor Antennas, Coverage Antennas, Coax Cable, Coax Connectors, lightning protectors, grounding kits for coaxial cables, Splitters, Combiners, Couplers, , Bi-Directional Amplifiers (BDA), Fiber-Optic Cable, Fiber-Optic Connectors, Fiber-Optic Jumpers, Fiber-Optic Master Unit and Fiber-Optic Remote Units.

B. Because of the substantial differences in topologies available in the market for DAS, the design drawings and specifications are not meant to be a set of construction drawings, but a performance criteria base to be used by the Radio Frequency System (RFS) installer of this system to create the final construction and permit documents. It is therefore in the scope of work of this system to provide a complete design for the review of the architect and engineer (A&E) of the project.

C. The scope of work also includes the following services:
   1. A software model of the building to determine the best locations of all the coverage antennas including heat map representations and modeling of all the different construction materials used in the construction of this building. Examples of this software is the modeling software offered by IBwave Systems.
   2. A wireless survey done with a spectrum analyzer of all areas of the building to verify and ratify the final locations of coverage antennas before the system is installed but the structure of the building is already installed.
   3. A final survey of the building after the system is installed to verify and document in drawings all measured signal levels in all areas of the building (approximately one measure point for every 100 sq-ft. in the building at all levels).

D. The scope of work includes, all submittal indicated in the documents, programming of the system, coordination with other trades in the job site, warranties, testing and as-built documentation.

E. It is also the responsibility of the RFS installer to mediate and process the agreement to re-broadcast the DAS frequencies between the building owner and Public Safety-First Responders Support Entity (PSN FRSE). This entity is the agency/department who maintains and supports the radio communications infrastructure for the First Responders (Fire Rescue, Police and EMS) a local jurisdiction.

1.2 RELATED DOCUMENTS

A. General: Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

B. All UTP 4-pair Cabling and Single Mode fiber optic cabling used in this project for the DAS shall be supplied and installed as per specification section 271000.

C. All raceways and conduits used in this project for the DAS shall be governed by specification section 270528.

1.3 SYSTEM DESCRIPTION

A. This specification outlines an In-Building Wireless (IBW) Distributed Antenna System (DAS). The system must extend wireless services digitally throughout the building. The system must be flexible, scalable, multi-band and multi-protocol solution.

B. The system platform shall be scalable to allow for easy system growth in size and scope of solution to reach new in-building service areas or to add bandwidth and capacity as necessary.

C. The system must support the technologies used by the PSN FRSE in the area where the project is installed providing edge-to-edge bandwidth for all frequencies used by them. It must also offer an element management system that includes on-site or remote accessible system alarming and management of network elements.

D. Services: Upon commissioning, the DAS shall provide coverage for the PSNs listed below on all frequencies currently being used by this system.
1. 800 MHz PSN coverage.
2. All other frequencies required by City of Edgewater and AHJ.

E. PSN Approval: The RFS Installer shall propose and deploy a DAS system capable of receiving approval by the Public Safety Network Authority Having Jurisdiction PSN AHJ. The DAS shall also be in compliance with NFPA 72 and NFPA 1221.

F. Architecture. The architecture of the system shall be based on donor antennas located in the exterior of the building, feeding one or more Bi-Directional Amplifiers (BDA). These BDAs shall feed the distribution system and the local antennas that radiate the signal in both directions to the handheld devices used by the PSN FRSE. Architectures based on twisted pair cable to the distribution antennas or distribution antennas that require local power shall not be acceptable

G. Coverage: Different from what is required in NFPA codes, the DAS shall be designed to provide 100% coverage of the building with the minimum signal levels required by the prevailing code for the area where the project is located.

H. Broadband Active Distribution: If the building area is very large and amplification is required to cover some areas, the design shall include the use of single-mode fiber-optic cable for active distribution. In-line copper amplifiers are not allowed. Coverage antennas requiring local power supplies will not be allowed. All power for coverage antennas must come from the DAS head end system.

I. Supervision: The DAS system shall be monitored by the Fire Alarm system to comply with NFPA 1221 requirements. The RFS installer shall coordinate with the installer of the Fire Alarm system for proper integration.

J. Management: The DAS system shall be provided with a web-browser management interface that allows configuring, management, and error reporting of active equipment part of the DAS system.

1.4 RFS INSTALLER QUALIFICATIONS

A. The installer of this system (RFS Installer) shall be a company regularly engaged in the installation of this type of system for the last five (5) years.

B. The RFS installer shall have had installed at least twenty (20) systems similar to this one, in the last five (5) years. The RFS installer shall provide a list of completed projects with contact information from the end user side.

C. The RFS installer shall have a local service office within 100 miles of the project site.

1.5 MATERIALS ALTERNATES AND SUBSTITUTIONS

A. General: See details for alternates and substitution in specification section 270010.

B. There are no acceptable substitutions for any parts of this system.

1.6 SUBMITTALS

A. The RFS installer shall follow all requirements for shop drawings indicated in specification section 27001.

B. Submittal Requirements:
1. RFS Installer qualifications
2. Product Data: Submit manufacturer datasheets for the following components:
   a. Donor and Coverage Antennas
   b. Coaxial Cable and Connectors
   c. Splitters, Combiners and Couplers
   d. Bi-Directional Amplifiers (BDA)
   e. Fiber-Optic Master Unit
   f. Fiber-Optic Remote Units

3. Shop Drawings: Submit the following items:
   a. RF link budget
   b. Signal to Noise Interference Ratio (SNIR) Map
   c. Overlay of system Components on floor plans
   d. Drawings for Donor Antenna and grounding
   e. Bill-of-Material (BOM)
   f. Heat maps for all frequencies
   g. Battery calculations for the DAS
   h. Complete IBwave reports

4. Statement of Work (SOW): Submit sample SOW
5. Acceptance Test Plan (ATP): Submit sample ATP
6. Recommended Spares
7. Maintenance Service Pricing
8. Warranty Documents:
   a. Submit for all manufactured Components specified in this Section.
   b. Submit RFS Installer’s System Warranty.

1.7 ABBREVIATIONS AND ACRONYMS

A. ACG: Automatic Gain Control

B. AHJ: Authority Having Jurisdiction

C. ATP: Acceptance Test Plan

D. AWS: Advanced Wireless Service

E. BDA: Bi-Direction Amplifier

F. BOM: Bill-of-Material

G. BRS: Broadband Radio Service

H. C/N: Carrier-to-Noise Ratio

I. DAS: Distributed Antenna System

J. FCC: Federal Communications Commission

K. GUI: Graphical User Interface

L. MTBF: Mean Time Between Failure

M. NFPA: National Fire Protection Association

N. NMS: Network Management System

O. PCS: Personal Communications System

P. PSN: Public Safety Network

Q. RoHS: Restriction of Hazardous Substances

R. RSL: Received Signal Level

S. SNIR: Signal-to-Noise Interference Ratio

T. SOW: Statement of Work

U. VSWR: Voltage Standing Wave Ratio

1.8 DEFINITIONS

A. Acceptance: Expressed approval by the customer

B. Active: DAS components that require AC/DC power for operation

C. Carrier Approval: Expressed approval to interconnect to the WSP macro network

D. Channel: A path for an RF transmission between two points

E. Component: A main system element of the DAS

F. Passive: DAS components that do not require AC/DC power for operation

PART 2 - PRODUCTS

2.1 COMPONENTS

A. Donor signal. For this project, the Donor signal will come from a roof mounted donor antenna.

B. Broadband Donor Antennas: Selected based on signal survey.

C. Omni-Directional Coverage: Omni-Directional Coverage antennas shall feature a multi-band design, accommodating multiple frequency bands in a single small antenna. These antennas shall be selected based on the system architecture and based on the software modeling.

D. For all fiber optic passive components specification section 271000 shall be followed.

E. Splitters, Combiners, Couplers, Coax Jumpers, and Connectors:

1. Approved Manufacturers:
    a. CommScope
    b. Times Microwave Systems
    c. Approved equal

F. Universal Multiband, Multi-service software-based repeater platform (Node). This unit provides digital programmable filtering to select the signals that will be propagated in the DAS system. This unit shall be manageable and have the ability to transmit SNMP alarms. This unit shall be modular and shall be provided with the proper cards for covering all frequencies listed in this specification.

1. Approved Manufacturer:
    a. CommScope
    b. Harris
    c. Solid
    d. Approved equal

G. Base Station Interface Unit (BIU). For the downlink path, the BIU shall receive simplexed signals from the RF signal source. The BIU shall independently filter, attenuates and controls each signal and transmits these to the system's Optical Distribution Units (ODU). Each BIU shall consist of up to two (2) MDBUs (SISO chassis) or up to two (2) MDBUs (MIMO chassis) and can support up to nine (9) or seventeen (17) discrete inputs per sector, respectively (four per MDBU and one V/UHF combined input on the BIU chassis). Supported bands include VHF,

UHF, 700MHz, 800MHz, 850MHz, 900MHz, 1900MHz, 2100MHz, and 2500MHz TDD. This BIU shall be classified as a Class A system.

1. Approved Manufacturers:
    a. CommScope
    b. Harris
    c. Solid
    d. Approved equal

H. Optical Distribution Unit (ODU). This unit shall convert all RF signals to a fiber optics signal for transmit and receive to the different Main Remote Units (MRU).

1. Approved Manufacturers:
    a. CommScope
    b. Harris
    c. Solid
    d. Approved equal

I. Fiber Remote Units (FRU). The FRU shall convert the optical signals back to RF signals and transports them across coaxial cable to the DAS omnidirectional antennae which radiate the wireless signals within the corresponding sector to the user equipment. For the uplink, the signal follows the reverse path using the same equipment. The units shall provide monitoring status for code compliant.

1. Approved Manufacturers:
    a. CommScope
    b. Harris
    c. Solid
    d. Approved equal

J. DAS Management System (DMS). The DAS Management System shall be a network management device that provides remote control and monitoring of the DAS through a standard Internet connection.

1. Approved Manufacturers:
    a. CommScope
    b. Harris
    c. Solid
    d. Approved equal

K. DAS Annunciator and Monitoring Panel: The Das system shall include a DAS annunciator and monitoring panel as required by code. The specifications of this unit shall be:
    1. It shall include a rechargeable battery to provide 24-hours of backup power.
    2. The unit shall include built in LED indicators to notify the different alarms.
    3. The unit shall provide status indicating for the following elements of the DAS system

a. The BDA
b. The donor Antenna
c. AC power
d. Battery Capacity
e. Battery Charger
f. System Status

4. The unit shall include Form-C relay contact for interfacing to a fire alarm panel, for all signal inputs.
5. The unit shall be housing in a NEMA-4 enclosure and capable of monitoring the communications link for integrity.
6. If the BDA does not offer an output for monitoring the donor antenna, the system shall be provided with a bias-T fitting in the donor antenna cable to monitor the status of the donor antennas.
7. Basis of design: DAS alert Model 1221A

2.2 RACEWAYS FOR DAS SYSTEM

A. All raceways for the DAS shall have a survivability level 1, as defined in NFPA 72 and as required by the AHJ.

B. All equipment for the DAS system shall be installed inside a NEMA 4 metallic enclosure. For the head end system, use an outdoor rated free-standing cabinet. For smaller equipment, use a wall mounted enclosure (no less than 36” x 36” x 8”) with a hinged door and lock. All enclosures and cabinet shall be painted red and shall include a label indicating it is Fire Department Equipment and the name of the company who supports the system and contact information.

2.3 POWER BACKUP

A. All DAS equipment shall be powered through emergency power branch circuit and shall be feed through a UPS system with a 12-hours of battery backup. The RFS installer shall estimate the required capacity of the UPS and the required battery backup. The UPS selected for this system shall have a monitoring card using dry contact relays to notify the faults, so they can be supervised.

B. Because of code requirements to house DAS equipment in NEMA 4X enclosure, the Uninterrupted Power Supply (UPS) system used to power the DAS system shall be based in outdoor rated UPS. The UPS system shall have monitoring capabilities through dry contact relays.

C. Approved manufacturers:
1. Alpha Micro (Outdoor UPS units) with monitoring card
2. Approved equal

2.4 SUPERVISION OF DAS SYSTEM

A. All DAS equipment shall be supervised as required by NFPA 1221. The monitoring shall happen through the fire alarm system and a dedicated remote annunciation panel located in the fire command room.

B. The scope of work for the monitoring shall be, not only for the head end but also for all the fiber remotes and the UPS units providing power to all components of the system.

C. The monitoring if the system shall happen through the Fire Alarm System (FAS), by means of monitoring modules connected to the DAS annunciator and monitoring panels. The FAS shall have a dedicated annunciator panel for the DAS system located at the main entrance to the building or inside the Fire Command Room.

2.5 IDENTIFICATION AND LABELING TAGS

A. The RFS installer shall follow labeling materials indicated in specification section 270010

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: The RFS installer shall follow all installation practices indicated in specification section 270010.

B. The RFS installer shall design, install, commission, and test the DAS in accordance with the manufacturer's instructions and recommendations.

C. All FODCs for fiber the optics cables feeding the DAS system shall be installed inside the NEMA 4X enclosures or cabinets holding the DAS equipment.

3.2 PERFORMANCE REQUIREMENTS

A. The PSN DAS shall comply with NFPA-72 and NFPA 1221.

B. Installers shall state the assumed channel count for the PSN Frequency Bands identified above in Section 1.3. with submittal of bid response. Prior to installation, installers shall confirm the channel count and frequencies with the AHJ and shall guarantee coverage for these channels per the criteria stated above.

3.3 SYSTEM WARRANTY AND SERVICE

A. General: The RFS installer shall follow all warranty and service requirements indicated in specification section 270010.

B. All Fiber optics cabling for the DAS system shall be covered in the same warranty for the structured cabling system indicated in specification section 271000.

3.4 ENGINEER'S FINAL ACCEPTANCE TEST

A. General: The RFS installer shall follow all test requirements indicated in specification section 270010

B. Additional testing requirements for the RF system:
   1. All antenna feed lines shall be RF swept with TDR to determine proper installation without kinks or damage to the coax

3.5 TRAINING AND INSTRUCTION

A. General: The RFS installer shall follow all training requirements indicated in specification section 270010.

3.6 AS BUILT DOUCMENTS AND CLOSE OUT INFORMATION

A. General: The RFS installer shall follow all as built and close out information requirements indicated in specification section 270010.

B. Additional requirements for as built documentation shall include:
   1. Donor antenna, grounding, and lighting protection details
   2. Cable routing, splitters, couplers, and coverage antenna locations
   3. Active component locations, layout, and configuration
   4. Test Reports. PSN: Submit Accepted ATP reports confirming the requirements of part 3 of this specification.
   5. Field Reports: Submit sweep-testing results for all cable runs.
   6. Field Reports: Submit OTDR test results for all fiber runs.
   7. Copy of the signed agreement for frequency re-broadcast between owner and PSN FRSE.

END OF SECTION 28 05 37

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SECTION 28 10 00
ELECTRONIC SECURITY SYSTEMS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. The scope of work shall include furnishing all labor, materials, enclosures, wiring, equipment, programming, training, testing, documentation, and warranty support, required to provide a completely operational and working Security System.

B. The Security System Installer (SSI) shall coordinate with the door frame installer, the door installer, the door hardware installer, and gate installers on the placement of all electronic locking hardware and door controls for this project. The SSI shall provide the low voltage power supplies for all electric locks, wire, and cable, terminate all connections, and shall interface this equipment with the integrated security system.

C. All materials for the structured cabling system (4-pair UTP cables, fiber optic cables and 24-AWG multi-pair (25 pairs or higher) components required for the security system shall be in compliance with specification Section 27 10 00.

D. The scope of work for this specification also includes the following items:

1. The programming of the access control software including the integration described in this specification section.

E. The following parts of the system are not part of this contract:

1. Software licenses for the security system beyond the 12 months included in this contract.

F. The following parts of the system are to be a part of this contract:

1. All networking equipment (switches, routers, etc.) for the operation of the system
2. All computers and software to run the security system with the exception of the items indicated in this specification.

1.2 RELATED DOCUMENTS

A. General Terms and Conditions of the Contract Documents
1. Division 8 – Door Hardware
2. Division 26 – Electrical

B. Supplemental: Refer to the specification sections identified below for additional requirements, which are supplemented by this section.
1. 27 00 10 Technology General Provisions
2. 27 05 28 Raceways for Technology
3. 27 10 00 Structured Cabling System
4. 27 05 26 Grounding and Bonding for Communication Systems
5. 28 20 00 Video Surveillance System

1.3 SECURITY SYSTEM INSTALLER QUALIFICATIONS

A. The SSI selected for this project must be a direct manufacturer authorized representative of the product they propose to provide. All technicians assigned to install and configure this system shall be factory trained and certified for the proper installation of this equipment. The SSI must have a minimum of 5 qualified and factory trained technicians to support this system. This company must be of established reputation and experience, regularly engaged in the supply and support of such systems for a period of at least five consecutive years. This company shall have a fully staffed office of sales and technical support representatives within 100 miles of travel to this project.

B. Other required SSI qualifications are:
1. The SSI shall agree, in writing, as part of their proposal, to provide both warranty and non-warranty service within 4 hours of notification of a problem. The SSI shall be able to perform any and all repairs to the system within 24 hours.
2. The SSI, as a minimum, must carry a current state issued limited energy license.

1.4 MATERIALS ALTERNATES AND SUBSTITUTIONS

A. General: See details for alternates and substitution in specification section 270010.

B. Due to compatibility issues with other buildings under the control of the owner, the only approved system to be provided in this project is Tyco C-Cure 9000 for ACS, Axis Communications for security cameras, and Genetec for VMS. No substitutions are accepted for this type of equipment.

C. Sensors or door security devices with the exception of card readers shall allow for substitutions.

1.5 SHOP DRAWINGS AND SUBMITTALS

A. The SSI shall follow all requirements for shop drawings indicated in specification section 270010.

B. The submittal process for this scope of work will be a two-stage process. The first stage is the product/installer approval. Within 30 business days of receiving contract approval and notice to proceed, the following items shall be submitted to the A&E for review and approval, as part of the product/installer approval process.
1. Proof of Installer qualifications, addressing all requirements of paragraph 1.3 of this specification.
2. Product numbers, specifications, and data sheets for all equipment.
3. Data sheets and samples of all labeling materials and equipment to be used in the project.
4. A complete explanation of the identification method to be used for all equipment and cabling part of the security system.
5. Data sheets of all termination blocks and mounting accessories to be used in the project. A paragraph shall be added before each data sheet indicating the intended use of each type of termination block.
6. Detailed drawings of all custom products to be used in the project.
7. Data sheets for all wire and cable to be used as part of this system. A paragraph shall be added before each data sheet indicating the intended use (to connect what type of devices) of each cable.

C. The second stage of the submittal process is the shop drawing process. Shop drawings shall only be submitted after all portions of the product/installer approval have been accepted by the A&E. The following information is required as part of the shop drawings:
   1. Floor plans indication all devices to be provided and all cable runs to all devices or junction boxes. Access controlled doors shall have the door name. All other devices shall have a unique identifier, as they will be programmed in the system.
   2. Point to point wiring diagrams indicating all termination points for each conductor and for each device, cable types and color coding of each termination. These diagrams shall be submitted for each door type and for each type of device in the system.
   3. Panel schedules in a table format, indicating all ports being used and what device is connected to each port. Panel schedules shall be submitted for all access control panels, alarm panels, fiber optics distribution frames, Ethernet switches, patch panels, termination blocks, etc.
   4. Completely fill out network configuration template provided by TLC Engineering upon request, to explain all network devices to be used in a project and to get IP addresses from the network administrator.
   5. Overall system diagrams indicating all head end components, their room location, and all configuration characteristics like IP addresses, serial ports used, etc.
   6. Termination details for multi-conductor connectors and other details not included in item 2 of the shop drawings.
   7. Outline of the testing process.
   8. Training syllabus for all systems included in this scope.

1.6 ABBREVIATIONS

A. Additional abbreviations used in this document:
   1. ADA - Americans with Disabilities Act
   2. API - Application Programming Interface
   3. ASCII - American Standard Code for Information Interchange
   4. BPS - Bits Per Second
   5. DIN - German Institute of Standardization
   6. DPS - Door Position Switch
   7. FCC - Federal Communications Commission
   8. GUI - Graphical User Interface
   9. ID - Identification
   10. I/O - Input /Output
   11. ISC: Intelligent System Controller
   12. ODBC - Open Database Connectivity
   13. O&M - Operations and Maintenance
   14. PIN - Personal Identification Number
   15. RAID - Redundant Array of Independent Disks
   16. REX - Request to Exit
   17. RoHS - Restriction of Hazardous Substances Directive
   18. SCS - Security Control System
   19. SDRAM - Synchronized Dynamic Random Access Memory
   20. STP - Shielded Twisted Pair
   21. UL - Underwriters Laboratories, Inc.
   22. UPS - Uninterrupted Power Supply
   23. USB - Universal Serial Bus
   24. UTP - Unshielded Twisted Pair
   25. VOC - Volatile Organic Compounds

1.7 GLOSSARY OF TERMS

A. The following terms are defined for the purposes of this specification:

1. Access Group: A logical group of card readers (terminals) which may be connected to one or more sub-controllers, and which represent a collection of readers for which a particular cardholder may have access privileges.
2. Access Mode: The mode of operation in which the security control system shall only annunciate tamper and trouble conditions at a monitored point. Alarm conditions shall not be annunciated in this mode. Also referred to as alarm shunting.
3. Acknowledge: The action taken by a security control system operator to indicate that he/she is aware of a specific alarm or tamper state.
4. Action Messages: A set of instructions automatically provided to the operator when an alarm condition is generated.
5. Advisory: A message provided by the security control system to the operator to inform him/her of a condition as reported by the security control system.
6. Alarm Condition: A change of state, as sensed by the security control system, indicating that the security control system has detected a condition which its sensors were designed to detect.
7. API Integration: a method to transfer information between two systems by means of APIs, though an Ethernet communication network.
8. Cardholder: A person who has been issued a valid access card.
9. Card Reader: A device usually located at access points, designed to decode the information contained on or within a card key credential for the purposes of making an access decision or for identity verification.
10. Clear: The action taken by a security control system operator to respond to an alarm condition or advisory so that other alarms may be serviced or so that other actions may be taken.
11. Download: To send computer data from the File Server to a controller for the purposes of making access decision without the intervention of the File Server.
12. Facility Code: A coded number, in addition to the individual card number, stored within each card key that uniquely identifies the facility at which the card is valid. This feature prevents cards from one facility from being used at another facility that has a similar access control system.
13. File Server: Primary host computer in the networked security system which maintains the access control system database.
14. Line Supervision: The monitoring of an electrical circuit via electrical and software systems to verify the electrical integrity of the supervised circuit.
15. Off-line: A condition in which a controller(s) is not in communication with the File Server. In the off-line mode, the controller continues to make access decisions and process alarms according to the information stored at its local database.
16. Password: A combination of numbers or letters unique to security control system operator which defines commands and data fields he/she may view, edit, or command.
17. Relay integration: A method to transfer signals between two systems by means of using potential free contact closures to input points.
18. Reset: A command or feedback signal that indicates that a monitored point has returned to its normal state after having transferred to the alarm or trouble state.
19. Secure Mode: The normal state of an alarm input point from which it will be monitored for change of state to either an alarm or trouble condition.
20. Secured Area: A physical location within the facility to which access is controlled by one or more card readers.
21. Secured side: Side of a security door where a higher security level needs to be granted for a user to be authorized to be in that side of the door.
22. Serial line integration: A method to transfer information between two systems by means of an RS-232/RS-422 or RS-485 line, using ASCII strings.

23. Tamper: A condition within the circuitry of a monitored point which indicates the electrical integrity of that sensing circuit has been compromised.
24. Tamper proof screws: A screw with a security hex lobular internal driving feature as described in ISO 10664. As an example, a security TORX head, as developed by Camcar LLC.
25. Time Interval: A time stamp of one start time and one stop time within a time period.
26. Time Period: A user programmable period of time made up of days of the week and hours in the day.
27. Trouble: A condition within the circuitry of a monitored point which indicates that an equipment malfunction, single break, single fault, or a wire-to-wire short exists.
28. Unsecured side: Side of a security door where a lower security level needs to be granted for a user to be authorized to be in that side of the door.
29. User Definable: An attribute of a security control system function that may be easily tailored by the System Administrator.
30. Workstation: A personal computer connected to the main security control system File Server via a local area network connection for the purpose of programming the system and responding to alarms.

1.8 SYSTEM DESCRIPTION

A. The security systems primary purposes shall be to provide access control and alarm monitoring capabilities for this project. The system shall provide functionality such as the ability to regulate and control access through specific areas of the facility and fully integrate with other security components such as closed-circuit television, alarm system, intercom and digital video recording.

B. The system must utilize a single seamlessly integrated relational database for all functionality. This integration shall be provided using a single operating environment. The operating environment shall be the fully multi-tasking multi-threading operating System.

C. Alarm monitoring and administrative workstations must be able to connect to, and monitor, field hardware devices such as card readers and intelligent system controllers. Administrative tasks including defining asset information, access groups, time zones, configuring digital video devices, generating reports, creating maps, etc. shall be provided from any client workstation on the network that is licensed to do so. All systems must utilize a single database on the network and must be accessible in real time to any security workstation connected to the network. This shall allow for automatic change propagation to all client workstations as well as common database consolidation.

D. A real-time graphical map representing the layout of this building shall indicate if an electronically controlled door is in a secure or unsecured mode. Control modules will be required to lock, or unlock, any electronically controlled door or vehicle gate at this facility. An automatic cardholder call-up feature shall allow for the quick search and display of images in the database. A System's Operator journal shall be available to log important daily events. A trace function shall be available for System Operator's to locate and track activity on a specific cardholder or at a specific card reader. All system hardware must be controllable using a mouse to click on the associated system icon.

E. The security system shall be designed to support an advanced distributed network architecture, whereas Intelligent System Controllers do not need to be home-run wired back to the database server. All Intelligent System Controllers shall be connected to an Ethernet network via industry standard TCP/IP communication protocol. Network based Intelligent System Controllers shall be able to communicate back with the database server through industry standard network switches and routers.

F. The security system shall support a data encryption utility. In utilizing encryption technologies, data communication shall be protected between workgroups, local area network computers, domain clients and servers, branch sites which may be physically remote, extranets, roving clients, and remote administration of computers.

PART 2 - SYSTEM CHARACTERISTICS

2.1 SECURITY SYSTEM SOFTWARE

A. The SSI shall provide all software required for the complete operation of the access control system.

B. Acceptable products for the security system software are:
1. Tyco Software House – CCure 9000

C. No other access control system software can be accepted by the A&E.

D. At a minimum the security system software shall provide the following key features:
1. Ability to integrate with other system with features as indicated in this specification.
2. Be able to operate with cards with multiple system codes.
3. Have an integrated platform with the video system.
4. Support browser-based clients and standard client workstation.

2.2 COMPUTER SYSTEM HARDWARE

A. Computer based system are required for the operation of the security system. The following types of computer systems are required for the system:
1. Server: System that communicates with ISC and other hardware. It is also the system with the database of all the components and transactions of the system. Server shall be installed in a secured room.
2. Workstation: System accessible to users for operating, configuring, and accessing reports from the security system. Workstations communicate with the server through TCP/IP.
3. Badging workstation: A system used to create the picture IDs for the system

B. INTEGRATED SERVER. When the manufacturer of the Security System Software offers the server as an integrated appliance and as a single part number, the server shall be as indicated by the manufacturer.

C. SOFTWARE ONLY. When the manufacturer of the Security System Software offers the possibility of providing the software only and the SSI is required to provide the hardware platform for the server the SSI shall provide a server in compliance with the Minimum Specifications by Software Manufacturer (MSSM) plus an extra capacity as indicated below:
1. Processor speed: MSSM + 30%
2. Cache memory: MSSM + 30%
3. Front side bus speed: MSSM +30%
4. Memory: MSSM + 100% (or maximum memory supported by Operating system)
5. Hard drive capacity: MSSM + 100% in RAID 1 configuration
6. CD/DVD Drive: DVD ROM Drive SATA, internal
7. Network Card: Dual 1 GB connections
8. Power supply: High Output Power Supply, Redundant.

9. USB ports: Minimum six (6) USB 2.0
10. Mounting: Rack chassis with sliding rapid/versa rails and cable management arm.
11. Operating system: As required by security system software.
12. Additional software: Database packages as required by Security System manufacturer. Antivirus and Internet Security package with a 1 year license
13. Warranty: 3 –year warranty.

D. BROWSER BASED WORKSTATIONS. When the manufacturer of the security system offers browser-based access to the security system, workstations will be provided by owner. Browser based workstations are only allowed in the system if they provide a complete functionality of the system. If the browser-based workstation offers only a partial set of functions compared to a client based workstations, browser based workstations will only be allowed additional to client based workstations.

E. CLIENT BASED WORKSTATIONS. When the manufacturer of the security system requires a software client to be installed in a workstation for the management of the system and the SSI is required to provide the hardware platform for the workstation, the SSI shall provide workstations in compliance with the Minimum Specifications by Software Manufacturer (MSSM) plus an extra capacity as indicated below:
1. Processor speed: MSSM + 30%
2. Cache memory: MSSM + 30%
3. Front side bus speed: MSSM +30%
4. Memory: MSSM + 100% (or maximum memory supported by Operating system)
5. Hard drive capacity: MSSM + 100%
6. CD/DVD Drive: DVD ROM Drive SATA, internal
7. Network Card: Single 1 GB connections
8. Power supply: High Output Power Supply
9. USB ports: Minimum six (6) USB 2.0
10. Mounting: Desk mounted. If rack mounted is required a rack shelf shall be provided to mount the workstation
11. Operating system: As required by security system software
12. Additional software: Antivirus and Internet Security package with a 1-year license
13. Warranty: 3 –year warranty.

F. SYSTEM UPS. All workstation and servers shall receive a UPS system with an integrated surge protector. The UPS system shall be rated at 1500 VA. Minimum runtimes in the event of total power loss shall not be less than 15 minutes at full load.

2.3 INTELLIGENT SYSTEM CONTROLLER (ISC)

A. An Intelligent System Controller (ISC) shall link the security software to all other field hardware components like card readers, inputs, and outputs. Controllers shall operate as autonomous, microprocessor-based processing units:
1. ISCs shall make decisions about access control, alarm monitoring, linking functions, and door-locking schedules for their operation, independent of other system components.
2. ISCs shall be part of a fully distributed processing-control network.
3. The portion of the database associated with a ISC, and consisting of parameters, constraints, and the latest value or status of points connected to that ISC, shall be maintained in the ISC.

B. ISC can be one single hardware board or multiple hardware boards linked together. The following functions shall be fully implemented and operational within each ISC:
1. Monitoring inputs (open, closed or fault).
2. Controlling outputs.

3. Automatically reporting alarms to the system server.
4. Reporting of sensor and output status to the system server on request.
5. Maintaining real time, automatically updated by the system server at least once a day.
6. Communicating with the system server through a secured encrypted Ethernet TCP/IP communication.
7. Communicating with other ISC or hardware devices through serial RS-422/RS-232/RS-45 encrypted lines.
8. Executing ISC resident programs.
9. Diagnosing.
10. Downloading and uploading data to and from the system server.

C. ISC Operations at a Location:
1. Globally operating I/O linking and anti-pass back functions between ISCs within the same Location without system server or workstation intervention. Linking and anti-pass back shall remain fully functional within the same Location even when the system server or workstations are off-line.
2. In the event of communication failure between the system server and a Location, there shall be no degradation in operations at the ISCs at that Location. ISCs at each Location shall be connected to a memory buffer with a capacity to store up to 10,000 events; there shall be no loss of transactions in system history files until the buffer overflows.
3. Buffered events shall be handled in a first-in-first-out mode of operation.

D. Individual ISC Operation:
1. ISCs shall transmit alarms, status changes, and other data to the system server when communications circuits are operable. If communications are not available, ISCs shall function in a stand-alone mode; operational data, including the status and alarm data normally transmitted to the system server, shall be stored for later transmission to the system server. Storage capacity for the latest 1024 events shall be provided at each ISC.
2. Card-reader ports of an ISC shall be custom configurable for at least 120 different card-reader or keypad formats (Weigand). Multiple reader or keypad formats may be used simultaneously at different ISCs or within the same ISC.
3. ISCs shall provide a response to card readers or keypad entries in less than 0.25 seconds, regardless of system size.
4. ISCs that are reset, or powered up from a non-powered state, shall automatically request a parameter download and reboot to their proper working state. This shall happen without any operator intervention.
5. Initial Startup: When ISCs are brought on-line, database parameters shall be automatically downloaded to them. After initial download is completed, only database changes shall be downloaded to each ISC.
6. On failure for any reason, ISCs shall perform an orderly shutdown and force ISC outputs to a predetermined failure-mode state, consistent with the failure modes shown and the associated control device.
7. After power is restored, following a power failure, startup software shall initiate self-test diagnostic routines, after which ISCs shall resume normal operation.
8. After ISC failure, if the database and application software are no longer resident, ISCs shall not restart but shall remain in the failure mode until repaired. If database and application programs are resident, ISCs shall immediately resume operation. If not, software shall be restored automatically from the system server.

E. Communications Monitoring:
1. System shall monitor and report status of serial communications loop of each Location.
2. Communication status window shall display which ISCs are currently communicating, a total count of missed polls since midnight, and which ISC last missed a poll.

3. Communication status window shall show the type of CPU, the type of I/O board, and the amount of RAM for each ISC.

F. Operating systems shall include a real-time clock function that maintains seconds, minutes, hours, day, date, and month. The real-time clock shall be automatically synchronized with the system server at least once a day to plus or minus 10 seconds. The time synchronization shall be automatic, without operator action and without requiring system shutdown.

G. All ISCs shall be UL listed. Input points in ISCs shall be UL 294 listed.

2.4 POWER SUPPLY/ENCLOSURES – ACCESS CONTROL SYSTEM

A. All ISCs and other boards part of the access control system shall be installed inside a metal enclosure with a power supply as recommended and designed by the manufacturer of the equipment.

B. The low voltage power supply shall convert a 115 VAC or 24 VAC 60 Hz input to a continuously supplied current of 12 or 24 VDC. The power supply shall be UL listed, fused protected and class 2 rated.

C. The power supply shall include a battery charger to provide backup power when main power goes down. If ISC has a battery charger and input built in, then the power supply does not need this feature.

D. Plug in transformers feeding a low voltage power supply feeding an access control panel are not allowed unless they are mounted inside another lockable enclosure. External multi-output individually fused protected outputs power supplies feeding all access control board are acceptable as long as they are located next to the access control panels.

E. Maintenance free batteries shall be provided with all power supplies or ISC and shall be mounted inside the same enclosure. Batteries shall be sized to allow at least 4 hours of power backup. All power supplies shall be monitored for low battery through the access control system.

F. All enclosures for ISCs, other electronic boards, power supplies or battery cabinets shall be UL listed NEMA 1 hinged cover enclosures where mounted indoors and in fully weatherproof NEMA 4X enclosures when located outdoors or in an exposed or covered area. All enclosure doors shall be key lockable, keyed alike, and shall include a tamper switch for monitoring by the security system. Any cabinet opening shall initiate an alarm condition to the security monitoring system.

G. Basis of design: Altronix

2.5 TAMPER SWITCH

A. All security enclosures, including power supplies and terminal cabinets shall include a tamper switch for direct supervision of the cabinet door. Any opening of these doors shall initiate an alarm condition to the security monitoring system. All tamper contacts shall be a reed actuated self adjusting plunger style switch. If a tamper-contact is provided by the manufacturer with the enclosure this device may be used.

B. Tamper switches shall be wired as to report separate alarms to the system for each panel.

C. Basis of design: Amseco PSW-1 or an approved equal.

2.6 CONTACTLESS SMART CARD READER

A. The standard smart card reader for use throughout this facility shall be a switch plate style reader in low profile weatherized polycarbonate housing suitable for mounting in either an indoor or outdoor environment. The reader shall be constructed of a polycarbonate material sealed to a NEMA rating of 4X IP65. The reader shall contain an integral magnet for use with an external magnetic reed switch to provide tamper protection when connected to an external alarm. The reader shall be UL/C 294 listed and shall conform to FCC and ISO standards. The reader shall operate at a frequency of 13.56MHz. All RF data transmitted between this device and the smart card shall be encrypted for additional protection using a secure algorithm. The reader shall provide an audiovisual indication to signify access granted or access denied. This operation shall be displayed by a high intensity LED light bar which shall change from red, amber, or green based on the status of the operation. The housing shall mount on an industry standard single gang electrical junction box. It shall have a read range of 4.0 to 4.5 inches when used with a standard smart access card and 1.0 to 2.0 inches when used with a key tag.

B. The mullion style readers shall only be used where wall mounting is not possible (for example glass/aluminum store-front systems).

C. The smart card reader with keypad shall have a standard contactless smart card and shall have a twelve (12) key keypad. Readers with keypad shall be used where indicated in design drawings.

D. With every badging station provided for this project, a verification reader with keypad shall be provided. This reader shall also have writing capabilities to the access cards. This reader shall be provided with USB interface and a stand for desktop mount.

E. Communications between the readers and the ISC shall be through a Wiegand [OSDP] interface

F. Basis of design selection: HID i-Class SE series.

2.7 CONTACTLESS SMART CARD

A. The contactless smart cards for the access control system shall be receptive to a standard smart card reader. Body shielding or variable environmental conditions shall have no adverse effect on their operation. The card shall be a read only type device

B. All card ordered for this project shall have the same system code.

C. All read/write cards ordered for this project shall have a 16K bit dual application area.

D. All access cards or tags shall be purchased through the HID Corporate 1000 program with the facility code assigned to the owner.

E. Basis of Design: HID i-Class SE

2.8 LONG RANGE UHF READER

A. The long-range UHF reader to be used at the vehicle gates as indicated in the construction drawings. The reader shall be constructed of a polycarbonate material sealed to a NEMA rating of 4X IP65. The reader shall be UL/C 294 listed and shall conform to FCC and ISO standards. The reader shall operate in the 902-928 MHz UHF band to communicate with radio frequency tags and credentials. All RF data transmitted between this device and the credential shall be encrypted for additional protection using a secure algorithm. The reader shall have a read range of 15 feet when used with an approved credential.

B. 12 VDC power for the long-range reader shall be from a general use power supply with battery backup.

C. The long-range reader shall connect to a reader port on the ACS. The reader shall communicate to the ISC through Wiegand interface

D. Basis of design: AWID LR-2000 or an approved equal.

2.9 LOCKING DEVICES – SPEICIFED UNDER DIV 8

A. The SSI shall coordinate with the door hardware installer on the placement of electronic locking hardware required for this project. The SSI shall provide all necessary wire and cable, and the low voltage power supplies for door locks. The SSI shall also be responsible for terminating all connections and interface this equipment with the integrated security system.

2.10 DELAYED EGRESS ELECTROMAGNETIC LOCKS

A. The delayed egress electromagnetic locks for this project shall be a NFPA 101 compliant units with a holding force of 1,500 lbs. The unit shall be able to be powered from a 12VDC or a 24 VDC power supply.

B. The delayed egress electromagnetic lock shall have the following options at a minimum: Bypass monitor, door status switch, and dynastat force sensor.

C. Accessories: The SSI shall provide all accessories for proper mounting of the delayed egress electromagnetic lock to the door frame such as filler plates, Z-brackets, or angle brackets.

D. Basis of design: Dynalock 3101C – Gen II.

2.11 ELECTROMAGNETIC LOCKS

A. The electromagnetic locks for this project shall provide a locking force of 1,500 lb. The unit shall be able to be powered from a 12VDC or a 24 VDC power supply.

B. The electromagnetic lock shall have the following options at a minimum: bi-color LED indicator and door status switch.

C. Accessories. The SSI shall provide all accessories for proper mounting of the electromagnetic lock to the door frame such as filler plates, Z-brackets, or angle brackets

D. Basis of design: Dynalock 3000.

2.12 DOOR RELASE BUTTONS (REQUEST TO EXIT SWITCH/BUTTON)

A. Where indicated on the drawings, a door release button shall be provided to function as a secondary method of door release on locked doors. The door release button shall have the following specifications:
1. Button type: Illuminated.
2. Button size: two inches square
3. Lettering: “Push to Exit”
4. Box size: Single gang
5. Contacts: Momentary DPDT or (1 SPST N/O and 1 SPST N/C) 5A @ 30 VDC
6. Built-in timer: Pneumatic timer, only required when used with electromagnetic locks.
7. Finish: Bright Chrome
8. Basis of design: Camden Door Controls CM-30EE or equal.

B. For applications where the door release buttons will be located under a desk a rocker switch shall be used instead of the regular exit device. The design selection for the rocker switch is the Camden Door Controls CM-850 surface mounted.

2.13 REQUEST TO EXIT EGRESS MOTION SENSOR

A. The egress sensors shall utilize passive infrared technology to detect the motion of individuals approaching a door. Upon activation this device shall release the lock and shunt the magnetic door position switch to allow unobstructed egress through the door. This device shall be field adjustable to fit the monitoring requirements of the location where installed.

B. All request to exit motion sensors shall be provided with a trim plate for mounting the detector over a standard single gang junction box.

C. Basis of design: Detection Systems/Bosch model DS150i or an approved equal

2.14 SURGE PROTECTION

A. All security components mounted outside the building and wired through low voltage copper conductor back to the building shall be provided with surge and lighting protection. Provide UL listed multi-stage protection on all low voltage and signal transmission lines. All 120 VAC surge suppression devices shall be EDCO HSP121BT-1RU or an approved equal. For low voltage connections provide FAS-1 surge suppressors manufactured by EDCO or an approved equal. For RS-485 or RS-422 connections provide PC642C-008LC with base PCB1B manufactured by EDCO or an approved equal.

B. For exposed Ethernet connections with PoE, use EDCO CAT6-E PoE or approved equal.

2.15 POWER SUPPLY – DOOR LOCKING HARDWARE AND SENSORS

A. Power supplies for door locks or powered sensors (i.e., request to exit motion sensors) shall be completely separate from power supplies for ISC or electronic hardware part of the card access system.

B. The power supply for door locks and powered sensors shall convert a 115 VAC 60 Hz input to a continuously supplied current of 24 VDC. The power supply shall be UL listed, NFPA compliant, and have multiple class 2 rated outputs. The power supply shall be housed in

NEMA 1 hinged cover enclosures where mounted indoors and in fully weatherproof NEMA 4 enclosures when located outdoors or in an exposed or covered area. All enclosure doors shall be key lockable, keyed alike, and shall include a tamper switch for monitoring by the security system. Any cabinet opening shall initiate an alarm condition to the security monitoring system.

C. The power supply for door locks and powered sensors shall include a battery charger and a battery input to provide power to the locks after a main power system failure. The switchover to stand-by battery shall be automatic when main AC power fails.

D. Power supplies for regular locking hardware shall be installed next to access control panels.

E. Maintenance free batteries shall be provided with all power supplies. Batteries shall be sized to allow at least 4 hours of power backup. All power supplies shall be monitored for low battery through the access control system.

F. The power supply for door locks and powered sensors shall have the following features:
1. Number of outputs: 16 programmable as fail-safe or fail secure individually
2. Fire alarm disconnect: Yes, latching or unlatching and individually selectable for any of the inputs.
3. Output protection: PTC
4. Monitoring: AC fail and low battery with dry contact closure.

G. Basis of design: Altronix Maximal series.

2.16 VEHICLE CARD READER, CAMERA, AND INTERCOM PEDESTAL

A. The custom pedestal shall be manufactured from 2-inch square aluminum tubing with a welded backplate and a square mounting baseplate with tapped holes. The stand shall include a fitted flange cover to conceal the mounting baseplate and associated fasteners required to secure this unit to the concrete platform. The enclosure shall be an aluminum design with a secure cover to prevent unauthorized access. This enclosure shall be weatherproof to protect electronics from environmental conditions. Dimensions and configuration of the pedestals shall be as indicated the design drawings.

2.17 KEY SWITCH

A. The key switch shall be a capable of fitting in a dual gang box with a single device adapter. The specifications of the key switch are:
1. Plate construction: ¼” extruded aluminum plate
2. Switch mode operation: maintained action.
3. Switch configuration: one SPDT and one DPDT
4. Cylinder: Match owner’s keying standard.
5. Screws: tamper resistant.
6. LED: bi-color (red-green) mounted in plate.
7. Design selection: Rutherford controls International model 960 or similar.

2.18 SLIDE GATE OPERATOR

A. All slide gate operators for this project shall be provided under this scope of work. The placement of all gate controllers shall be coordinated with the locations shown civil and

electrical documents. All gates shall be interfaced with the security system to restrict vehicle access into controlled areas.

B. The slide gate controller shall be designed for high traffic use, commercial grade, and continuous cycle operation with gates up to 1,500 pounds in weight and 45 feet in length. It shall use a solid steel machined pulley and notched v-grove belt for high efficient torque transfer from the motor to the gear reducer. The unit shall be suitable for Class I, II, III and IV applications.

C. All control operations shall be provided through an advanced electronic control board that incorporates input and output control points on a solid-state circuit board. Plug-in loop detectors shall be included for reverse detection.

D. The slide gate operator shall utilize a 1HP instant reversing 115VAC 7-amp motor with a precision limit switch system. The slide gate operator shall be ETL listed or UL 325 and UL 991 listed.

E. At a minimum each slide gate operator shall be provided with two (2) safety loops and sensors to prevent accidents.

F. Basis of design: NKS DoorKing model 9150 or approved equal.

2.19 EXTERIOR EQUIPMENT HOUSING

A. NEMA 4X rated stainless steel enclosures shall be provided to house electronic security equipment to all vehicle gates. The enclosure shall be constructed of 14 gauge stainless and shall have dimensions as required to hold electronics.

B. All enclosures shall be provided with a pad lock and a tamper switch for direct supervision. Any door opening shall initiate an alarm condition to the security monitoring system. All cores shall be keyed alike. A grounding package shall be provided for connection to a ground rod. A #8 solid copper ground wire shall be provided and installed from the ground lug to a grounding rod installed next to the enclosure.

C. All exterior enclosures shall include a compact air condition unit. The air condition unit shall be as indicated in the design drawings. All air condition units shall be monitored for proper operation through relay contacts through the access control system.

D. Basis of design: nVent Watershed, Type 4X

2.20 LOOP DETECTORS

A. Loop detectors shall be used to detect the presence of a vehicle in the spot where the loop detector is installed. Loop detectors shall be used as indicated in the design drawings to control gates, or to notify the presence of a vehicle in a specific area.

B. The loop detector system shall have the following specification:
1. The unit shall have loop diagnostics, a loop isolation transformer and loop conditioner.
2. The unit shall have aluminum RF shield housing, surge protection and a loop frequency counter.
3. The unit shall have sensitivity controls (10 levels), function controls and operation controls, through dip switch settings.

4. Unit shall operate at 12 V AC/DC or 24 V AC/DC.
5. Unit shall have at least two outputs on SPDT contacts.

C. The size of the loop shall be as recommended by gate ISC manufacturer. The SSI shall estimate the number on turns to ensure a maximum detection height of 3.2 ft from the ground.

D. After the wire loop is installed, the SSI shall seal the opening only with a commercial type of loop sealant designed for traffic loops. The SSI shall install wire loops with backer rod to prevent the wire from moving. For sealants and baker rods use RAI products or similar manufacturer.

E. Loop detectors shall be installed inside a metal enclosure in the secure side of the gate. Loop detector can be installed inside the enclosure for the gate operator or in a separate Stainless Steel NEMA 4X enclosure sized for the dimensions of the devices.

F. Power for the loop detectors shall be provided from the gate operator or from a power supply located in the telecommunications space when the loop is not part of the gate safety or request to exit features.

G. Basis of design: D-Tek loop detector by EMX industries or recommended device by manufacturer of gate operator.

2.21 DIN-RAIL MOUNTED RELAYS

A. General Description: Any time the access control system needs to switch any load that is not considered a Class 2 circuit as defined in the NEC article 725, or any load that works at voltages higher than 24 V (AC or DC) an external relay shall be used to switch the load. The Access control relay from an RIM or and OCM shall drive the coil of the external relay which contacts shall control the load. These additional relays shall always be mounted in a DIN rail and will be references in this specification as the DIN-rail mounted relays. These DIN rail mounted relays shall have the following specifications:
1. Number of contacts: 2 –Poles
2. Contact type: Form C
3. Contact material: AgCdO (silver tin oxide) or gold plating
4. Contact rating: 8 A minimum or as required by load
5. Insulation voltage: 250V IEC, 300V UL
6. Coil voltages: 24 VDC
7. Enclosure design: Slim line design. Width less than 0.5”

B. All DIN rail mounted relays shall be provided with a base made of molded high dielectric material, with terminal screw sockets for all contacts. All bases shall be capable of mounting on a standard DIN (#3) 35 mm wide rail and shall be of the screw terminal type.

C. All DIN rail mounted relays shall be provided with end clamps at the ends of each row of devices and shall be mounted inside security enclosures.

D. Basis of design: Rockwell Automation series 700-HK or equal.

2.22 DIN-RAIL MOUNTED TERMINAL BLOCKS

A. General Description: When multiple terminations are required for cabling part of the security system separate from the termination blocks mounted on the access control equipment, DIN rail mounted terminal blocks shall be used to make all wire termination. Other termination methods

such as wire nuts, crimp on connectors, shall not be used. The specifications of the DIN rail mounted terminal blocks are:

1. Block type: Feed-through block, for single conductor or two conductors, modular system. SSI to select according to application. Block shall be specifically designed for mounting on a DIN rail. Other types of blocks designed for direct surface mounting on a panel are not allowed.
2. Termination type: Captive screw connection.
3. Wire range per contact: AWG 28 to AWG 12
4. Maximum voltage rating: > 600V AC/DC
5. Maximum current rating: >20 A
6. Size: Termination block shall separate termination point from enclosure back panel no less than 0.5”

B. DIN rail mounted termination blocks shall be provided with all accessories including: DIN rail, end barriers, end anchors and jumpers.

C. Basis of design: Allen-Bradley 1492 series blocks, or similar from Eaton or Phoenix Contact.

2.23 WIRE & CABLE

A. Cables for un-powered security sensors shall have the following specification:
1. Minimum cable gauge: AWG 20
2. Number of conductors: 2, stranded conductors
3. Conductor type: Bare copper
4. Cable insulation: Color coded PVC
5. Conductor insulation colors: Black and red.
6. Voltage rating: 300V
7. Cable shield: No cable shields

B. Cables for powered security sensors shall have the following specifications:
1. Minimum cable gauge: AWG 20
2. Number of conductors: 4, stranded conductors
3. Conductor type: Bare copper
4. Cable insulation: Color coded PVC
5. Conductor insulation colors: Black, red, white and green.
6. Voltage rating: 300V
7. Cable shield: No cable shields

C. Cables for access control readers shall have the following specifications:
1. Minimum cable gauge: AWG 22
2. Number of conductors: 6, stranded conductors
3. Conductor type: Tinned copper
4. Cable insulation: Color coded PVC
5. Conductor insulation colors: Black, red, white, green, orange (or brown) and blue.
6. Voltage rating: 300V
7. Cable shield: Aluminum/polyester foil (overall) with a AWG 24 tinned copper drain wire

D. Cables for RS-232, RS-422 or RS-485 control lines shall have the following specifications:
1. Minimum cable gauge: AWG 24
2. Number of conductors: 2-paired, stranded conductors
3. Conductor type: Tinned copper
4. Cable insulation: Polyethylene
5. Conductor insulation colors: White-blue, blue-white white-orange and orange-white
6. Voltage rating: 300V

7. Cable shield: Aluminum/polyester foil (overall), a tinned copper braid (90% coverage) and a AWG 24 tinned copper drain wire
8. Nominal characteristic impedance: 120 Ohms
9. Nominal capacitance: 12.8 pF/ft.
10. Nominal delay: 1.6 ns/ft.
11. Nominal attenuation: 0.6 dB/100 ft @ 1 MHz.

E. Cables for door locks and low voltage power supplies shall have the following specifications:
1. Minimum cable gauge: AWG 18
2. Number of conductors: 2, stranded conductors
3. Conductor type: Bare copper
4. Cable insulation: PVC
5. Conductor insulation colors: Black and red.
6. Voltage rating: 300V
7. Cable shield: No cable shields

F. Cables for loop detectors shall have the following specifications:
1. Minimum cable gauge: AWG 16
2. Number of conductors: 1, stranded conductors
3. Conductor type: Bare copper
4. Cable insulation: Cross-linked polyethylene (XLPE)
5. Conductor insulation colors: Black
6. Voltage rating: 600V
7. Cable shield: No cable shields

G. All UTP Category horizontal cables and fiber optic cables for the security system shall be in compliance of all requirements in specification section 271000 and shall be under the same warranty as all UTP category cables and fiber optic cables described in specification section 271000.

H. Cable gauge: All cable gauges shall be estimated as to allow a maximum of 5% voltage drop from the source to the load. Sizes given previously are only minimum gauges accepted. The SSI shall always estimate proper values.

I. Cable jackets: All cable jackets shall be suitable for the environment on which the cables will be installed. Use plenum rated cables when cables are installed in plenum spaces. Use riser rated cables when cables are installed through floor sleeves. Use cable jackets with water-blocking material when installed in underground conduits. All spaces above ceilings in this project shall be treated as plenum spaces. All cables with a NEC type TC shall be run fully in conduit from the panel to the device and shall be separated from other communication or Class 2 rated cables.

J. Cable jackets for this project: Except when cables are run continuously in conduit all cable jackets for access control cables shall be plenum rated.

K. All cables shall be RoHS compliant and free of VOC. The SSI shall provide proof of compliance for all cables during the submittal process.

L. Acceptable manufacturers: Belden, Alpha Wire Company, General Cable and West Penn Wire.

2.24 IDENTIFICATION AND LABELING TAGS

A. The SSI shall follow labeling materials indicated in specification section 270010

PART 3 - EXECUTION

3.1 SECURITY DOORS FUNCTIONALITY

A. The following paragraphs described the expected functionality of the typical security doors. The SSI shall use this description to draw the one-line diagrams part of the shop drawings and described in part 1 of this specification. The SSI shall make sure the proposed wiring for each door type produces the desired functionality for each door type.

B. All control logic for this functionality shall be accomplished through local input/output events. Global events to accomplish these requirements are not allowed. Failure of the access control server shall not limit the functionality of the doors. When the word reader is used in the following descriptions, it means it is a generic device, it could be any type of reader (biometric, iClass, prox) with or without keypad, see the design drawings for particular selection for every door.

C. Devices indicated in the following paragraph as provided by Door Hardware Installer are only the devices that are associated with the security system. For further instructions of additional passive door hardware devices to be provided, see Division 8 specifications.

D. DOOR TYPE A1 (Single controlled entry with electric strike, free exit, non-emergency)
1. Door type:
   a. Single leaf
2. Door mode:
   a. Operational door.
3. Devices on secured side:
   a. One (1) Power transfer,
   b. one (1) electric strike
   c. one (1) request-to-exit device
4. Devices on unsecured side:
   a. One (1) reader, as indicated in floor plans.
5. Door operation:
   a. From secured side: Door shall be opened by mechanical means using the electric strike lock. From unsecured side: Door shall be unlocked by request-to-exit device. Door alarms shall by bypassed for a fixed period of time.
   b. Key override: The use of a valid key in the lock's cylinder shall unlock the door and allow the door to be opened.
   c. Fail mechanism: door lock shall be fail secure.
6. Reported Alarms:
   a. Door forced open.
   b. Invalid, lost, or stolen card presented at the reader.
   c. Door held open. Installer to coordinate with the Owner held open time in a per door basis.

E. DOOR TYPE B1 (Single controlled entry with electric strike, free exit, emergency)
1. Door type:
   a. Single leaf
2. Door mode:
   a. Operational door.
3. Devices on secured side:
   a. One (1) Power transfer,
   b. One (1) panic devices with RX switch
   c. One (1) request-to-exit device
4. Devices on unsecured side:
   a. One (1) reader, as indicated in floor plans

5. Door operation:
   a. From secured side: Door shall be opened by mechanical means using the panic device. Activation of the built-in request to exit switch in the lock shall bypass all door alarms for a fixed period of time. From unsecured side: Door shall be unlocked by releasing the lock after a valid transaction at the reader. Door alarms shall by bypassed for a fixed period of time.
   b. Key override: The use of a valid key in the lock's cylinder shall unlock the door and allow the door to be opened.
   c. Fail mechanism: door lock shall be fail secure.
6. Reported Alarms:
   a. Door forced open, one alarm.
   b. Invalid, lost, or stolen card presented at the reader.
   c. Door held open, as one alarm. Installer to coordinate with the Owner held open time in a per door basis.

F. DOOR TYPE B2 (Double controlled entry with electric latch, free exit, emergency)
1. Door type:
   a. Double leaf, one active
2. Door mode:
   a. Operational door.
3. Devices on secured side:
   a. One (1 Power transfer,
   b. two (2) panic devices, one with RX switch
   c. one (1) request-to-exit device.
4. Devices on unsecured side:
   a. One (1) reader, as indicated in floor plans.
5. Door operation:
   a. From secured side: Either leaf shall be opened by mechanical means using the panic device. Activation of the built-in request to exit switch in the lock shall bypass all door alarms for a fixed period of time. From unsecured side: One leaf shall be unlocked by releasing the lock after a valid transaction at the reader. Door alarms shall by bypassed for a fixed period of time.
   b. Key override: The use of a valid key in the lock's cylinder shall unlock the door and allow the door to be opened.
   c. Fail mechanism: door lock shall be fail secure.
6. Reported Alarms:
   a. Door forced open, either leaf as one alarm.
   b. Invalid, lost, or stolen card presented at the reader.
   c. Door held open, either leaf as one alarm. Installer to coordinate with the Owner held open time in a per door basis.
   d. Door held open. Installer to coordinate with the Owner held open time in a per door basis.

G. DOOR TYPE Z1 (Controlled entry/free exit vehicular gate)
1. Door type:
   a. Vehicular gate
2. Door mode:
   a. Operational door.
3. Devices on secured side:
   a. One (1) dual gate operator with safety features (safety loops or photo eyes),
   b. one (1) loop detector,
   c. two (2) door position switches and
   d. one (1) tamper switch.
4. Devices on unsecured side:
   a. One (1) pedestal with reader as indicated in floor plans.

5. Door operation:
   a. From secured side (exit side):
      1) Gate shall be opened for a fixed period of time after activation of the loop detector.
      2) Gate alarms shall be by-passed for a fixed period of time.
   b. From unsecured side (entry side):
      1) Gate shall be opened for a fixed period of time after a valid transaction at the reader.
      2) Gate alarms shall be by-passed for a fixed period of time.
   c. Activation of the safety loop shall not let the gate closed until cleared.
6. Reported Alarms:
   a. Gate enclosure tamper.
   b. Invalid, lost, or stolen card presented at the reader.
   c. Gate held open: Gate opened after opening time expired. Installer to coordinate with the Owner held open time in a per door basis.

H. DOOR TYPE Z2. (Controlled entry/controlled exit man gate)
1. Door type:
   a. Man Gate, single leaf
2. Door mode:
   a. Operational door.
3. Devices on secured side:
   a. One (1) reader a reader as indicated in floor plans
4. Devices on unsecured side:
   a. One (1) reader a reader as indicated in floor plans.
5. Door operation:
   a. From secured side or unsecured side: Door shall be unlocked by releasing the electromagnetic lock at the gate after a valid transaction at the reader.
6. Reported Alarms:
   a. Door forced open
   b. Invalid, lost, or stolen card presented at the reader.
   c. Door held open. Installer to coordinate with the owner held open times in a per door basis.

3.2 SECURITY SYSTEM INTEGRATION

A. General: A. The access control system software shall integrate with the other security system components as indicated in this section. The SSI shall be responsible for programming all security systems in such a way that interaction between the different systems is achieved to provide a higher degree of security in the building. The minimum required integration features between the access control and the other security systems are described below:

B. ACCESS CONTROL AND DIGITAL VIDEO RECORDING SYSTEM
1. The Access control software proposed shall integrate with the new Digital Video Recording System (DVRS) proposed for this project (refer to specification section 282000 for details on the Digital Video Recording System). The integration shall make the following features possible from the Access Control GUI:
   a. Event video tagging. Selectable security events in the access control system shall tag the recorded video, so when the operator reviews the event, video from that moment in time when the event took place shall be retrieved automatically and brought into a window of the access control GUI.
   b. DVRS playback control: Through the access control GUI, the operator shall be capable of controlling the video playback. The operator shall be capable of retrieving any recorded video from any camera by using a time search or an event

search. The operator shall be capable of controlling the speed of the playback by selecting frame by frame playback or playback at higher speeds.

c. Live video: The operator shall be capable of displaying live video in window in the access control GUI. The operator shall be capable of selecting the camera in the system that he/she wants to see. Up to 4 live video windows (live or recorded) shall be possible in every workstation running the access control GUI.

d. PTZ Control: The operator shall be capable of controlling all PTZ features of a camera by simply using buttons in the Access Control screen with the orientation of movement.

e. Alarm event: Any alarm event (like video analytic alarms, or video motion detection) in the DVRS shall be transferred to the access control system for processing as any other alarm in the access control system. Alarms shall be uniquely identified in the access control system.

f. Status events: Any status events (system errors, or administration events) in the DVRS shall be transferred to the access control system for processing as any other status event in the access control system. Events shall be uniquely identified in the access control system.

g. Export/load video file: the operator shall be able to export or load video files compatible with the recording format of the DVRS from the access control GUI.

h. Recorder authentication: Since login is required for most DVRS, the login action on the Access Control System shall also grant access to the DVRS. Separate or further login to the DVRS shall not be required.

i. Dry contact control: The operator shall be capable of triggering relay contacts part of the DVRS equipment from the access control GUI.

j. Video locking: The operator shall be capable of locking video on the DVRS to prevent it from being purged accidentally. Locked video can be set to automatically purge or archive based on user defined thresholds.

C. CCTV SYSTEM

1. Activation of access control system alarms (like door held open, door forced open, stolen/lost card used, duress alarm, alarms coming from other systems, etc) shall call presets in the nearest CCTV cameras (one or more) to point towards the device that is in alarm. This action shall take place without any operator's intervention.
2. Activation of access control system alarms shall call any associated camera to the triggered alarm to the operator's workstation alarm monitor. This action shall take place without any operator's intervention. When the alarm is cleared by the operator the image of the alarm monitor shall be removed. Alarms from doors in detention areas shall be received in the monitors in Master Control Room, alarms from doors in other areas shall be received in Building control room.
3. Video loss alarm: loos of video signal on any of the surveillance cameras in the system shall trigger an alarm in the access control system.
4. Graphic substation calling: Intercom substations shall be represented with graphic icons in the graphic maps part of the Access control system GUI. Double clicking on those icons shall automatically create a call to that substation from the master station associated with the user workstation initiating the command.
5. Graphic camera calling: Surveillance cameras shall be represented with graphic icons in the graphic maps part of the Access control system GUI. Double clicking on those icons shall automatically open a video window with a live stream from that camera.

D. DOOR ENTRY SYSTEM

1. Remote door release: During a call from a substation by an access-controlled door to a master station, the user in the master station side shall be capable of opening the door by pressing a key in the mater station keypad. This action shall not create any alarm conditions in the access control system.

E. ALARM SYSTEM.
1. Alarm events: Activation of a device in the alarm system shall be treated as an access control alarm event, calling camera presets, calling any associated cameras to the operator's alarm monitors, and creating automatic intercom calls (if available). This action shall take place without any operator's intervention.
2. Status events: Status alarm conditions (faults or errors) shall be reported to the access control system with unique identifiers.
3. Graphic status: All alarm devices shall be represented with graphic icons in the graphic maps part of the access control system GUI. Alarm devices shall represent their status with a different color, red for "on alarm" condition, and green for "no alarm" condition in the graphic maps.

F. Different methods of integration are allowed between the access control system and the other systems. Integration methods are given different hierarchy as follows, relay integration is lowest hierarchy, serial line integration is considered medium hierarchy integration and API integration is considered high hierarchy integration. At a minimum integration between the different security system shall be provided with the integration method explained below. It is acceptable for the SSI to propose integration methods with higher hierarchy integration methods, but not with lower hierarchy methods. The requested integration methods with each system are as follows:
1. Access control system and DVRS API integration.
2. Access control system and CCTV system API integration.
3. Access control and door entry system Relay integration
4. Access control and Alarm system API integration
5. Access control and AV system Serial line integration or API.

3.3 INSTALLATION PRACTICES

A. General: The SSI shall follow all installation practices indicated in specification section 270010.

B. Access control panels and multi-output power supplies shall be installed as to have in any cluster of panels no less than 2 spare ports (reader ports for access control) available per cluster of panels.

C. All power supplies shall be monitored for AC failure. When power supply provides a form c relay with low battery signaling, this contact shall also be monitored. All AC fail and battery low alarms shall be monitored through individual alarm inputs. Series connections of multiple alarm points shall not be allowed.

D. All buzzers inside card readers shall be wired as to function to alert users of different door status like (door held open alarm and door forced open alarm).

3.4 WIRING METHODS

A. All proposed wire and cable shall meet or exceed the recommendations established by the equipment manufacturers and shall comply with all state and local codes.

B. Visually inspect all wire and cable for faulty insulation prior to installation. Protect cable ends at all times with acceptable end caps.

C. Provide grommets and strain relief materials where necessary to avoid abrasion and excess tension on wire and cable.

D. All termination of UTP Category type multi pair cables shall be done in Insulation Displacement Connectors (IDC), modular plugs or connectors. The use of wire nuts or manually twisting cables and protecting them with electrical tape are not acceptable means of termination.

E. All cable with gauges larger or equal to AWG-18 and all types of stranded conductors shall be terminated on termination blocks part of an active equipment or in termination blocks supplied by the SSI. The use of wire nuts or manually twisting cables and protecting them with electrical tape are not acceptable means of termination.

F. All termination blocks shall always be mount inside a security enclosure, with a hinged cover and lock. Up to 2 conductors can be terminated in the same point in a termination block as long as the combined diameter of the conductors does not exceed the maximum cable diameter allowed by the termination block. No more than 2 conductors shall be terminated in the same point at a termination block regardless of the cable gauges.

G. Termination blocks shall be used for wire terminations next to access control panels or for termination above the security doors. Termination blocks are not required for connection to security devices at the door side.

H. When equipment supplied has wire leads instead of termination en points for connections, the only acceptable methods of connection to field wiring are insulated butt splices, quick release connectors (both ends provided) or quick lock self stripping pig tail connectors. All connectors or splices shall be selected according to the gauge of the cable to be terminated.

I. All penetrations through fire rated barriers shall be provided, by the SSI, with appropriate fire stopping materials in accordance with NFPA requirements and local fire authority having jurisdiction.

J. All cable runs shall be continuous from the device to the equipment. Cable splices shall not be allowed inside conduits, or cable trays.

K. Cables of similar signal level shall be bundled together and kept physically separate from power cords, plug strips or other circuits with different potential. Exposed wire bundles or individual cables shall be neatly secured with self-clinching nylon "TY-Raps" (Thomas & Betts or equal).

L. All cables run part of the security system in areas where ceiling is not accessible or in building exterior shall be in conduit at all times.

M. All cables for security equipment shall be installed in conduit to the nearest accessible ceiling space, J-hook to the cable tray and from the cable tray and from the tray to the equipment cabinets. The SSI shall provide all j-hooks to support the cables part of these components.

N. Components of the distribution system shall be installed in a neat, workmanlike manner consistent with all best practices.

O. Wiring color codes shall be strictly observed, terminations shall be uniform throughout the building.

P. Finger duct wire managers shall be used inside all equipment panels to properly dress cables.

3.5 IDENTIFICATION AND TAGGING

A. All cables, wires, wiring forms, terminal blocks, and terminals shall be clearly identified by pre-printed labels or tags. The permanent markings shall clearly indicate the function, source, and destination of all cabling, wire, and terminals. All cables shall be labeled at both ends of the cable with the same and unique identifier label.

B. Cable and equipment identifiers shall follow a standard labeling system like TIA/EIA-606. The identification system chosen by the SSI shall be submitted for approval to the A&E.

C. All access control panels, alarm panels, PLCs, or Intercom exchanges shall include a work sheet attached to the interior of the panel/ equipment in plastic envelops. This work sheet shall include the location, type of device and part number of all devices connected to the boards inside those equipments. All names used to identify devices in these worksheets shall match all names and identifiers used in the software or the user interface of the system. A second copy of this worksheet shall be delivered to as part of the as-built information.

3.6 SECURITY SYSTEM PROGRAMMING

A. Programming: It is the responsibility of the SSI to program all requested features in the access control system and the integration to other security systems. The programming responsibilities of the SSI include but not limited to:
1. Program all security doors to achieve the desired operation as described in this specification section. The SSI shall coordinate with the owner the door names and numbers, building names, room names and numbers to be used for the programming.
2. Program all components of the system to achieve the functionality described in this specification.
3. Program at least 5 access profiles for card holders and all access profiles for doors.
4. Create at least 5 administrator profiles. The owner will program any additional card holder profiles required in the system.
5. Program at least twenty-five (25) users in the system. The SSI shall get this information from the owner. The owner will program all other users in the system.
6. Program all required security features like macros and integration with other security modules like intercom and CCTV system.
7. Program all interfaces with the elevator control systems.
8. Program all GUIs in the system. The SSI shall use AutoCAD drawings to create all maps of the facility with the corresponding icons for control, operation, and visualization of the security system. The SSI shall choose a scale for the drawings that allows all icons to be places without overlap and close enough to the actual physical location of the equipment in the map as to avoid ambiguity of the actual location of the devices. Nested maps shall be programmed to go from a complete building view to a detail zoned identifying all devices in the area.
9. The SSI shall coordinate with the owner what alarms from the access control system are to be considered major alarms. All major alarms shall be programmed by the SSI to provide the operator detail information on the type of operating procedure expected during those alarms. All mayor alarms shall be programmed as to provide the operator and input field to type the response taken by the operator.
10. All programming of remote monitoring features for the security system like telephone numbers to dial, reporting codes and alarm formats.
11. All alarm messages and descriptive text of those messages shall be programmed.

B. DOOR INTERLOCKS: When indicated in the drawings (or in the sally port) two doors that have a controlled door interlock, the SSI shall program the security system as to provide the following functionality: While one door is opened the other door shall not be possible to be opened not by

using a valid transaction at the reader neither by issuing a remote release command from the access control system.

C. The SSI shall work with the owner during the programming of the system to fine tune all programming requirements of the system, as per owner's request. Fine tune is defined for this purpose as changing all field parameters available in the system, as specified, to complete software options available in the system. Fine tuning does not indicate adding additional software modules or additional hardware.

3.7 ADDITIONAL INSTALLER RESPONSIBILITIES

A. Upon project commencement, the SSI shall provide qualified technical personnel on-site. Personnel shall be present on each consecutive working day until the system is fully functional and ready to begin the testing phase of this project.

B. During the installation process the SSI shall maintain an up-to-date set of as-built shop drawings, which shall always be available for review by the client and/or consulting engineers. This set of documents should be clearly annotated with as-built data as the work is performed. These documents will be reviewed as part of the approval process when evaluating payment request applications. At a minimum, the drawings should contain the following information:
1. Quantity and location of all equipment installed.
2. Cable and wire runs along with the designations tags assigned to each.
3. Wiring diagrams that indicate terminal strip layout, identification, and terminations.

C. The SSI Project Manager shall maintain continuous coordination with the A&E. The A&E shall be kept informed of the progress and all conflicts that arise during the course of this project. Prior to the start of construction, the SSI shall submit a complete plan and schedule for proposed operations. This schedule should include information relevant to number of employees assigned to the project, work hours, etc.

3.8 REQUEST OF IP ADRESSES

A. The SSI shall comply with all requirements indicated in specification section 270010 for requesting IP address for the security system.

3.9 SYSTEM WARRANTY AND SERVICE

A. General: The SSI shall follow all warranty and service requirements indicated in specification section 270010.

3.10 ENGINEER'S FINAL ACCEPTANCE TEST

A. General: The SSI shall follow all test requirements indicated in specification section 270010.

B. Additional requirements for the system acceptance test:
1. The day of the final acceptance test the SSI shall have at least two (2) 2-way radios to communicate between the testing groups. Cell phones are not acceptable for communication since it takes too long to establish communication and will delay the test substantially. Radios shall be fully charged, and spare batteries shall be available for 8 hours of use.

2. The final acceptance test will be done with two groups of people. Each group will have at least one member of each stakeholder of the project (A&E, Owner, SSI, General Installer/ Construction Manager). One group will be station in the monitoring room the other group will be going to all locations in the project where security equipment is installed.
3. During the final acceptance test every single device in the security system will be tested for normal operation and for simulated alarm conditions at both ends (the field devices and in the monitoring room). When possible, security equipment will be tested for operation during main power failure. All features requested in this specification will be tested.

C. Testing of all structured cabling system part of the Security System shall be done in accordance of specification section 271000

3.11 SPARE PARTS

A. As part of this project the SSI shall provide the following spare parts:
1. One (1) Intelligent System ISC (ISC)
2. One (1) Standard card readers
3. One (1) Card reader with a keypad
4. Two (2%) percent of all installed field devices, like local alarms, duress buttons, door position switches, tamper switches, request to exit motion sensors, etc.
5. One (1) Power supply for locks
6. One (1) power supply for access control panels.
7. Four (4) surge protection devices of each type used in the project.

B. A list of delivered spare parts shall be included with the close out information. This list shall indicate all components delivered and shall be signed received by the Owner. The name of person receiving the equipment shall be clearly written in the list and the date it was received.

3.12 TRAINING AND INSTRUCTION

A. General: The SSI shall follow all training requirements indicated in specification section 270010.

B. The SSI shall provide three (3) levels of training for this project as explained in this section.

C. USER TRAINING.
1. User training shall be provided for security personnel interacting with the security system in areas different from the security monitoring rooms. The purpose of this training is to explain clearly how the field devices operate and what the different status indicators mean.
2. This training shall cover operation of devices and doors like:
   a. Operation and indication of all types of readers in the project
   b. Operation of all roll-up doors.
   c. Operation of all vehicular gates.
   d. Resetting door alarms (local) for all door types.
   e. Resetting of duress alarm buttons.
   f. Operation of door interlocks
   g. Operation of the duress alarm notification system
3. This training shall be provided by personnel working directly for the SSI.
4. At least 4 separate sessions (on 4 different days) of this type of training shall be provided (one session video-taped only).
5. Each session could have up to 20 trainees.
6. No training material is expected to be provided

D. OPERATOR/ADMINISTRATION TRAINING.
1. Operator/Administration training shall be provided for security and IT personnel interacting with the security system in all security monitoring rooms. The purpose of this training is to explain clearly how the complete system operates and what the different status indicators mean.
2. This training shall cover at least the following topics:
   a. All content provided during the user training.
   b. Operation of the Access control software (all aspects).
   c. Operation of all devices inside the security monitoring room.
   d. Alarm response and alarm reset in the security monitoring room
   e. Data backup/restore and achieving.
   f. File import/export.
   g. Badging system operation (complete description)
   h. Creating reports and print outs.
   i. Basic system troubleshooting.
   j. Creating users and password reset.
3. This training shall be provided by personnel working directly for the SSI or a direct employee of the manufacturer of the system.
4. One session of this type of training shall be provided and video-taped. This session shall last no less than 24 hours, broken down into day sessions no longer than 6 hours each.
5. Each session could have up to 20 trainees.
6. The approved O&M manuals shall be available at the time of the training.

E. MAINTENANCE TRAINING.
1. Maintenance training shall be provided for maintenance and IT personnel. The purpose of this training is to explain how to troubleshoot and replace all field devices and hardware.
2. This training shall cover at least the following topics:
   a. Trouble shooting and replacement of all field devices.
   b. Installation of all field panels and settings (jumpers, dip switches, etc).
   c. Wire labeling system.
   d. Software system installation and recover from system crashes.
   e. Detail explanation on all physical keys used in security devices.
   f. Routine preventive maintenance procedures recommended by equipment manufacturers for all components of the system.
   g. Detail explanation of source code programming for all devices that have software code specifically compiled for this project.
3. This training shall be provided by personnel working directly for the SSI or a direct employee of the manufacturer of the system.
4. One session of this type of training shall be provided and video-taped. This session shall last no less than 18 hours, broken down into day sessions no longer than 6 hours each.
5. Each session could have up to 5 trainees.
6. The approved O&M manuals shall be available at the time of the training.

3.13 AS-BUILT DOCUMENTS AND CLOSE OUT INFORMATION.

A. General: The SSI shall follow all as built and close out information requirements indicated in specification section 270010

B. Additional requirements for as-built documentation shall include:
1. Approved as-built drawings shall be a complete set of floor plans drawings, riser diagrams, and wiring details indicating the layout and interconnection of the system. All cable routings and elevation of each outlet, tie, and riser cable terminations shall be required.

2. The content of the as-built information shall be no less than the content provided during the shop drawings and shall be modified as per changes done during construction.

C. Close out information shall also include:
1. Two (2) digital backups of all configuration files and databases part of the security system not earlier than the day after the final acceptance test is approved. These backups shall include a list of all the file names used and a complete description of the system that each file name belong to. The media for these backups shall be a compatible media that can be read by the computer system running the specific software program.
2. Testing reports for structured cabling system used for the Security system.

END OF SECTION 28 10 00

SECTION 28 20 00
VIDEO SURVEILLANCE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes a video surveillance system consisting of cameras, digital video recorder, data transmission wiring, and a control station with its associated equipment.

B. Related Requirements:

1. Section 28 10 00 "Electronic Security Systems" to integrate access control system interface and control.

1.3 DEFINITIONS

A. AGC: Automatic gain control.

B. BNC: Bayonet Neill-Concelman - type of connector.

C. CCD: Charge-coupled device.

D. FTP: File transfer protocol.

E. IP: Internet protocol.

F. LAN: Local area network.

G. MPEG: Moving picture experts group.

H. NTSC: National Television System Committee.

I. PC: Personal computer.

J. PTZ: Pan-tilt-zoom.

K. RAID: Redundant array of independent disks.

L. TCP: Transmission control protocol - connects hosts on the Internet.

M. UPS: Uninterruptible power supply.

N. WAN: Wide area network.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include dimensions and data on features, performance, electrical characteristics, ratings, and finishes.

B. Shop Drawings: For video surveillance. Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Functional Block Diagram: Show single-line interconnections between components for signal transmission and control. Show cable types and sizes.
3. Dimensioned plan and elevations of equipment racks, control panels, and consoles. Show access and workspace requirements.
4. UPS: Sizing calculations.
5. Wiring Diagrams: For power, signal, and control wiring.

C. Design Data: Include an equipment list consisting of every piece of equipment by model number, manufacturer, serial number, location, and date of original installation. Add pretesting record of each piece of equipment, listing name of person testing, date of test, set points of adjustments, name and description of the view of preset positions, description of alarms, and description of unit output responses to an alarm.

1.5 INFORMATIONAL SUBMITTALS

A. Product Warranty: Sample of special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For cameras, power supplies, infrared illuminators, monitors, videotape recorders, digital video recorders, video switches, and control-station components to include in emergency, operation, and maintenance manuals. In addition to items specified in Section 01 78 23 "Operation and Maintenance Data," include the following:

1. Lists of spare parts and replacement components recommended to be stored at the site for ready access.

1.7 PROJECT CONDITIONS

A. Environmental Conditions: Capable of withstanding the following environmental conditions without mechanical or electrical damage or degradation of operating capability:

1. Interior, Controlled Environment: System components, except central-station control unit, installed in air-conditioned interior environments shall be rated for continuous operation in ambient temperatures of 36 to 122 deg F dry bulb and 20 to 90 percent relative humidity, noncondensing. Use NEMA 250, Type 1 enclosures.
2. Interior, Uncontrolled Environment: System components installed in non-air-conditioned interior environments shall be rated for continuous operation in ambient temperatures of 0 to 122 deg F dry bulb and 20 to 90 percent relative humidity, noncondensing. Use NEMA 250, Type 3R enclosures.

3. Exterior Environment: System components installed in locations exposed to weather shall be rated for continuous operation in ambient temperatures of minus 30 to plus 122 deg F dry bulb and 20 to 90 percent relative humidity, condensing. Rate for continuous operation when exposed to rain as specified in NEMA 250, winds up to 165 mph. Use NEMA 250, Type 4X enclosures.
4. Security Environment: Camera housing for use in high-risk areas where surveillance equipment may be subject to physical violence.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of cameras, equipment related to camera operation, and control-station equipment that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Three years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SYSTEM REQUIREMENTS

A. Video-signal format shall comply with NTSC standard, composite interlaced video. Composite video-signal termination shall be 75 ohms.

B. Surge Protection: Protect components from voltage surges originating external to equipment housing and entering through power, communication, signal, control, or sensing leads. Include surge protection for external wiring of each conductor's entry connection to components.

1. Minimum Protection for Power Connections 120 V and More: Auxiliary panel suppressors complying with requirements in Section 26 43 13 "Surge Protection for Low-Voltage Electrical Power Circuits."
2. Minimum Protection for Communication, Signal, Control, and Low-Voltage Power Connections: Comply with requirements in Section 26 43 13 "Surge Protection for Low-Voltage Electrical Power Circuits" as recommended by manufacturer for type of line being protected.

C. Tamper Protection: Tamper switches on enclosures, control units, pull boxes, junction boxes, cabinets, and other system components shall initiate a tamper-alarm signal when unit is opened or partially disassembled. Control-station, control-unit alarm display shall identify tamper alarms and indicate locations.

2.2 PERFORMANCE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NECA 1.

C. Comply with NFPA 70.

D. Electronic data exchange between video surveillance system with an access-control system shall comply with SIA TVAC.

2.3 STANDARD CAMERAS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Axis Communications, Inc.

B. Color Camera:

1. Comply with UL 639.
2. Pickup Device: CCD interline transfer, 380,000 771(H) by 492(V) pixels.
3. Horizontal Resolution: 480 lines.
4. Signal-to-Noise Ratio: Not less than 50 dB, with camera AGC off.
5. With AGC, manually selectable on or off.
6. Sensitivity: Camera shall deliver 1-V peak-to-peak video signal at the minimum specified light level. Illumination for the test shall be with lamps rated at approximately 2200-K color temperature, and with camera AGC off.
7. Manually selectable modes for backlight compensation or normal lighting.
8. Scanning Synchronization: Determined by external synch over the coaxial cable. Camera shall revert to internally generated synchronization on loss of external synch signal.
9. White Balance: Auto-tracing white balance, with manually settable fixed balance option.
10. Motion Detector: Built-in digital.

2.4 POWER SUPPLIES

A. Low-voltage power supplies matched for voltage and current requirements of cameras and accessories, and of type as recommended by manufacturer of camera and lens.

1. Enclosure: NEMA 250, Type 4X.

2.5 CAMERA-SUPPORTING EQUIPMENT

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Axis Communications, Inc.

B. Minimum Load Rating: Rated for load in excess of the total weight supported times a minimum safety factor of two.

C. Mounting Brackets for Fixed Cameras: Type matched to items supported and mounting conditions. Include manual pan-and-tilt adjustment.

D. Protective Housings for Fixed and Movable Cameras: Steel or 6061 T6 aluminum enclosures with internal camera mounting and connecting provisions that are matched to camera/lens combination and mounting and installing arrangement of camera to be housed.

1. Camera Viewing Window: Polycarbonate window, aligned with camera lens.

2. Duplex Receptacle: Internally mounted.
3. Alignment Provisions: Camera mounting shall provide for field aiming of camera and permit removal and reinstallation of camera lens without disturbing camera alignment.
4. Built-in, thermostat-activated units. Units shall be automatically controlled so the environmental limits of the camera equipment are not exceeded.
5. Sun shield shall not interfere with normal airflow around the housing.
6. Mounting bracket and hardware for wall or ceiling mounting of the housing. Bracket shall be of same material as the housing; mounting hardware shall be stainless steel.
7. Finish: Housing and mounting bracket shall be factory finished using manufacturer's standard finishing process suitable for the environment.
8. Enclosure Rating: Type 4X.

2.6 NETWORK VIDEO RECORDERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Axis Communications, Inc.

B. External storage or internal 250-1, 500-GB hard disk drive.

1. Video and audio recording over TCP/IP network.
2. Video recording of MPEG-2 and MPEG-4 streams.
3. Video recording up to 48 Mbps for internal storage and up to 100 Mbps for external storage.
4. Duplex Operation: Simultaneous recording and playback.
5. Continuous and alarm-based recording.
6. Full-Featured Search Capabilities: Search based on camera, time, or date.
7. Automatic data replenishment to ensure recording even if network is down.
8. Digital certification by watermarking.
9. Internal RAID storage or non-RAID storage of up to 1500 GB.
10. Capable of adding external RAID storage up to 7000 GB for models with no internal storage.
11. Full integration with LAN, Intranet, or Internet through standard Web browser or video management software.
12. Integrated Web server FTP server functionality.
13. Supports up to 16, 32, or 64 devices.

2.7 IP VIDEO SYSTEMS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Axis Communications, Inc.

B. Description:

1. System shall provide high-quality delivery and processing of IP-based video, audio, and control data using standard Ethernet-based networks.
2. System shall have seamless integration of all video surveillance and control functions.
3. Graphical user interface software shall manage all IP-based video matrix switching and camera control functions, two-way audio communication, alarm monitoring and control,

and recording and archive/retrieval management. IP system shall also be capable of integrating into larger system environments.

4. System design shall include all necessary compression software for high-performance, dual-stream, MPEG-2/MPEG-4 video. Unit shall provide connections for all video cameras, camera PTZ control data, bidirectional audio, discreet sensor inputs, and control system outputs.
5. All camera signals shall be compressed, encoded, and delivered onto the network for processing and control by the IP video-management software.
6. Camera system units shall be ruggedly built and designed for extreme adverse environments, complying with NEMA Type environmental standards.
7. Encoder/decoder combinations shall place video, audio, and data network stream that can be managed from multiple workstations on the user's LAN or WAN.
8. All system interconnect cables, workstation PCs, PTZ joysticks, and network intermediate devices shall be provided for full performance of specified system.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine pathway elements intended for cables. Check raceways and other elements for compliance with space allocations, installation tolerance, hazards to camera installation, and other conditions affecting installation.

B. Examine roughing-in for LAN, WAN, and IP network before device installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 WIRING

A. Comply with requirements in Section 27 05 28 "Pathways for Communications Systems."
   1. Conceal raceways and wiring except in unfinished spaces.

B. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools.

C. Splices, Taps, and Terminations: For power and control wiring, use numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

D. For communication wiring, comply with the following:

   1. Section 27 10 00 "Structured Cabling Systems."

E. Grounding: Provide independent-signal circuit grounding recommended in writing by manufacturer.

3.3 VIDEO SURVEILLANCE SYSTEM INSTALLATION

A. Install cameras level and plumb.

B. Install cameras with 84-inch-minimum clear space below cameras and their mountings. Change type of mounting to achieve required clearance.

C. Set pan unit and pan-and-tilt unit stops to suit final camera position and to obtain the field of view required for camera. Connect all controls and alarms and adjust.

D. Install power supplies and other auxiliary components at control stations unless otherwise indicated.

E. Install tamper switches on components indicated to receive tamper switches, arranged to detect unauthorized entry into system-component enclosures and mounted in self-protected, inconspicuous positions.

F. Avoid ground loops by making ground connections only at the control station.

1. For 12- and 24-V dc cameras, connect the coaxial cable shields only at the monitor end.

G. Identify system components, wiring, cabling, and terminals according to Section 27 05 53 "Identification for Communications Systems."

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

B. Perform tests and inspections.

C. Tests and Inspections:

1. Inspection: Verify that units and controls are properly installed, connected, and labeled, and that interconnecting wires and terminals are identified.
2. Pretesting: Align and adjust system and pretest components, wiring, and functions to verify that they comply with specified requirements. Conduct tests at varying lighting levels, including day and night scenes as applicable. Prepare video-surveillance equipment for acceptance and operational testing as follows:

    a. Prepare equipment list described in "Informational Submittals" Article.
    b. Verify operation of auto-iris lenses.
    c. Set back-focus of fixed focal length lenses. At focus set to infinity, simulate nighttime lighting conditions by using a dark glass filter of a density that produces a clear image. Adjust until image is in focus with and without the filter.
    d. Set back-focus of zoom lenses. At focus set to infinity, simulate nighttime lighting conditions by using a dark glass filter of a density that produces a clear image. Additionally, set zoom to full wide angle and aim camera at an object 50 to 75 feet away. Adjust until image is in focus from full wide angle to full telephoto, with the filter in place.
    e. Set and name all preset positions; consult Owner's personnel.
    f. Set sensitivity of motion detection.
    g. Connect and verify responses to alarms.

h. Verify operation of control-station equipment.

3. Test Schedule: Schedule tests after pretesting has been successfully completed and system has been in normal functional operation for at least 14 days. Provide a minimum of 10 days' notice of test schedule.
4. Operational Tests: Perform operational system tests to verify that system complies with Specifications. Include all modes of system operation. Test equipment for proper operation in all functional modes.

D. Video surveillance system will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

3.5 ADJUSTING

A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose. Tasks shall include, but are not limited to, the following:

1. Check cable connections.
2. Check proper operation of cameras and lenses. Verify operation of auto-iris lenses and adjust back-focus as needed.
3. Adjust all preset positions; consult Owner's personnel.
4. Recommend changes to cameras, lenses, and associated equipment to improve Owner's use of video surveillance system.
5. Provide a written report of adjustments and recommendations.

3.6 CLEANING

A. Clean installed items using methods and materials recommended in writing by manufacturer.

B. Clean video-surveillance-system components, including camera-housing windows, lenses, and monitor screens.

3.7 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain video-surveillance equipment.

END OF SECTION 28 20 00

Division 31

Earthwork

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SECTION 31 10 00
SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. All material and construction shall comply with all applicable FDOT and OSHA requirements and standards (latest editions).

C. Refer to Geotechnical Report for additional information and requirements for site clearing, fill, pavement, underdrain and other geotechnical components.

D. Contractor required to submit an NOI to DEP and comply with all erosion control best management practices and inspection reporting requirements.

1.2 SUMMARY

A. Section Includes:

1. Protecting existing vegetation to remain.
2. Removing existing vegetation.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Stripping and stockpiling rock.
6. Removing above- and below-grade site improvements.
7. Disconnecting, capping or sealing, and removing site.
8. Temporary erosion and sedimentation control.

B. Related Requirements:

1. Section 01 50 00 "Temporary Facilities and Controls" for temporary erosion- and sedimentation-control measures.

C. Related Requirements:

1. Section 01500 "Temporary Facilities and Controls" for temporary erosion- and sedimentation-control measures.

1.3 DEFINITIONS

A. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.

B. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil," but in disturbed areas such as urban environments, the surface soil can be subsoil.

C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil; the zone where plant roots grow.

D. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil; the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects larger than 2 inches in diameter; and free of weeds, roots, toxic materials, or other nonsoil materials.

E. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.

F. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and indicated on Drawings.

G. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 MATERIAL OWNERSHIP

A. Except for materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.6 INFORMATIONAL SUBMITTALS

A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.

1. Use sufficiently detailed photographs or video recordings.
2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plant designated to remain.

B. Topsoil stripping and stockpiling program.

C. Rock stockpiling program.

D. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

E. Burning: Documentation of compliance with burning requirements and permitting of authorities having jurisdiction. Identify location(s) and conditions under which burning will be performed.

1.7 QUALITY ASSURANCE

A. Topsoil Stripping and Stockpiling Program: Prepare a written program to systematically demonstrate the ability of personnel to properly follow procedures and handle materials and equipment during the Work. Include dimensioned diagrams for placement and protection of stockpiles.

B. Rock Stockpiling Program: Prepare a written program to systematically demonstrate the ability of personnel to properly follow procedures and handle materials and equipment during the Work. Include dimensioned diagrams for placement and protection of stockpiles.

1.8 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed trafficways if required by Owner or authorities having jurisdiction.

B. Improvements on Adjoining Property: Authority for performing site clearing indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.

1. Do not proceed with work on adjoining property until directed by Architect.

C. Salvageable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated by owner.

D. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.

E. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.

F. Tree- and Plant-Protection Zones: Protect according to requirements in Section 01 56 39 "Temporary Tree and Plant Protection."

G. Soil Stripping, Handling, and Stockpiling: Perform only when the soil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 31 20 00 "Earth Moving."

1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Verify that trees, shrubs, and other vegetation to remain or to be relocated have been flagged and that protection zones have been identified and enclosed according to requirements in Section 01 56 39 "Temporary Tree and Plant Protection."

C. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.

B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

D. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

A. Protect trees and plants remaining on-site according to requirements in Section 01 56 39 "Temporary Tree and Plant Protection."

B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations according to requirements in Section 01 56 39 "Temporary Tree and Plant Protection."

3.4 EXISTING UTILITIES

A. Owner will arrange for disconnecting and sealing indicated utilities that serve existing structures before site clearing, when requested by Contractor.

1. Verify that utilities have been disconnected and capped before proceeding with site clearing.

B. Locate, identify, disconnect, and seal or cap utilities indicated to be removed or abandoned in place.

1. Arrange with utility companies to shut off indicated utilities.
2. Owner will arrange to shut off indicated utilities when requested by Contractor.

C. Locate, identify, and disconnect utilities indicated to be abandoned in place.

D. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others, unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Owner not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Architect's written permission.

E. Excavate for and remove underground utilities indicated to be removed.

F. Removal of underground utilities is included in earthwork sections; in applicable fire suppression, plumbing, HVAC, electrical, communications, electronic safety and security, and utilities sections; and in Section 02 41 16 "Structure Demolition" and Section 02 41 19 "Selective Demolition."

G. The contractor is responsible for the confirmation and protection of all existing utilities including Security Conduits. FPL feeder to control tower and main security lines may not be altered by the General Contractor without field verification and coordination with the owner. Contractor may not perform work within 5 feet of these lines without owner’s representation present.

3.5 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.

1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
2. Grind down stumps and remove roots larger than 2 inches in diameter, obstructions, and debris to a depth of 12 inches below exposed subgrade.
3. Use only hand methods or air spade for grubbing within protection zones.
4. Chip removed tree branches and dispose of off-site.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.6 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to depth of 6 inches in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Remove subsoil and nonsoil materials from topsoil, including clay lumps, gravel, and other objects larger than 2 inches in diameter; trash, debris, weeds, roots, and other waste materials.

C. Stockpile topsoil away from edge of excavations without intermixing with subsoil or other materials. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

1. Limit height of topsoil stockpiles to 72 inches.
2. Do not stockpile topsoil within protection zones.
3. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.
4. Stockpile surplus topsoil to allow for respreading deeper topsoil.

3.7 STOCKPILING ROCK

A. Remove from construction area naturally formed rocks that measure more than 1 foot across in least dimension. Do not include excavated or crushed rock.

1. Separate or wash off non-rock materials from rocks, including soil, clay lumps, gravel, and other objects larger than 2 inches in diameter; trash, debris, weeds, roots, and other waste materials.

B. Stockpile rock away from edge of excavations without intermixing with other materials. Cover to prevent windblown debris from accumulating among rocks.

1. Limit height of rock stockpiles to 36 inches.
2. Do not stockpile rock within protection zones.
3. Dispose of surplus rock. Surplus rock is that which exceeds quantity indicated to be stockpiled or reused.
4. Stockpile surplus rock to allow later use by the Owner.

3.8 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.

B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.

1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.
2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.9 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

B. Burning tree, shrub, and other vegetation waste is permitted according to burning requirements and permitting of authorities having jurisdiction. Control such burning to produce the least smoke or air pollutants and minimum annoyance to surrounding properties. Burning of other waste and debris is prohibited.

C. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials, and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION 31 10 00

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SECTION 31 20 00
EARTH MOVING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. All material and construction shall comply with all applicable FDOT and OSHA requirements and standards (latest editions).

C. Refer to Geotechnical Report for additional information and requirements for site clearing, fill, pavement, underdrain and other geotechnical components.

D. Coordination with architectural information for additional building pad requirements.

1.2 SUMMARY

A. Section Includes:

1. Excavating and filling for rough grading the Site.
2. Preparing subgrades for slabs-on-grade, walks, pavements, turf and grasses, and plants.
3. Excavating and backfilling for buildings and structures.
4. Drainage course for concrete slabs-on-grade.
5. Subbase course for concrete walks and pavements.
6. Subbase course and base course for asphalt paving.
7. Subsurface drainage backfill for walls and trenches.
8. Excavating and backfilling trenches for utilities and pits for buried utility structures.
9. Excavating well hole to accommodate elevator-cylinder assembly.

B. Related Requirements:

1. Section 01 32 00 "Construction Progress Documentation" for recording preexcavation and earth-moving progress.
2. Section 03 30 00 "Cast-in-Place Concrete" for granular course if placed over vapor retarder and beneath the slab-on-grade.
3. Section 31 10 00 "Site Clearing" for site stripping, grubbing, stripping [and stockpiling] topsoil, and removal of above- and below-grade improvements and utilities.
4. Section 31 23 19 "Dewatering" for lowering and disposing of ground water during construction.
5. Section 31 50 00 "Excavation Support and Protection" for shoring, bracing, and sheet piling of excavations.
6. Section 31 63 29 "Drilled Concrete Piers and Shafts" for excavation of shafts and disposal of surplus excavated material.
7. Section 32 92 00 "Turf and Grasses" for finish grading in turf and grass areas, including preparing and placing planting soil for turf areas.
8. Section 32 93 00 "Plants" for finish grading in planting areas and tree and shrub pit excavation and planting.

1.3 UNIT PRICES

A. Work of this Section is affected by unit prices for earth moving specified in Section 01 22 00 "Unit Prices."

B. Quantity allowances for earth moving are included in Section 01 21 00 "Allowances."

C. Rock Measurement: Volume of rock actually removed, measured in original position, but not to exceed the following. Unit prices for rock excavation include replacement with approved materials.

1. 24 inches outside of concrete forms other than at footings.
2. 12 inches outside of concrete forms at footings.
3. 6 inches outside of minimum required dimensions of concrete cast against grade.
4. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
5. 6 inches beneath bottom of concrete slabs-on-grade.
6. 6 inches beneath pipe in trenches, and the greater of 24 inches wider than pipe or 42 inches wide.

1.4 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.

C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

E. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.
2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.

G. Fill: Soil materials used to raise existing grades.

H. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material that exceed 1 cu. yd. for bulk excavation or 3/4 cu. yd. for footing, trench, and pit excavation that cannot be removed by rock-excavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting, when permitted:

1. Equipment for Footing, Trench, and Pit Excavation: Late-model, track-mounted hydraulic excavator; equipped with a 42-inch maximum-width, short-tip-radius rock bucket; rated at not less than 138-hp flywheel power with bucket-curling force of not less than 28,700 lbf and stick-crowd force of not less than 18,400 lbf with extra-long reach boom.
2. Equipment for Bulk Excavation: Late-model, track-mounted loader; rated at not less than 230-hp flywheel power and developing a minimum of 47,992-lbf breakout force with a general-purpose bare bucket.

I. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material 3/4 cu. yd. or more in volume that exceed a standard penetration resistance of 100 blows/2 inches when tested by a geotechnical testing agency, according to ASTM D 1586.

J. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

K. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.

L. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.

M. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct preexcavation conference at Project site.

1. Review methods and procedures related to earthmoving, including, but not limited to, the following:

a. Personnel and equipment needed to make progress and avoid delays.
b. Coordination of Work with utility locator service.
c. Coordination of Work and equipment movement with the locations of tree- and plant-protection zones.
d. Extent of trenching by hand or with air spade.
e. Field quality control.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of the following manufactured products required:

1. Geotextiles.
2. Controlled low-strength material, including design mixture.

3. Geofoam.
4. Warning tapes.

B. Samples for Verification: For the following products, in sizes indicated below:

1. Geotextile: 12 by 12 inches.
2. Warning Tape: 12 inches long; of each color.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:

1. Classification according to ASTM D 2487.
2. Laboratory compaction curve according to ASTM D 1557.Retain one or both of first two paragraphs below if explosives are permitted. Retain second paragraph only if seismic survey is required with blasting.

C. Preexcavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earth-moving operations. Submit before earth moving begins.

1.8 QUALITY ASSURANCE

A. Blasting: Comply with applicable requirements in NFPA 495, "Explosive Materials Code," and prepare a blasting plan reporting the following:

1. Types of explosive and sizes of charge to be used in each area of rock removal, types of blasting mats, sequence of blasting operations, and procedures that will prevent damage to site improvements and structures on Project site and adjacent properties.
2. Seismographic monitoring during blasting operations.

B. Seismic Survey Agency: An independent testing agency, acceptable to authorities having jurisdiction, experienced in seismic surveys and blasting procedures to perform the following services:

1. Report types of explosive and sizes of charge to be used in each area of rock removal, types of blasting mats, sequence of blasting operations, and procedures that will prevent damage to site improvements and structures on Project site and adjacent properties.
2. Seismographic monitoring during blasting operations.

C. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E 329 and ASTM D 3740 for testing indicated.

1.9 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

B. Improvements on Adjoining Property: Authority for performing earth moving indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.

1. Do not proceed with work on adjoining property until directed by Architect.

C. Utility Locator Service: Notify utility locator service for area where Project is located before beginning earth-moving operations.

D. Do not commence earth-moving operations until temporary site fencing and erosion- and sedimentation-control measures specified in Section 01 50 00 "Temporary Facilities and Controls" and Section 31 10 00 "Site Clearing" are in place.

E. Do not commence earth-moving operations until plant-protection measures specified in Section 01 56 39 "Temporary Tree and Plant Protection" are in place.

F. The following practices are prohibited within protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

G. Do not direct vehicle or equipment exhaust towards protection zones.

H. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations: See Geotechnical Report.

B. Terms, descriptions, and gradations of granular soil materials in remaining paragraphs are examples only. Revise to comply with local practices and to suit Project. For example, granular materials may be referenced by state or local highway designations rather than by ASTM classifications.

C. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940/D 2940M; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.

D. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 294/D 2940M 0; with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.

E. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940/D 2940M; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.

F. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940/D 2940M; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.

G. Drainage Course: Narrowly graded mixture of [washed]crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and zero to 5 percent passing a No. 8 sieve.

H. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch sieve and zero to 5 percent passing a No. 4 sieve.

I. Sand: ASTM C 33/C 33M; fine aggregate.

J. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

2.2 GEOTEXTILES

A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 2; AASHTO M 288.
2. Survivability: As follows:

    a. Grab Tensile Strength: 157 lbf; ASTM D 4632.
    b. Sewn Seam Strength: 142 lbf; ASTM D 4632.
    c. Tear Strength: 56 lbf; ASTM D 4533.
    d. Puncture Strength: 56 lbf; ASTM D 4833.

3. Apparent Opening Size: No. 40 sieve, maximum; ASTM D 4751.
4. Permittivity: 0.5 per second, minimum; ASTM D 4491.
5. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

B. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 2; AASHTO M 288.
2. Survivability: As follows:

    a. Grab Tensile Strength: 247 lbf; ASTM D 4632.
    b. Sewn Seam Strength: 222 lbf; ASTM D 4632.
    c. Tear Strength: 90 lbf; ASTM D 4533.

d. Puncture Strength: 90 lbf; ASTM D 4833.

3. Apparent Opening Size: No. 60 sieve, maximum; ASTM D 4751.
4. Permittivity: 0.02 per second, minimum; ASTM D 4491.
5. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

2.3 ACCESSORIES

A. Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:

1. Red: Electric.
2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

B. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:

1. Red: Electric.
2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.

B. Protect and maintain erosion and sedimentation controls during earth-moving operations.

C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

3.3 EXPLOSIVES

A. Explosives: Do not use explosives.

3.4 EXCAVATION, GENERAL

A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
2. Remove rock to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:

a. 24 inches outside of concrete forms other than at footings.
b. 12 inches outside of concrete forms at footings.
c. 6 inches outside of minimum required dimensions of concrete cast against grade.
d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
e. 6 inches beneath bottom of concrete slabs-on-grade.
f. 6 inches beneath pipe in trenches and the greater of 24 inches wider than pipe or [42 inches wide.

B. Classified Excavation: Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned by Architect. The Contract Sum will be adjusted for rock excavation according to unit prices included in the Contract Documents. Changes in the Contract Time may be authorized for rock excavation.

1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; and soil, boulders, and other materials not classified as rock or unauthorized excavation.

a. Intermittent drilling; blasting, if permitted; ram hammering; or ripping of material not classified as rock excavation is earth excavation.

2. Rock excavation includes removal and disposal of rock. Remove rock to lines and subgrade elevations indicated to permit installation of permanent construction without exceeding the following dimensions:

a. 24 inches outside of concrete forms other than at footings.
b. 12 inches outside of concrete forms at footings.
c. 6 inches outside of minimum required dimensions of concrete cast against grade.

d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
e. 6 inches beneath bottom of concrete slabs-on-grade.
f. 6 inches beneath pipe in trenches and the greater of 24 inches wider than pipe or 42 inches wide.

3.5 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
2. Pile Foundations: Stop excavations 6 to 12 inches above bottom of pile cap before piles are placed. After piles have been driven, remove loose and displaced material. Excavate to final grade, leaving solid base to receive concrete pile caps.
3. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended as bearing surfaces.

B. Excavations at Edges of Tree- and Plant-Protection Zones:

1. Excavate by hand or with an air spade to indicated lines, cross sections, elevations, and subgrades. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Cut and protect roots according to requirements in Section 01 56 39 "Temporary Tree and Plant Protection."

3.6 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.7 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and elevations.

1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.

B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit unless otherwise indicated.

1. Clearance: 12 inches each side of pipe or conduit.

C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

1. For pipes and conduit less than 6 inches in nominal diameter, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
2. For pipes and conduit 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe or conduit circumference. Fill depressions with tamped sand backfill.
3. For flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support conduit on an undisturbed subgrade.
4. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

D. Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells of pipe.

1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

E. Trenches in Tree- and Plant-Protection Zones:

1. Hand-excavate to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities.
3. Cut and protect roots according to requirements in Section 01 56 39 "Temporary Tree and Plant Protection."

3.8 SUBGRADE INSPECTION

A. Notify Architect when excavations have reached required subgrade.

B. If Architect determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

C. Proof-roll subgrade below the building slabs and pavements with a pneumatic-tired to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.

D. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.

E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

3.9 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by Architect.

1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Architect.

3.10 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.11 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
2. Surveying locations of underground utilities for Record Documents.
3. Testing and inspecting underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.
6. Removing temporary shoring, bracing, and sheeting.
7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.12 UTILITY TRENCH BACKFILL

A. Place backfill on subgrades free of mud, frost, snow, or ice.

B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

C. Trenches under Footings: Backfill trenches excavated under footings and within 18 inches of bottom of footings with satisfactory soil; fill with concrete to elevation of bottom of footings. Concrete is specified in Section 03 30 00 "Cast-in-Place Concrete."

D. Trenches under Roadways: Provide 4-inch thick, concrete-base slab support for piping or conduit less than 30 inches below surface of roadways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway subbase course. Concrete is specified in Section 03 30 00 "Cast-in-Place Concrete." Backfill voids with satisfactory soil while removing shoring and bracing.

E. Initial Backfill:

1. Soil Backfill: Place and compact initial backfill of [subbase material] [satisfactory soil], free of particles larger than [1 inch] <Insert dimension> in any dimension, to a height of 12 inches over the pipe or conduit.

   a. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.

2. Controlled Low-Strength Material: Place initial backfill of controlled low-strength material to a height of 12 inches over the pipe or conduit. Coordinate backfilling with utilities testing.

F. Final Backfill:

1. Soil Backfill: Place and compact final backfill of satisfactory soil to final subgrade elevation.
2. Controlled Low-Strength Material: Place final backfill of controlled low-strength material to final subgrade elevation.

G. Warning Tape: Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.13 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:

1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use satisfactory soil material.
3. Under steps and ramps, use engineered fill.
4. Under building slabs, use engineered fill.
5. Under footings and foundations, use engineered fill.

C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.14 CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.15 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 6 inches in loose depth for material compacted by heavy compaction equipment and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 1557

3.16 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:

1. Turf or Unpaved Areas: Plus or minus 1 inch
2. Walks: Plus or minus 1 inch.
3. Pavements: Plus or minus 1/4 inch.

C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.17 SUBSURFACE DRAINAGE

A. Subdrainage Pipe: Specified in Section 33 46 00 "Subdrainage."

B. Subsurface Drain: Place subsurface drainage geotextile around perimeter of subdrainage trench. Place a 6-inch course of filter material on subsurface drainage geotextile to support subdrainage pipe. Encase subdrainage pipe in a minimum of 12 inches of filter material, placed in compacted layers 6 inches thick, and wrap in subsurface drainage geotextile, overlapping sides and ends at least 6 inches.

1. Compact each filter material layer to 85 percent of maximum dry unit weight according to ASTM D 698 with a minimum of two passes of a plate-type vibratory compactor.

C. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches of final subgrade, in compacted layers 6 inches thick. Overlay drainage backfill with one layer of subsurface drainage geotextile, overlapping sides and ends at least 6 inches.

1. Compact each filter material layer to 85 percent of maximum dry unit weight according to ASTM D 698 with a minimum of two passes of a plate-type vibratory compactor.

2. Place and compact impervious fill over drainage backfill in 6-inch thick compacted layers to final subgrade.

3.18 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

A. Place subbase course and base course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place subbase course and base course under pavements and walks as follows:

1. Install separation geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
2. Place base course material over subbase course under hot-mix asphalt pavement.
3. Shape subbase course and base course to required crown elevations and cross-slope grades.
4. Place subbase course and base course 6 inches or less in compacted thickness in a single layer.
5. Place subbase course and base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
6. Compact subbase course and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 98 percent of maximum dry unit weight according to ASTM D 1557.

3.19 DRAINAGE COURSE UNDER CONCRETE SLABS-ON-GRADE

A. Place drainage course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place and compact drainage course under cast-in-place concrete slabs-on-grade as follows:

1. Install subdrainage geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
2. Place drainage course 6 inches or less in compacted thickness in a single layer.
3. Place drainage course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
4. Compact each layer of drainage course to required cross sections and thicknesses to not less than 98 percent of maximum dry unit weight according to ASTM D 698.

3.20 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:

1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
2. Determine that fill material classification and maximum lift thickness comply with requirements.
3. Determine, during placement and compaction, that in-place density of compacted fill complies with requirements.

B. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.

C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.

D. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.

E. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2937, and ASTM D 6938, as applicable. Tests will be performed at the following locations and frequencies:

1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. or less of paved area or building slab but in no case fewer than three tests.
2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for every 100 feet or less of wall length but no fewer than two tests.
3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 150 feet or less of trench length but no fewer than two tests.

F. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.21 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.22 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

B. Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Architect.

1. Remove waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 31 20 00

SECTION 31 23 19
DEWATERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. All material and construction shall comply with all applicable FDOT and OSHA requirements and standards (latest editions).

C. Refer to Geotechnical Report for additional information and requirements for site clearing, fill, pavement, underdrain and other geotechnical components.

D. Contractor required to obtain all required dewatering permits, including but not limited to SJRWMD.

1.2 SUMMARY

A. Section includes construction dewatering.

B. Related Requirements:

1. Section 01 32 33 "Photographic Documentation" for recording preexisting conditions and dewatering system progress.
2. Section 31 20 00 "Earth Moving" for excavating, backfilling, site grading, and controlling surface-water runoff and ponding.
3. Section 33 46 00 "Subdrainage" for permanent foundation wall, underfloor, and footing drainage.

1.3 ALLOWANCES

A. Dewatering observation wells are part of dewatering allowance.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Verify availability of Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review condition of site to be dewatered including coordination with temporary erosion-control measures and temporary controls and protections.
3. Review geotechnical report.
4. Review proposed site clearing and excavations.
5. Review existing utilities and subsurface conditions.
6. Review observation and monitoring of dewatering system.

1.5 ACTION SUBMITTALS

A. Shop Drawings: For dewatering system, prepared by or under the supervision of a qualified professional engineer.

1. Include plans, elevations, sections, and details.
2. Show arrangement, locations, and details of wells and well points; locations of risers, headers, filters, pumps, power units, and discharge lines; and means of discharge, control of sediment, and disposal of water.
3. Include layouts of piezometers and flow-measuring devices for monitoring performance of dewatering system.
4. Include written plan for dewatering operations including sequence of well and well-point placement coordinated with excavation shoring and bracings and control procedures to be adopted if dewatering problems arise.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and professional engineer.

B. Field quality-control reports.

C. Existing Conditions: Using photographs or video recordings, show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by dewatering operations. Submit before Work begins.

D. Record Drawings: Identify locations and depths of capped wells and well points and other abandoned-in-place dewatering equipment.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer that has specialized in design of dewatering systems and dewatering work.

1.8 FIELD CONDITIONS

A. Project-Site Information: A geotechnical report has been prepared for this Project and is available for information only. The opinions expressed in this report are those of a geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by a geotechnical engineer. Owner is not responsible for interpretations or conclusions drawn from this data.

1. Make additional test borings and conduct other exploratory operations necessary for dewatering according to the performance requirements.
2. The geotechnical report is included elsewhere in Project Manual.

B. Survey Work: Engage a qualified land surveyor or professional engineer to survey adjacent existing buildings, structures, and site improvements; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Dewatering Performance: Design, furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.

1. Design dewatering system, including comprehensive engineering analysis by a qualified professional engineer.
2. Continuously monitor and maintain dewatering operations to ensure erosion control, stability of excavations and constructed slopes, prevention of flooding in excavation, and prevention of damage to subgrades and permanent structures.
3. Prevent surface water from entering excavations by grading, dikes, or other means.
4. Accomplish dewatering without damaging existing buildings, structures, and site improvements adjacent to excavation.
5. Remove dewatering system when no longer required for construction.

B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning dewatering. Comply with water- and debris-disposal regulations of authorities having jurisdiction.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by dewatering operations.

1. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding site or surrounding area.
2. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.

B. Install dewatering system to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

C. Provide temporary grading to facilitate dewatering and control of surface water.

D. Protect and maintain temporary erosion and sedimentation controls, which are specified in Section 31 10 00 "Site Clearing," during dewatering operations.

3.2 INSTALLATION

A. Install dewatering system utilizing wells, well points, or similar methods complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, and surface-water controls.

1. Space well points or wells at intervals required to provide sufficient dewatering.
2. Use filters or other means to prevent pumping of fine sands or silts from the subsurface.

B. Place dewatering system into operation to lower water to specified levels before excavating below ground-water level.

C. Provide sumps, sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.

D. Provide standby equipment on-site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of system becomes inadequate or fails.

3.3 OPERATION

A. Operate system continuously until drains, sewers, and structures have been constructed and fill materials have been placed or until dewatering is no longer required.

B. Operate system to lower and control ground water to permit excavation, construction of structures, and placement of fill materials on dry subgrades. Drain water-bearing strata above and below bottom of foundations, drains, sewers, and other excavations.

1. Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.
2. Reduce hydrostatic head in water-bearing strata below subgrade elevations of foundations, drains, sewers, and other excavations.
3. Maintain piezometric water level a minimum of 36 inches below bottom of excavation.

C. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others.

D. Remove dewatering system from Project site on completion of dewatering. Plug or fill well holes with sand or cut off and cap wells a minimum of 36 inches below overlying construction.

3.4 FIELD QUALITY CONTROL

A. Observation Wells: Provide observation wells or piezometers, take measurements, and maintain at least the minimum number indicated; additional observation wells may be required by authorities having jurisdiction.

1. Observe and record daily elevation of ground water and piezometric water levels in observation wells.
2. Repair or replace, within 24 hours, observation wells that become inactive, damaged, or destroyed. In areas where observation wells are not functioning properly, suspend construction activities until reliable observations can be made. Add or remove water from observation-well risers to demonstrate that observation wells are functioning properly.

3. Fill observation wells, remove piezometers, and fill holes when dewatering is completed.

B. Survey-Work Benchmarks: Resurvey benchmarks regularly during dewatering and maintain an accurate log of surveyed elevations for comparison with original elevations. Promptly notify Architect if changes in elevations occur or if cracks, sags, or other damage is evident in adjacent construction.

C. Provide continual observation to ensure that subsurface soils are not being removed by the dewatering operation.

D. Prepare reports of observations.

3.5 PROTECTION

A. Protect and maintain dewatering system during dewatering operations.

B. Promptly repair damages to adjacent facilities caused by dewatering.

END OF SECTION 31 23 19

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SECTION 31 31 16
TERMITE CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes pre-construction soil treatment for underslab and foundation wall perimeters.

1.3 SUBMITTALS

A. Product Data:

1. Chemicals and products used
2. Application instructions
3. Certification that products used comply with U.S. Environmental Protection Agency (EPA) regulations for termiticides.
4. Information that soil treatment conforms to specified requirements

B. Provide information regarding the type of equipment to be used to apply the soil treatment, size of volume mixing tank, the pump capacity in gallons per minute, and the application tools with in-line flow meter devices attached.

C. Certificate of Compliance: Submit as part of the Close Out Documents the following statement from the pest control company: “The building has received a complete treatment for the prevention of subterranean termites. Treatment is in accordance with rules and laws established by the Florida Department of Agriculture and Consumer Services.”

D. Submit job site log book.

E. Submit warranty.

1.4 QUALITY ASSURANCE

A. In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for preparing substrate and application.

B. Engage a professional pest control operator who is licensed according to regulations of the State of Florida.

C. Use only termiticides that bear a federal registration number of the EPA and are approved by local authorities having jurisdiction.

1.5 FIELD CONDITIONS

A. Soil Treatment:

1. Environmental Limitations: To ensure penetration, do not treat soil that is water saturated or frozen. Do not treat soil while precipitation is occurring. Comply with requirements of the EPA-Registered Label and requirements of authorities having jurisdiction.
2. Related Work: Coordinate soil treatment application with excavating, filling, grading, and concreting operations. Treat soil under footings, grade beams, and ground-supported slabs before construction.

1.6 REGULATORY REQUIREMENTS

A. Minimum requirements for application as authorized by the State of Florida to fulfill the work according to manufacturer's specifications.

1.7 PROJECT RECORD DOCUMENTATION

A. Log Book to be kept at job site ad to include:

1. Project name
2. Company providing treatment
3. Applicator's name
4. Time of arrival and departure
5. Product name
6. Record date of all applications
7. Rate of application to all required areas of the designated site
8. All areas to be treated
9. The soil treatment trade name
10. Quantity of concentrate delivered to the site
11. Quantity used for the designated treated areas
12. The percentage of active ingredient in diluted form
13. Finished gallons of soil treatment for each application
14. Linear and square footage amount to determine total finished soil treatment used

B. Architect will observe both the amount of concentrate delivered to the site and the empty units that total the amount used to the treated areas. The Owner's representative shall sign the logbook as noted.

1.8 DELIVERY

A. The State Registered products must be delivered to the jobsite in the original sealed and labeled containers of the manufacturer. Use a synthetic dye for proper identification on the surface areas treated.

1.9 WARRANTY

A. Warranty: Furnish written warranty, executed by Applicator and Contractor, certifying that applied soil termiticide treatment will prevent infestation of subterranean termites. If subterranean termite activity is discovered during warranty period, re-treat soil and repair or replace damage caused by termite infestation.

B. Warranty Period: 5 years from Date of Substantial Completion, or the minimum more than 5 years if prevailing local laws require.

C. The warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

1.10 PROJECT CONDITIONS

A. Restrictions: Do not apply soil treatment solution until excavating, filling, and grading operations are completed, except as otherwise required in construction operations.

B. To ensure penetration, do not apply soil treatment to excessively wet soils or during inclement weather. Comply with handling and application instructions of the soil toxicant manufacturer.

PART 2 - PRODUCTS

2.1 SOIL TREATMENT

A. Termiticide: Provide an EPA-Registered termiticide, complying with requirements of authorities having jurisdiction, in an aqueous solution formulated to prevent termite infestation. Provide quantity required for application at the label volume and rate for the maximum termiticide concentration allowed for each specific use, according to product's EPA-Registered Label.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. BASF Corporation, Agricultural Products; Termidor SC
b. Bayer Environmental Science; Premise 75 WP.
c. FMC Corporation, Agricultural Products Group; Dragnet FT.
d. Syngenta; Demon Max.

2. Service Life of Treatment: Soil treatment termiticide that is effective for not less than five years against infestation of subterranean termites.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for moisture content of soil per termiticide label, interfaces with earthwork, slab and foundation work, landscaping, utility installation, and other conditions affecting performance of termite control.

B. Proceed with application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Prepare work areas according to the requirements of authorities having jurisdiction and according to manufacturer's written instructions before beginning application and installation of termite control treatment(s). Remove extraneous sources of wood cellulose and other edible materials, such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil within and around foundations.

B. Soil Treatment Preparation: Remove foreign matter and impermeable soil materials that could decrease treatment effectiveness on areas to be treated. Loosen, rake, and level soil to be treated, except previously compacted areas under slabs and footings. Termiticides may be applied before placing compacted fill under slabs if recommended in writing by termiticide manufacturer.

1. Fit filling hose connected to water source at the site with a backflow preventer, according to requirements of authorities having jurisdiction.

3.3 APPLYING SOIL TREATMENT

A. Application: Mix soil treatment termiticide solution to a uniform consistency. Distribute treatment uniformly. Apply treatment at the product's EPA-Registered Label volume and rate for maximum specified concentration of termiticide to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction.

1. Slabs-on-Grade and Basement Slabs: Underground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before concrete footings and slabs are placed.
2. Foundations: Soil adjacent to and along the entire inside perimeter of foundation walls; along both sides of interior partition walls; around plumbing pipes and electric conduit penetrating the slab; around interior column footers, piers, and along the entire outside perimeter, from grade to bottom of footing.
3. Masonry: Treat voids.
4. Penetrations: At expansion joints, control joints, and areas where slabs and below-grade walls will be penetrated.

B. Post warning signs in areas of application.

C. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

3.4 PROTECTION

A. Avoid disturbance of treated soil after application. Keep off treated areas until completely dry.

B. Protect termiticide solution dispersed in treated soils and fills from being diluted by exposure to water spillage or weather until ground-supported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.

END OF SECTION 31 31 16

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SECTION 31 50 00
EXCAVATION SUPPORT AND PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. All material and construction shall comply with all applicable FDOT and OSHA requirements and standards (latest editions).

1.2 SUMMARY

A. Section includes temporary excavation support and protection systems.

B. Related Requirements:

1. Section 01 32 33 "Photographic Documentation" for recording preexisting conditions and excavation support and protection system progress.
2. Section 31 20 00 "Earth Moving" for excavating and backfilling and for controlling surface-water runoff and ponding.
3. Section 31 23 19 "Dewatering" for dewatering excavations.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review geotechnical report.
2. Review existing utilities and subsurface conditions.
3. Review coordination for interruption, shutoff, capping, and continuation of utility services.
4. Review proposed excavations.
5. Review proposed equipment.
6. Review monitoring of excavation support and protection system.
7. Review coordination with waterproofing.
8. Review abandonment or removal of excavation support and protection system.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, performance properties, and dimensions of individual components and profiles, and calculations for excavation support and protection system.

B. Shop Drawings: For excavation support and protection system, prepared by or under the supervision of a qualified professional engineer.

1. Include plans, elevations, sections, and details.
2. Show arrangement, locations, and details of soldier piles, piling, lagging, tiebacks, bracing, and other components of excavation support and protection system according to engineering design.
3. Indicate type and location of waterproofing.
4. Include a written plan for excavation support and protection, including sequence of construction of support and protection coordinated with progress of excavation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For land surveyor and professional engineer.

B. Contractor Calculations: For excavation support and protection system. Include analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Existing Conditions: Using photographs o video recordings, show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by inadequate performance of excavation support and protection systems. Submit before Work begins.

D. Record Drawings: Identify locations and depths of capped utilities, abandoned-in-place support and protection systems, and other subsurface structural, electrical, or mechanical conditions.

1.6 FIELD CONDITIONS

A. Interruption of Existing Utilities: Do not interrupt any utility serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility according to requirements indicated:

1. Notify Owner no fewer than two days in advance of proposed interruption of utility.
2. Do not proceed with interruption of utility without Owner's written permission.

B. Project-Site Information: A geotechnical report has been prepared for this Project and is available for information only. The opinions expressed in this report are those of a geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by a geotechnical engineer. Owner is not responsible for interpretations or conclusions drawn from the data.

1. Make additional test borings and conduct other exploratory operations necessary for excavation support and protection according to the performance requirements.
2. The geotechnical report is included elsewhere in Project Manual.

C. Survey Work: Engage a qualified land surveyor or professional engineer to survey adjacent existing buildings, structures, and site improvements; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Provide design, monitor, and maintain excavation support and protection system capable of supporting excavation sidewalls and of resisting earth and hydrostatic pressures and superimposed and construction loads.

1. Contractor Design: Design excavation support and protection system, including comprehensive engineering analysis by a qualified professional engineer.
2. Prevent surface water from entering excavations by grading, dikes, or other means.
3. Install excavation support and protection systems without damaging existing buildings, structures, and site improvements adjacent to excavation.
4. Continuously monitor vibrations, settlements, and movements to ensure stability of excavations and constructed slopes and to ensure that damage to permanent structures is prevented.

2.2 MATERIALS

A. General: Provide materials that are either new or in serviceable condition.

B. Structural Steel: ASTM A 36/A 36M, ASTM A 690/A 690M, or ASTM A 992/A 992M.

C. Steel Sheet Piling: ASTM A 328/A 328M, ASTM A 572/A 572M, or ASTM A 690/A 690M; with continuous interlocks.

1. Corners: Site-fabricated mechanical interlock

D. Wood Lagging: Lumber, mixed hardwood, nominal rough thickness of size and strength required for application.

E. Shotcrete: Comply with Section 03 37 13 "Shotcrete" for shotcrete materials and mixes, reinforcement, and shotcrete application.

F. Cast-in-Place Concrete: ACI 301, of compressive strength required for application.

G. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

H. Tiebacks: Steel bars, ASTM A 722/A 722M.

I. Tiebacks: Steel strand, ASTM A 416/A 416M.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards that could develop during excavation support and protection system operations.

1. Shore, support, and protect utilities encountered.

B. Install excavation support and protection systems to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

C. Locate excavation support and protection systems clear of permanent construction so that construction and finishing of other work is not impeded.

3.2 SOLDIER PILES AND LAGGING

A. Install steel soldier piles before starting excavation. Extend soldier piles below excavation grade level to depths adequate to prevent lateral movement. Space soldier piles at regular intervals not to exceed allowable flexural strength of wood lagging. Accurately align exposed faces of flanges to vary not more than 2 inches from a horizontal line and not more than 1:120 out of vertical alignment.

B. Install wood lagging within flanges of soldier piles as excavation proceeds. Trim excavation as required to install lagging. Fill voids behind lagging with soil, and compact.

C. Install wales horizontally at locations indicated on Drawings and secure to soldier piles.

3.3 SHEET PILING

A. Before starting excavation, install one-piece sheet piling lengths and tightly interlock vertical edges to form a continuous barrier.

B. Accurately place the piling, using templates and guide frames unless otherwise recommended in writing by the sheet piling manufacturer. Limit vertical offset of adjacent sheet piling to 60 inches. Accurately align exposed faces of sheet piling to vary not more than 2 inches from a horizontal line and not more than 1:120 out of vertical alignment.

C. Cut tops of sheet piling to uniform elevation at top of excavation.

3.4 TIEBACKS

A. Drill, install, grout, and tension tiebacks.

B. Test load-carrying capacity of each tieback and replace and retest deficient tiebacks.

1. Have test loading observed by a qualified professional engineer responsible for design of excavation support and protection system.

C. Maintain tiebacks in place until permanent construction is able to withstand lateral earth and hydrostatic pressures.

3.5 BRACING

A. Bracing: Locate bracing to clear columns, floor framing construction, and other permanent work. If necessary to move brace, install new bracing before removing original brace.

1. Do not place bracing where it will be cast into or included in permanent concrete work unless otherwise approved by Architect.
2. Install internal bracing if required to prevent spreading or distortion of braced frames.
3. Maintain bracing until structural elements are supported by other bracing or until permanent construction is able to withstand lateral earth and hydrostatic pressures.

3.6 FIELD QUALITY CONTROL

A. Survey-Work Benchmarks: Resurvey benchmarks regularly during installation of excavation support and protection systems, excavation progress, and for as long as excavation remains open. Maintain an accurate log of surveyed elevations and positions for comparison with original elevations and positions. Promptly notify Architect if changes in elevations or positions occur or if cracks, sags, or other damage is evident in adjacent construction.

B. Promptly correct detected bulges, breakage, or other evidence of movement to ensure that excavation support and protection system remains stable.

C. Promptly repair damages to adjacent facilities caused by installation or faulty performance of excavation support and protection systems.

3.7 REMOVAL AND REPAIRS

A. Remove excavation support and protection systems when construction has progressed sufficiently to support excavation and earth and hydrostatic pressures. Remove in stages to avoid disturbing underlying soils and rock or damaging structures, pavements, facilities, and utilities.

1. Remove excavation support and protection systems to a minimum depth of 48 inches below overlying construction and abandon remainder.
2. Fill voids immediately with approved backfill compacted to density specified in Section 31 20 00 "Earth Moving."
3. Repair or replace, as approved by Architect, adjacent work damaged or displaced by removing excavation support and protection systems.

B. Leave excavation support and protection systems permanently in place.

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Division 32

Exterior Improvements

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SECTION 32 12 16
ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. All material and construction shall comply with all applicable FDOT and OSHA requirements and standards (latest editions).

C. Refer to Geotechnical Report for additional information and requirements for site clearing, fill, pavement, underdrain and other geotechnical components.

1.2 SUMMARY

A. Section Includes:

1. Cold milling of existing asphalt pavement.
2. Hot-mix asphalt patching.
3. Hot-mix asphalt paving.
4. Hot-mix asphalt overlay.
5. Asphalt curbs.
6. Asphalt traffic-calming devices.
7. Asphalt surface treatments.

B. Related Requirements:

1. Section 02 41 16 "Structure Demolition" and Section 02 41 19 "Selective Demolition" for demolition and removal of existing asphalt pavement.
2. Section 31 20 00 "Earth Moving" for subgrade preparation, fill material, unbound-aggregate subbase and base courses, and aggregate pavement shoulders.
3. Section 32 13 73 "Concrete Paving Joint Sealants" for joint sealants and fillers at pavement terminations.
4. Section 32 14 00 "Unit Paving" for bituminous setting bed for pavers.

1.3 UNIT PRICES

A. Work of this Section is affected by Insert name of unit price.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to hot-mix asphalt paving including, but not limited to, the following:

a. Review proposed sources of paving materials, including capabilities and location of plant that will manufacture hot-mix asphalt.
b. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include technical data and tested physical and performance properties.
2. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.
3. Job-Mix Designs: For each job mix proposed for the Work.

B. LEED Submittals:

1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer and testing agency.

B. Material Certificates: For each paving material. Include statement that mixes containing recycled materials will perform equal to mixes produced from all new materials.

C. Material Test Reports: For each paving material, by a qualified testing agency.

D. Field quality-control reports.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: A paving-mix manufacturer registered with and approved by authorities having jurisdiction or the DOT of state in which Project is located.

B. Testing Agency Qualifications: Qualified according to ASTM D 3666 for testing indicated.

C. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of FDOT for asphalt paving work.

1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:

1. Prime Coat: Minimum surface temperature of 60 deg F.
2. Tack Coat: Minimum surface temperature of 60 deg F.
3. Slurry Coat: Comply with weather limitations in ASTM D 3910.
4. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
5. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. General: Use materials and gradations that have performed satisfactorily in previous installations.

B. Coarse Aggregate: ASTM D 692/D 692M, sound; angular crushed stone, crushed gravel, or cured, crushed blast-furnace slag.

C. Fine Aggregate: ASTM D 1073 or AASHTO M 29, sharp-edged natural sand or sand prepared from stone, gravel, cured blast-furnace slag, or combinations thereof.

1. For hot-mix asphalt, limit natural sand to a maximum of 20 percent by weight of the total aggregate mass.

D. Mineral Filler: ASTM D 242/D 242M or AASHTO M 17, rock or slag dust, hydraulic cement, or other inert material.

2.2 ASPHALT MATERIALS

A. Asphalt Binder: AASHTO M 320, PG 64-22 PG 58-28 PG 70-22 <Insert performance grade>.

B. Asphalt Cement: ASTM D 3381/D 3381M for viscosity-graded material ASTM D 946/D 946M for penetration-graded material.

C. Cutback Prime Coat: ASTM D 2027, medium-curing cutback asphalt, MC-30 or MC-70 MC-250.

D. Emulsified Asphalt Prime Coat: ASTM D 977 or AASHTO M 140 emulsified asphalt, or ASTM D 2397 or AASHTO M 208 cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.

E. Tack Coat: ASTM D 977 or AASHTO M 140 emulsified asphalt, or ASTM D 2397 or AASHTO M 208 cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.

F. Fog Seal: ASTM D 977 or AASHTO M 140 emulsified asphalt, or ASTM D 2397 or AASHTO M 208 cationic emulsified asphalt, slow setting, factory diluted in water, of suitable grade and consistency for application.

G. Water: Potable.

H. Undersealing Asphalt: ASTM D 3141/D 3141M; pumping consistency.

2.3 AUXILIARY MATERIALS

A. Recycled Materials for Hot-Mix Asphalt Mixes: Reclaimed asphalt pavement; reclaimed, unbound-aggregate base material; and recycled tires asphalt shingles or glass from sources and gradations that have performed satisfactorily in previous installations, equal to performance of required hot-mix asphalt paving produced from all new materials.

B. Herbicide: Commercial chemical for weed control, registered by the EPA, and not classified as "restricted use" for locations and conditions of application. Provide in granular, liquid, or wettable powder form.

C. Sand: ASTM D 1073 or AASHTO M 29, Grade No. 2 or No. 3.

D. Joint Sealant: ASTM D 6690 or AASHTO M 324, Type I Type II or III Type IV, hot-applied, single-component, polymer-modified bituminous sealant.

2.4 MIXES

A. Recycled Content of Hot-Mix Asphalt: To meet FDOT Requirements

1. Surface Course Limit: Recycled content no more than 10 percent by weight.

B. Hot-Mix Asphalt: Dense-graded, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction ; designed according to procedures in AI MS-2, "Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types"; and complying with the following requirements:

1. FDOT Requirements

C. Emulsified-Asphalt Slurry: ASTM D 3910, and FDOT Requirements

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that subgrade is dry and in suitable condition to begin paving.

B. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
2. Proof roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.

C. Proceed with paving only after unsatisfactory conditions have been corrected.

3.2 COLD MILLING

A. Clean existing pavement surface of loose and deleterious material immediately before cold milling. Remove existing asphalt pavement by cold milling to grades and cross sections indicated.

1. Mill to a depth of 1-1/2 inches
2. Mill to a uniform finished surface free of excessive gouges, grooves, and ridges.
3. Control rate of milling to prevent tearing of existing asphalt course.
4. Repair or replace curbs, manholes, and other construction damaged during cold milling.
5. Excavate and trim unbound-aggregate base course, if encountered, and keep material separate from milled hot-mix asphalt.
6. Patch surface depressions deeper than 1 inch after milling, before wearing course is laid.
7. Handle milled asphalt material according to approved waste management plan required in Section 01 74 19 "Construction Waste Management and Disposal."
8. Keep milled pavement surface free of loose material and dust.
9. Do not allow milled materials to accumulate on-site.

3.3 PATCHING

A. Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into perimeter of adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.

B. Portland Cement Concrete Pavement: Break cracked slabs and roll as required to reseat concrete pieces firmly.

1. Pump hot undersealing asphalt under rocking slab until slab is stabilized or, if necessary, crack slab into pieces and roll to reseat pieces firmly.
2. Remove disintegrated or badly cracked pavement. Excavate rectangular or trapezoidal patches, extending into perimeter of adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Recompact existing unbound-aggregate base course to form new subgrade.

C. Tack Coat: Before placing patch material, apply tack coat uniformly to vertical asphalt surfaces abutting the patch. Apply at a rate of 0.05 to 0.15 gal./sq. yd.

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

D. Placing Patch Material: Fill excavated pavement areas with hot-mix asphalt base mix for full thickness of patch and, while still hot, compact flush with adjacent surface.

E. Placing Patch Material: Partially fill excavated pavements with hot-mix asphalt base mix and, while still hot, compact. Cover asphalt base course with compacted, hot-mix surface layer finished flush with adjacent surfaces.

3.4 REPAIRS

A. Leveling Course: Install and compact leveling course consisting of hot-mix asphalt surface course to level sags and fill depressions deeper than 1 inch in existing pavements.

1. Install leveling wedges in compacted lifts not exceeding 3 inches thick.

B. Crack and Joint Filling: Remove existing joint filler material from cracks or joints to a depth of 1/4 inch.

1. Clean cracks and joints in existing hot-mix asphalt pavement.
2. Use emulsified-asphalt slurry to seal cracks and joints less than 1/4 inch wide. Fill flush with surface of existing pavement and remove excess.
3. Use hot-applied joint sealant to seal cracks and joints more than 1/4 inch wide. Fill flush with surface of existing pavement and remove excess.

3.5 SURFACE PREPARATION

A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

B. Herbicide Treatment: Apply herbicide according to manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.

1. Mix herbicide with prime coat if formulated by manufacturer for that purpose.

C. Cutback Prime Coat: Apply uniformly over surface of compacted unbound-aggregate base course at a rate of 0.15 to 0.50 gal./sq. yd. . Apply enough material to penetrate and seal, but not flood, surface. Allow prime coat to cure.

1. If prime coat is not entirely absorbed within 24 hours after application, spread sand over surface to blot excess asphalt. Use enough sand to prevent pickup under traffic. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.
2. Protect primed substrate from damage until ready to receive paving.

D. Emulsified Asphalt Prime Coat: Apply uniformly over surface of compacted unbound-aggregate base course at a rate of 0.10 to 0.30 gal./sq. yd. per inch depth. Apply enough material to penetrate and seal, but not flood, surface. Allow prime coat to cure.

1. If prime coat is not entirely absorbed within 24 hours after application, spread sand over surface to blot excess asphalt. Use enough sand to prevent pickup under traffic. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.
2. Protect primed substrate from damage until ready to receive paving.

E. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd.

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces..

3.6 PLACING HOT-MIX ASPHALT

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand in areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.

1. Place hot-mix asphalt base course in number of lifts and thicknesses indicated.
2. Place hot-mix asphalt surface course in single lift.
3. Spread mix at a minimum temperature of 250 deg F.
4. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes unless otherwise indicated.
5. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.

1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Overlap mix placement about 1 to 1-1/2 inches from strip to strip to ensure proper compaction of mix along longitudinal joints.
2. Complete a section of asphalt base course before placing asphalt surface course.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.7 JOINTS

A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.

1. Clean contact surfaces and apply tack coat to joints.
2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
3. Offset transverse joints, in successive courses, a minimum of 24 inches.
4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints using either "bulkhead" or "papered" method according to AI MS-22, for both "Ending a Lane" and "Resumption of Paving Operations." as shown on Drawings. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
5. Compact asphalt at joints to a density within 2 percent of specified course density.

3.8 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.

1. Complete compaction before mix temperature cools to 185 deg F.

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density: 96 percent of reference laboratory density according to ASTM D 6927 or AASHTO T 245 , but not less than 94 percent or greater than 100 percent.
2. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent or greater than 96 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.

F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.

G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.9 ASPHALT CURBS

A. Construct hot-mix asphalt curbs over compacted pavement surfaces. Apply a light tack coat unless pavement surface is still tacky and free from dust. Spread mix at a minimum temperature of 250 deg F.

1. Asphalt Mix: Same as pavement surface-course mix.

B. Place hot-mix asphalt to curb cross section indicated or, if not indicated, to local standard shapes, by machine or by hand in wood or metal forms. Tamp hand-placed materials and screed to smooth finish. Remove forms after hot-mix asphalt has cooled.

3.10 ASPHALT TRAFFIC-CALMING DEVICES

A. Construct hot-mix asphalt speed bumps humps cushions and tables over compacted pavement surfaces. Apply a tack coat unless pavement surface is still tacky and free from dust. Spread mix at a minimum temperature of 250 deg F.

1. Tack Coat Application: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd. Revise "Asphalt Mix" Subparagraph below to insert designations of state or local DOT if mixes are different.
2. Asphalt Mix: Same as pavement surface-course mix.

3. Before installation, mill pavement that will be in contact with bottom of traffic-calming device. Mill to a depth of 1 inch from top of pavement to a clean, rough profile.

B. Place and compact hot-mix asphalt to cross section indicated, by machine or by hand in wood or metal forms. Tamp hand-placed materials and screed to smooth finish. Remove forms after hot-mix asphalt has cooled.

3.11 INSTALLATION TOLERANCES

A. Pavement Thickness: Compact each course to produce the thickness indicated within the following tolerances:

1. Base Course: Plus or minus 1/2 inch.
2. Surface Course: Plus 1/4 inch, no minus.

B. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:

1. Base Course: 1/4 inch
2. Surface Course: 1/8 inch
3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

C. Asphalt Traffic-Calming Devices: Compact and form asphalt to produce the contour indicated and within a tolerance of plus or minus 1/8 inch of height indicated above pavement surface.

3.12 SURFACE TREATMENTS

A. Fog Seals: Apply fog seal at a rate of 0.10 to 0.15 gal./sq. yd. to existing asphalt pavement and allow to cure. With fine sand, lightly dust areas receiving excess fog seal.

B. Slurry Seals: Apply slurry coat in a uniform thickness according to ASTM D 3910 and allow to cure.

1. Roll slurry seal to remove ridges and provide a uniform, smooth surface.

3.13 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549.

C. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.

D. Asphalt Traffic-Calming Devices: Finished height of traffic-calming devices above pavement will be measured for compliance with tolerances.

E. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement according to ASTM D 979 or AASHTO T 168 .

1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041, and compacted according to job-mix specifications.
2. In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726.

a. One core sample will be taken for every 1000 sq. yd. or less of installed pavement, with no fewer than three cores taken.
b. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.

F. Replace and compact hot-mix asphalt where core tests were taken.

G. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.14 WASTE HANDLING

A. General: Handle asphalt-paving waste according to approved waste management plan required in Section 01 74 19 "Construction Waste Management and Disposal."

END OF SECTION 32 12 16

SECTION 32 13 13
CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. All material and construction shall comply with all applicable FDOT and OSHA requirements and standards (latest editions).

C. Refer to Geotechnical Report for additional information and requirements for site clearing, fill, pavement, underdrain and other geotechnical components.

1.2 SUMMARY

A. Section Includes Concrete Paving, Including the Following:

1. Driveways.
2. Roadways.
3. Parking lots.
4. Curbs and gutters.
5. Walks.

B. Related Requirements:

1. Section 03 30 00 "Cast-in-Place Concrete" for general building applications of concrete.
2. Section 32 13 16 "Decorative Concrete Paving" for stamped concrete other than stamped detectable warnings.
3. Section 32 13 73 "Concrete Paving Joint Sealants" for joint sealants in expansion and contraction joints within concrete paving and in joints between concrete paving and asphalt paving or adjacent construction.
4. Section 32 17 13 "Parking Bumpers."
5. Section 32 17 23 "Pavement Markings."
6. Section 32 17 26 "Tactile Warning Surfacing" for detectable warning mats.
7. Section 32 17 29 "Manufactured Traffic-Calming Devices."

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash, slag cement, and other pozzolans.

B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to concrete paving, including but not limited to, the following:

   a. Concrete mixture design.
   b. Quality control of concrete materials and concrete paving construction practices.

2. Require representatives of each entity directly concerned with concrete paving to attend, including the following:

   a. Contractor's superintendent.
   b. Independent testing agency responsible for concrete design mixtures.
   c. Ready-mix concrete manufacturer.
   d. Concrete paving Subcontractor.
   e. Manufacturer's representative of stamped concrete paving system used for stamped detectable warnings.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. LEED Submittals:

1. Laboratory Test Reports for Credit SS 7.1: For concrete paving mixtures, documentation indicating that cured concrete complies with requirement for Solar Reflectance Index.
2. Product Certificates for Credit MR 5: For products and materials required to comply with requirements for regional materials, certificates indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating distance to Project, cost for each regional material, and fraction by weight that is considered regional.
3. Design Mixtures for Credit ID 1: For each concrete mixture containing fly ash as a replacement for Portland cement or other Portland cement replacements. For each design mixture submitted, include an equivalent concrete mixture that does not contain Portland cement replacements, to determine amount of Portland cement replaced.

C. Samples for Initial Selection: For each type of product, ingredient, or admixture requiring color selection.

D. Samples for Verification: For each type of product or exposed finish, prepared as Samples of size indicated below:

1. Exposed Aggregate: 10-lb Sample of each mix.

E. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer of stamped detectable warnings ready-mix concrete manufacturer and testing agency.

B. Material Certificates: For the following, from manufacturer:

1. Cementitious materials.
2. Steel reinforcement and reinforcement accessories.
3. Fiber reinforcement.
4. Admixtures.
5. Curing compounds.
6. Applied finish materials.
7. Bonding agent or epoxy adhesive.
8. Joint fillers.

C. Material Test Reports: For each of the following:

1. Aggregates: [Include service-record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity.]

D. Field quality-control reports.

E. Contractor to provide joint layout to engineer for review.

1.7 QUALITY ASSURANCE

A. Stamped Detectable Warning Installer Qualifications: An employer of workers trained and approved by manufacturer of stamped concrete paving systems.

B. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").

C. Testing Agency Qualifications: Qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

D. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockups of full-thickness sections of concrete paving to demonstrate typical joints; surface finish, texture, and color; curing; and standard of workmanship.
2. Build mockups of concrete paving in the location and of the size indicated or, if not indicated, build mockups where directed by Architect and not less than 96 inches by 96 inches.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified independent testing agency to perform preconstruction testing on concrete paving mixtures.

1.9 FIELD CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

B. Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:

1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
2. Do not use frozen materials or materials containing ice or snow.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.

C. Hot-Weather Concrete Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301 unless otherwise indicated.

2.2 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.

1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.3 STEEL REINFORCEMENT

A. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

B. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, fabricated from galvanized steel wire into flat sheets.

C. Deformed-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, flat sheet.

D. Epoxy-Coated Welded-Wire Reinforcement: ASTM A 884/A 884M, Class A, plain steel.

E. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.

F. Galvanized Reinforcing Bars: ASTM A 767/A 767M, Class II zinc coated, hot-dip galvanized after fabrication and bending; with ASTM A 615/A 615M, Grade 60 deformed bars.

G. Epoxy-Coated Reinforcing Bars: ASTM A 775/A 775M or ASTM A 934/A 934M; with ASTM A 615/A 615M, Grade 60 deformed bars.

H. Steel Bar Mats: ASTM A 184/A 184M; with ASTM A 615/A 615M, Grade 60 deformed bars; assembled with clips.

I. Plain-Steel Wire: ASTM A 1064/A 1064M, galvanized.

J. Deformed-Steel Wire: ASTM A 1064/A 1064M.

K. Epoxy-Coated-Steel Wire: ASTM A 884/A 884M, Class A; coated, plain.

L. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 plain-steel bars [; zinc coated galvanized after fabrication according to ASTM A 767/A 767M, Class I coating. Cut bars true to length with ends square and free of burrs.

M. Epoxy-Coated, Joint Dowel Bars: ASTM A 775/A 775M; with ASTM A 615/A 615M, Grade 60 plain-steel bars.

N. Tie Bars: ASTM A 615/A 615M, Grade 60; deformed.

O. Hook Bolts: ASTM A 307, Grade A, internally and externally threaded. Design hook-bolt joint assembly to hold coupling against paving form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.

P. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded-wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:

1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

Q. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating, compatible with epoxy coating on reinforcement.

R. Zinc Repair Material: ASTM A 780/A 780M.

2.4 CONCRETE MATERIALS

A. Regional Materials: Concrete shall be manufactured within 500 miles of Project site from aggregates [and cement] that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site.

B. Cementitious Materials: Use the following cementitious materials, of same type, brand, and source throughout Project:

1. Portland Cement: ASTM C 150/C 150M, gray Portland cement Type I/II.
2. Fly Ash: ASTM C 618, Class C.
3. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.
4. Blended Hydraulic Cement: ASTM C 595/C 595M, Type IS, cement.

C. Normal-Weight Aggregates: ASTM C 33/C 33M, Class 4S, uniformly graded. Provide aggregates from a single source [with documented service-record data of at least 10 years' satisfactory service in similar paving applications and service conditions using similar aggregates and cementitious materials].

1. Maximum Coarse-Aggregate Size: 1 inch nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Exposed Aggregate: Selected, hard, and durable; washed; free of materials with deleterious reactivity to cement or that cause staining; from a single source, with gap-graded coarse aggregate as follows:

1. Aggregate Sizes: 3/4 to 1 inch nominal.
2. Aggregate Source, Shape, and Color

E. Air-Entraining Admixture: ASTM C 260/C 260M.

F. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain no more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.

4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

G. Color Pigment: ASTM C 979/C 979M, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable free of carbon black, nonfading, and resistant to lime and other alkalis.

1. Color: As selected by Architect from manufacturer's full range

H. Water: Potable and complying with ASTM C 94/C 94M.

2.5 FIBER REINFORCEMENT

A. Synthetic Fiber: Monofilament polypropylene fibers engineered and designed for use in decorative concrete paving, complying with ASTM C 1116/C 1116M, Type III, 1/2 to 1-1/2 inches long.

B. Synthetic Fiber: Fibrillated polypropylene fibers engineered and designed for use in decorative concrete paving, complying with ASTM C 1116/C 1116M, Type III, 1/2 to 1-1/2 inches long.

2.6 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz. /sq. yd. dry.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Evaporation Retarder: Waterborne, monomolecular, film forming, manufactured for application to fresh concrete.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

F. White, Waterborne, and Membrane-Forming Curing Compound: ASTM C 309, Type 2, Class B, dissipating.

2.7 RELATED MATERIALS

A. Joint Fillers: ASTM D 1751, asphalt-saturated cellulosic fiber in preformed strips.

B. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, nonglazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery aggregate containing not less than 50 percent aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.

C. Bonding Agent: ASTM C 1059/C 1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

D. Epoxy-Bonding Adhesive: ASTM C 881/C 881M, two-component epoxy resin capable of humid curing and bonding to damp surfaces; of class suitable for application temperature, of grade complying with requirements, and of the following types:

1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

E. Chemical Surface Retarder: Water-soluble, liquid, set retarder with color dye, for horizontal concrete surface application, capable of temporarily delaying final hardening of concrete to a depth of 1/8 to 1/4 inch.

F. Pigmented Mineral Dry-Shake Hardener: Factory-packaged, dry combination of Portland cement, graded quartz aggregate, color pigments, and plasticizing admixture. Use color pigments that are finely ground, nonfading mineral oxides interground with cement.

1. Color: As selected by Architect from manufacturer's full range.

G. Rock Salt: Sodium chloride crystals, kiln dried, coarse gradation with 100 percent passing 3/8-inch sieve and 85 percent retained on a No. 8 sieve.

2.8 STAMPED DETECTABLE WARNING MATERIALS

A. Detectable Warning Stamp: Semirigid polyurethane mats with formed underside capable of imprinting detectable warning pattern on plastic concrete; perforated with a vent hole at each dome.

1. Size of Stamp: One piece, matching detectable warning area shown on Drawings.

B. Liquid Release Agent: Manufacturer's standard, clear, evaporating formulation designed to facilitate release of stamp mats.

2.9 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.

1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.
2. When automatic machine placement is used, determine design mixtures and obtain laboratory test results that comply with or exceed requirements.

B. Cementitious Materials: Use fly ash, pozzolan, slag cement, and silica fume as needed to reduce the total amount of Portland cement, which would otherwise be used, by not less than 40 percent.] [Limit percentage, by weight, of cementitious materials other than Portland cement in concrete as follows:

1. Fly Ash or Pozzolan: 25 percent.
2. Slag Cement: 50 percent.
3. Combined Fly Ash or Pozzolan, and Slag Cement: 50 percent, with fly ash or pozzolan not exceeding 25 percent.

C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:

1. Air Content: 4-1/2 percent plus or minus 1-1/2 percent for 1-1/2-inch (nominal maximum aggregate size.
2. Air Content: 4-1/2 percent plus or minus 1-1/2 percent for 1-inch nominal maximum aggregate size.
3. Air Content: 5 percent plus or minus 1-1/2 percent for 3/4-inch nominal maximum aggregate size.

D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use high-range, water-reducing admixture in concrete as required for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

F. Synthetic Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than 1.5 lb/cu. yd.

G. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.

H. Concrete Mixtures: Normal-weight concrete.

1. Compressive Strength (28 Days): 3500 psi. Insert another subparagraph for flexural strength if required.
2. Maximum W/C Ratio at Point of Placement: 0.45.
3. Slump Limit: 4 inches, plus or minus 1 inch.
4. Solar Reflectance Index: Not less than 29.

2.10 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates for each batch discharged and used in the Work.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For concrete batches of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
2. For concrete batches larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixing time, quantity, and amount of water added.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proof-roll prepared subbase surface below concrete paving to identify soft pockets and areas of excess yielding.

1. Completely proof-roll subbase in one direction and repeat in perpendicular direction. Limit vehicle speed to 3 mph.
2. Proof-roll with a pneumatic-tired and loaded, 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
3. Correct subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch > according to requirements in Section 31 20 00 "Earth Moving."

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

D. Install welded-wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

E. Zinc-Coated Reinforcement: Use galvanized-steel wire ties to fasten zinc-coated reinforcement. Repair cut and damaged zinc coatings with zinc repair material.

F. Epoxy-Coated Reinforcement: Use epoxy-coated steel wire ties to fasten epoxy-coated reinforcement. Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963/D 3963M.

G. Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortions. Straighten bends, kinks, and other irregularities, or replace units as required before placement. Set mats for a minimum 2-inch overlap of adjacent mats.

3.5 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.

1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.

1. Continue steel reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of paving strips unless otherwise indicated.
2. Provide tie bars at sides of paving strips where indicated.
3. Butt Joints: Use bonding agent at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
4. Keyed Joints: Provide preformed keyway-section forms or bulkhead forms with keys unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.
5. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.

1. Locate expansion joints at intervals of 50 feet unless otherwise indicated.
2. Extend joint fillers full width and depth of joint.
3. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.

6. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/4-inch radius. Repeat grooving of contraction joints after applying surface finishes.

a. Tolerance: Ensure that grooved joints are within 3 inches either way from centers of dowels.

2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.

a. Tolerance: Ensure that sawed joints are within 3 inches either way from centers of dowels.

3. Doweled Contraction Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.

E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes.

3.6 CONCRETE PLACEMENT

A. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.

B. Remove snow, ice, or frost from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

E. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.

F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

G. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating joint devices.

H. Screed paving surface with a straightedge and strike off.

I. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleedwater appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

J. Curbs and Gutters: Use design mixture for automatic machine placement. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing.

K. Slip-Form Paving: Use design mixture for automatic machine placement. Produce paving to required thickness, lines, grades, finish, and jointing.

1. Compact subbase and prepare subgrade of sufficient width to prevent displacement of slip-form paving machine during operations.

3.7 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Burlap Finish: Drag a seamless strip of damp burlap across float-finished concrete, perpendicular to line of traffic, to provide a uniform, gritty texture.
2. Medium-to-Fine-Textured Broom Finish: Draw a soft-bristle broom across float-finished concrete surface, perpendicular to line of traffic, to provide a uniform, fine-line texture.
3. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8 inch deep with a stiff-bristled broom, perpendicular to line of traffic.

3.8 SPECIAL FINISHES

A. Monolithic Exposed-Aggregate Finish: Expose coarse aggregate in paving surface as follows:

1. Immediately after float finishing, spray-apply chemical surface retarder to paving according to manufacturer's written instructions.
2. Cover paving surface with plastic sheeting, sealing laps with tape, and remove when ready to continue finishing operations.
3. Without dislodging aggregate, remove mortar concealing the aggregate by lightly brushing surface with a stiff, nylon-bristle broom. Do not expose more than one-third of the average diameter of the aggregate and not more than one-half of the diameter of the smallest aggregate.
4. Fine-spray surface with water and brush. Repeat cycle of water flushing and brushing until cement film is removed from aggregate surfaces to depth required.

B. Seeded Exposed-Aggregate Finish: Immediately after initial floating, spread a single layer of aggregate uniformly on paving surface. Tamp aggregate into plastic concrete and float finish to entirely embed aggregate with mortar cover of 1/16 inch.

1. Spray-apply chemical surface retarder to paving according to manufacturer's written instructions.
2. Cover paving surface with plastic sheeting, sealing laps with tape, and remove sheeting when ready to continue finishing operations.
3. Without dislodging aggregate, remove mortar concealing the aggregate by lightly brushing surface with a stiff, nylon-bristle broom. Do not expose more than one-third of the average diameter of the aggregate and not more than one-half of the diameter of the smallest aggregate.
4. Fine-spray surface with water and brush. Repeat cycle of water flushing and brushing until cement film is removed from aggregate surfaces to depth required.

C. Slip-Resistive Aggregate Finish: Before final floating, spread slip-resistive aggregate finish on paving surface according to manufacturer's written instructions and as follows:

1. Uniformly spread 40 lb/100 sq. ft. of dampened, slip-resistive aggregate over paving surface in two applications. Tamp aggregate flush with surface using a steel trowel, but do not force below surface.
2. Uniformly distribute approximately two-thirds of slip-resistive aggregate over paving surface with mechanical spreader, allow to absorb moisture, and embed by power floating. Follow power floating with a second slip-resistive aggregate application, uniformly distributing remainder of material at right angles to first application to ensure uniform coverage, and embed by power floating.
3. Cure concrete with curing compound recommended by slip-resistive aggregate manufacturer. Apply curing compound immediately after final finishing.
4. After curing, lightly work surface with a steel-wire brush or abrasive stone and water to expose nonslip aggregate.

D. Pigmented Mineral Dry-Shake Hardener Finish: After initial floating, apply dry-shake materials to paving surface according to manufacturer's written instructions and as follows:

1. Uniformly spread dry-shake hardener at a rate of 100 lb/100 sq. ft. unless greater amount is recommended by manufacturer to match paving color required.
2. Uniformly distribute approximately two-thirds of dry-shake hardener over the concrete surface with mechanical spreader; allow hardener to absorb moisture and embed it by power floating. Follow power floating with a second application of pigmented mineral dry-shake hardener, uniformly distributing remainder of material at right angles to first application to ensure uniform color, and embed hardener by final power floating.
3. After final power floating, apply a hand-troweled finish followed by a broom finish.
4. Cure concrete with curing compound recommended by dry-shake hardener manufacturer. Apply curing compound immediately after final finishing.

3.9 DETECTABLE WARNING INSTALLATION

A. Blockouts: Form blockouts in concrete for installation of detectable paving units specified in Section 32 17 26 "Tactile Warning Surfacing."

1. Tolerance for Opening Size: Plus 1/4 inch, no minus.

B. Cast-in-Place Detectable Warning Tiles: Form blockouts in concrete for installation of tiles specified in Section 32 17 26 "Tactile Warning Surfacing." Screed surface of concrete where tiles are to be installed to elevation, so that edges of installed tiles will be flush with surrounding concrete paving. Embed tiles in fresh concrete to comply with Section 32 17 26 "Tactile Warning Surfacing" immediately after screeding concrete surface.

C. Stamped Detectable Warnings: Install stamped detectable warnings as part of a continuous concrete paving placement and according to stamp-mat manufacturer's written instructions.

1. Before using stamp mats, verify that the vent holes are unobstructed.
2. Apply liquid release agent to the concrete surface and the stamp mat.
3. Stamping: While initially finished concrete is plastic accurately align and place stamp mats in sequence. Uniformly load, gently vibrate, and press mats into concrete to produce imprint pattern on concrete surface. Load and tamp mats directly perpendicular to the stamp-mat surface to prevent distortion in shape of domes. Press and tamp until mortar begins to come through all of the vent holes. Gently remove stamp mats.
4. Trimming: After 24 hours, cut off the tips of mortar formed by the vent holes.
5. Remove residual release agent according to manufacturer's written instructions, but no fewer than three days after stamping concrete. High-pressure-wash surface and joint patterns, taking care not to damage stamped concrete. Control, collect, and legally dispose of runoff.

3.10 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture-retaining-cover as follows:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period, using cover material and waterproof tape.
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall

within three hours after initial application. Maintain continuity of coating, and repair damage during curing period.

3.11 PAVING TOLERANCES

A. Comply with tolerances in ACI 117 and as follows:

1. Elevation: 3/4 inch.
2. Thickness: Plus 3/8 inch , minus 1/4 inch
3. Surface: Gap below 10-feet- long; unleveled straightedge not to exceed 1/2 inch
4. Alignment of Tie-Bar End Relative to Line Perpendicular to Paving Edge: 1/2 inch per 12 inches of tie bar.
5. Lateral Alignment and Spacing of Dowels: 1 inch
6. Vertical Alignment of Dowels: 1/4 inch
7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Paving Edge: 1/4 inch per 12 inches of dowel.
8. Joint Spacing: 3 inches
9. Contraction Joint Depth: Plus 1/4 inch, no minus.
10. Joint Width: Plus 1/8 inch, no minus.

3.12 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Testing Services: Testing and inspecting of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least one composite sample for each 5000 sq. ft. or fraction thereof of each concrete mixture placed each day.

    a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231/C 231M, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when it is 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C 39/C 39M; test one specimen at seven days and two specimens at 28 days.

    a. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at 28 days.

C. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no

compressive-strength test value falls below specified compressive strength by more than 500 psi.

D. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.

G. Concrete paving will be considered defective if it does not pass tests and inspections.

H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

I. Prepare test and inspection reports.

3.13 REPAIR AND PROTECTION

A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Architect.

B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with Portland cement concrete bonded to paving with epoxy adhesive.

C. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 32 13 13

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SECTION 32 31 13
CHAIN LINK FENCES AND GATES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Manufacturers specifications to be utilized and shall apply to decorative fencing per civil plan set.

C. FDOT requirements (latest editions) for materials and installation shall apply to all fence construction with the most restrictive governing. Contractor to contact engineer and architect if discrepancies exist.

D. Contractor to coordinate with electrical plans for reuse of electric gate and additional coordination.

1.2 SUMMARY

A. Section Includes:

1. Vinyl coated chain-link fences with barbed wire.
2. Horizontal-slide, motor-operated and manual operated gates.(reuse of existing gates/operators)
3. Decorative fence.

B. Related Requirements:

1. Section 03 30 00 "Cast-in-Place Concrete" for cast-in-place concrete equipment bases/pads for gate operators and controls and post footings.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Inspect and discuss electrical roughing-in, equipment bases, and other preparatory work specified elsewhere.
2. Review sequence of operation for each type of gate operator.
3. Review coordination of interlocked equipment specified in this Section and elsewhere.
4. Review required testing, inspecting, and certifying procedures.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:

a. Fence and gate posts, rails, and fittings.
b. Chain-link fabric, reinforcements, and attachments.
c. Gates and hardware.
d. Gate operators, including operating instructions and motor characteristics.

B. Shop Drawings: For each type of fence and gate assembly.

1. Include plans, elevations, sections, details, and attachments to other work.
2. Include accessories, hardware, gate operation, and operational clearances.
3. Gate Operator: Show locations and details for installing operator components, switches, and controls. Indicate motor size, electrical characteristics, drive arrangement, mounting, and grounding provisions.
4. Wiring Diagrams: For power, signal, and control wiring.

C. Samples for Initial Selection: For each type of factory-applied finish.

D. Samples for Verification: For each type of component with factory-applied finish, prepared on Samples of size indicated below:

1. Polymer-Coated Components: In 6-inch lengths for components and on full-sized units for accessories.

E. Delegated-Design Submittal: For structural performance of chain-link fence and gate frameworks, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency, factory-authorized service representative.

B. Product Certificates: For each type of chain-link fence, operator, and gate.

C. Product Test Reports: For framework strength according to ASTM F 1043, for tests performed by manufacturer and witnessed by a qualified testing agency. Retain "Field quality-control reports" Paragraph below if Contractor is responsible for field quality-control testing and inspecting.

D. Field quality-control reports.

E. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For gate operators to include in emergency, operation, and maintenance manuals.

1.7 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing fence grounding; member company of NETA or an NRTL.

1. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.

B. Emergency Access Requirements: According to requirements of authorities having jurisdiction for gates with automatic gate operators serving as a required means of access.

C. Mockups: Build mockups to set quality standards for fabrication and installation.

1. Build mockup for typical chain-link fence and gate, including accessories.

a. Size: 10-foot length of fence.

1.8 FIELD CONDITIONS

A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

1.9 WARRANTY

A. Special Warranty: Installer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Failure to comply with performance requirements.
b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
c. Faulty operation of gate operators and controls.

2. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design chain-link fence and gate frameworks.

B. Structural Performance: Chain-link fence and gate frameworks shall withstand the design wind loads and stresses for fence height(s) and under exposure conditions indicated according to Local Code requirements.

1. Design Wind Load: As indicated on Architectural Drawings.

a. Minimum Post Size: Determine according to ASTM F 1043 for post spacing not to exceed 10 feet for Material Group IA, ASTM F 1043, Schedule 40 steel pipe.
b. Minimum Post Size and Maximum Spacing: Determine according to CLFMI WLG 2445, based on mesh size and pattern specified.

C. Lightning Protection System: Maximum resistance-to-ground value of 25 ohms at each grounding location along fence under normal dry conditions.

2.2 Decorative Fence

A. Ameristar Montage II Invincible 2/3/4 Rail

2.3 CHAIN-LINK FENCE

A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage twist according to "CLFMI Product Manual" and requirements indicated below:

1. Fabric Height: As indicated on Drawings.
2. Steel Wire for Fabric per FDOT requirements 2” mesh black vinyl coated steel

2.4 FENCE COMPONENTS

A. Posts, Top rails, braces, barbed wire, bottom tension wire, gates, fittings – comply with FDOT requirements to match mesh.

PART 3 – EXECUTION

3.1 Execution installation per AC150 and FDOT requirements.

3.2 FIELD QUALITY CONTROL

A. Testing Agency: [Engage] a qualified testing agency to perform tests.

B. Grounding Tests: Comply with requirements in Section 26 41 13 "Lightning Protection for Structures."

C. Prepare test reports.

3.3 ADJUSTING

A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Automatic Gate Operator: Energize circuits to electrical equipment and devices, start units, and verify proper motor rotation and unit operation.

1. Hydraulic Operator: Purge operating system, adjust pressure and fluid levels, and check for leaks.

2. Test and adjust operators, controls [, alarms,] and safety devices. Replace damaged and malfunctioning controls and equipment.

3. Lubricate operator and related components.

C. Lubricate hardware and other moving parts.

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain chain-link fences and gates.

END OF SECTION 32 31 13

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SECTION 32 84 00
PLANTING IRRIGATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Piping.
2. Manual valves.
3. Automatic control valves.
4. Automatic drain valves.
5. Sprinklers.
6. Quick couplers.
7. Controllers.
8. Boxes for automatic control valves.

1.2 PERFORMANCE REQUIREMENTS

A. Irrigation zone control shall be automatic operation with controller and automatic control valves.

B. Location of Sprinklers and Specialties: Design location is approximate. Make minor adjustments necessary to avoid plantings and obstructions such as signs and light standards. Maintain 100 percent irrigation coverage of areas indicated.

C. Minimum Working Pressures: The following are minimum pressure requirements for piping, valves, and specialties unless otherwise indicated:

1. Irrigation Main Piping: Schedule 40 PVC pipe
2. Circuit Piping: Class 160 PVC pipe.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories.

B. Wiring Diagrams: For power, signal, and control wiring.

C. Zoning Chart: Show each irrigation zone and its control valve.

D. Controller Timing Schedule: Indicate timing settings for each automatic controller zone.

E. Field quality-control reports.

F. Operation and maintenance data.

1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

PART 2 - PRODUCTS

2.1 PIPES, TUBES, AND FITTINGS

A. Comply with requirements in the piping schedule for applications of pipe, tube, and fitting materials, and for joining methods for specific services, service locations, and pipe sizes.

B. PVC Pipe: ASTM D 1785, PVC 1120 compound, Schedule 40.

1. PVC Socket Fittings: ASTM D 2466, Schedule 80.
2. PVC Threaded Fittings: ASTM D 2464, Schedule 80.
3. PVC Socket Unions: Construction similar to MSS SP-107, except both headpiece and tailpiece shall be PVC with socket ends.

C. PVC Pipe, Pressure Rated: ASTM D 2241, PVC 1120 compound, SDR 26.

1. PVC Socket Fittings: ASTM D 2467, Schedule 80.
2. PVC Socket Unions: Construction similar to MSS SP-107, except both headpiece and tailpiece shall be PVC with socket or threaded ends.

2.2 PIPING JOINING MATERIALS

A. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face, 1/8 inch thick unless otherwise indicated; full-face or ring type unless otherwise indicated.

B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

C. Brazing Filler Metals: AWS A5.8/A5.8M, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.

D. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

E. Solvent Cements for Joining PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.

F. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer unless otherwise indicated.

2.3 MANUAL VALVES

A. Brass Ball Valves:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:

    a. Crane Co.; Crane Valve Group; Crane Valves.
    b. Flow-Tek, Inc.; a subsidiary of Bray International, Inc.
    c. Hammond Valve.
    d. KITZ Corporation.
    e. Legend Valve.
    f. Marwin Valve; a division of Richards Industries.
    g. Milwaukee Valve Company.
    h. NIBCO INC.

B. Plastic Ball Valves:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. American Valve, Inc.
    b. Asahi/America, Inc.
    c. Fischer, George Inc.
    d. IPEX Inc.
    e. KBI (King Bros. Industries).
    f. NIBCO INC.
    g. Sloane, George Fischer, Inc.
    h. Spears Manufacturing Company.
    i. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

2.4 AUTOMATIC CONTROL VALVES

A. Plastic, Automatic Control Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    a. Hunter Industries Incorporated.
    b. Rain Bird Corporation.
    c. Toro Company (The); Irrigation Division.

2.5 SPRINKLERS

A. General Requirements: Designed for uniform coverage over entire spray area indicated at available water pressure.

B. Plastic, Pop-up, Gear-Drive Rotary Sprinklers:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    a. Hunter Industries Incorporated.
    b. Rain Bird Corporation.
    c. Toro Company (The); Irrigation Division.

C. Plastic, Surface, Pop-up Spray Sprinklers:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Hunter Industries Incorporated.
   b. Rain Bird Corporation.
   c. Toro Company (The); Irrigation Division.

2.6 QUICK COUPLERS

A. Description: Factory-fabricated, bronze or brass, two-piece assembly. Include coupler water-seal valve; removable upper body with spring-loaded or weighted, rubber-covered cap; hose swivel with ASME B1.20.7, 3/4-11.5NH threads for garden hose on outlet; and operating key.

1. Locking-Top Option: Vandal-resistant locking feature. Include one matching key.

2.7 CONTROLLERS

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Hunter Industries Incorporated.
   b. Rain Bird Corporation.
   c. Toro Company (The); Irrigation Division.

2.8 BOXES FOR AUTOMATIC CONTROL VALVES

A. Plastic Boxes:

1. Description: Box and cover, with open bottom and openings for piping; designed for installing flush with grade.

   a. Size: As required for valves and service.
   b. Shape: Rectangular.
   c. Sidewall Material: PE, ABS, or FRP.
   d. Cover Material: PE, ABS, or FRP.

      1) Lettering: "ZONE NUMBER"

B. Drainage Backfill: Cleaned gravel or crushed stone, graded from 3/4 inch minimum to 3 inches maximum.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavating, trenching, and backfilling are specified in Section 31 20 00 "Earth Moving."

B. Install warning tape directly above pressure piping, 12 inches below finished grades, except 6 inches below subgrade under pavement and slabs.

C. Provide minimum cover over top of underground piping according to the following:

1. Irrigation Main Piping: Minimum depth of 18 inches below finished grade.
2. Circuit Piping: 12 inches.
3. Sleeves: 24 inches.

3.2 PIPING INSTALLATION

A. Location and Arrangement: Drawings indicate location and arrangement of piping systems. Install piping as indicated unless deviations are approved on Coordination Drawings.

B. Install piping free of sags and bends.

C. Install groups of pipes parallel to each other, spaced to permit valve servicing.

D. Install fittings for changes in direction and branch connections.

E. Install expansion loops in control-valve boxes for plastic piping.

F. Lay piping on solid subbase, uniformly sloped without humps or depressions.

G. Install PVC piping in dry weather when temperature is above 40 deg F. Allow joints to cure at least 24 hours at temperatures above 40 deg F before testing.

3.3 JOINT CONSTRUCTION

A. PVC Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:

1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
2. PVC Pressure Piping: Join schedule number, ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
3. PVC Nonpressure Piping: Join according to ASTM D 2855.

3.4 SPRINKLER INSTALLATION

A. Install sprinklers after hydrostatic test is completed.

B. Install sprinklers at manufacturer's recommended heights.

C. Locate part-circle sprinklers to maintain a minimum distance of 4 inches from walls and 2 inches from other boundaries unless otherwise indicated.

3.5 AUTOMATIC IRRIGATION-CONTROL SYSTEM INSTALLATION

A. Equipment Mounting: Install interior controllers on wall.

1. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor bolts to elevations required for proper attachment to supported equipment.

B. Install control cable in same trench as irrigation piping and at least 2 inches or beside piping. Provide conductors of size not smaller than recommended by controller manufacturer. Install cable in separate sleeve under paved areas.

3.6 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
2. Operational Test: After electrical circuitry has been energized, operate controllers and automatic control valves to confirm proper system operation.
3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

C. Any irrigation product will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

3.7 ADJUSTING

A. Adjust settings of controllers.

B. Adjust automatic control valves to provide flow rate at rated operating pressure required for each sprinkler circuit.

C. Adjust sprinklers and devices, except those intended to be mounted aboveground, so they will be flush with, or not more than 1/2 inch above, finish grade.

3.8 PIPING SCHEDULE

A. Install components having pressure rating equal to or greater than system operating pressure.

B. Piping in control-valve boxes and aboveground may be joined with flanges or unions instead of joints indicated.

C. Aboveground irrigation main piping shall be one of the following:

1. Galvanized-steel pipe and galvanized-steel pipe nipples; galvanized, gray-iron threaded fittings; and threaded joints.
2. Schedule 40 PVC pipe; socket-type PVC fittings; and solvent-cemented joints.
3. Schedule 80, PVC pipe; Schedule 80, threaded PVC fittings; and threaded joints.

D. Underground irrigation main piping shall be the following:
1. Schedule 40 PVC pipe and socket fittings, and solvent-cemented joints.

2. Schedule 40 threaded PVC fittings; and threaded joints.

E. Circuit piping shall be the following:
1. SDR 26, PVC, pressure-rated pipe; Schedule 40, PVC socket fittings; and solvent-cemented joints.

F. Underground Branches and Offsets at Sprinklers and Devices: Schedule 80, PVC pipe; threaded PVC fittings; and threaded joints.

1. Option: Plastic swing-joint assemblies, with offsets for flexible joints, manufactured for this application.

G. Risers to Aboveground Sprinklers and Specialties: Schedule 80, PVC pipe and socket fittings; and solvent-cemented joints.

3.9 VALVE SCHEDULE

A. Underground, Shutoff-Duty Valves: Use the following:
1. Iron gate valve, resilient seated; iron gate valve casing; and operating wrench (es).

B. Aboveground, Shutoff-Duty Valves:

1. Brass, bronze, or plastic ball valve.

END OF SECTION 32 84 00

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SECTION 32 92 00
TURF AND GRASSES

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Sodding.

1.2 DEFINITIONS

A. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.

B. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See drawing designations for planting soils.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 SUBMITTALS

A. Certification of grass seed.

   1. Certification of each seed mixture for turfgrass sod.

B. Product certificates.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful turf establishment.

   1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
   2. Personnel Certifications: Installer's field supervisor shall have certification in one of the following categories from the Professional Landcare Network:

      a. Landscape Industry Certified Technician - Exterior.
      b. Landscape Industry Certified Lawncare Manager.
      c. Landscape Industry Certified Lawncare Technician.

3. Pesticide Applicator: State licensed, commercial.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.

B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.

PART 2 - PRODUCTS

2.1 SEED

A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.

2.2 TURFGRASS SOD

A. Turfgrass Sod: Certified, complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture that is strongly rooted and capable of vigorous growth and development when planted.

B. Turfgrass Species: Sod of grass species as follows:
   a. Empire Zoysia
   b. Argentine Bahia

2.3 FERTILIZERS

A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

1. Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.

B. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.

2.4 MULCHES

A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

B. Sphagnum Peat Mulch: Partially decomposed sphagnum peat moss, finely divided or of granular texture, and with a pH range of 3.4 to 4.8.

C. Muck Peat Mulch: Partially decomposed moss peat, native peat, or reed-sedge peat, finely divided or of granular texture, with a pH range of 6 to 7.5, and having a water-absorbing capacity of 1100 to 2000 percent, and containing no sand.

D. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch sieve; soluble salt content of 2 to 5 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

2.5 PESTICIDES

A. General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

PART 3 - EXECUTION

3.1 TURF AREA PREPARATION

A. General: Prepare planting area for soil placement and mix planting soil.

B. Reduce elevation of planting soil to allow for soil thickness of sod.

C. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

D. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.2 SODDING

A. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.

B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to soil or sod during installation. Tamp and roll lightly to ensure contact with soil, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

1. Lay sod across slopes exceeding 1:3.
2. Anchor sod on slopes exceeding 1:6 with wood pegs or steel staples spaced as recommended by sod manufacturer but not less than two anchors per sod strip to prevent slippage.

C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.

3.3 TURF MAINTENANCE

A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.

B. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings.

3.4 SATISFACTORY TURF

A. Turf installations shall meet the following criteria as determined by Architect:
1. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.

B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

END OF SECTION 32 92 00

SECTION 32 93 00
PLANTS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plants.

1.2 DEFINITIONS

A. Backfill: The earth used to replace or the act of replacing earth in an excavation.

B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant. Some sources classify herbicides separately from pesticides.

C. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See drawing designations for planting soils.

D. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 SUBMITTALS

A. Product Data: For each type of product.

B. Samples of each type of mulch.

C. Product certificates.

D. Sample warranty.

E. Maintenance Data: Recommended procedures to be established by Owner for maintenance of plants during a calendar year.

1.5 QUALITY ASSURANCE

A. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.

1. Pesticide Applicator: State licensed, commercial.

B. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver bare-root stock plants within 24 hours of digging. Immediately after digging up bare-root stock, pack root system in wet straw, hay, or other suitable material to keep root system moist until planting. Transport in covered, temperature-controlled vehicles, and keep plants cool and protected from sun and wind at all times.

B. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.

C. Handle planting stock by root ball.

D. Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.

1.7 WARRANTY

A. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner.
b. Structural failures including plantings falling or blowing over.

2. Warranty Periods: From date of Substantial Completion.

a. Trees, Shrubs, Vines, and Ornamental Grasses: 12 months.
b. Ground Covers, Biennials, Perennials, and Other Plants: 12 months.

PART 2 - PRODUCTS

2.1 PLANT MATERIAL

A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant List, Plant Schedule, or Plant Legend indicated on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.

B. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which begins at root flare according to ANSI Z60.1. Root flare shall be visible before planting.

C. Annuals: Provide healthy, disease-free plants of species and variety shown or listed, with well-established root systems reaching to sides of the container to maintain a firm ball, but not with excessive root growth encircling the container. Provide only plants that are acclimated to outdoor conditions before delivery.

2.2 FERTILIZERS

A. Planting Tablets: Tightly compressed chip-type, long-lasting, slow-release, commercial-grade planting fertilizer in tablet form. Tablets shall break down with soil bacteria, converting nutrients into a form that can be absorbed by plant roots.
1. Nutrient Composition: 20 percent nitrogen, 10 percent phosphorous, and 5 percent potassium, by weight plus micronutrients.

2.3 MULCHES

A. Organic Mulch: Ground or shredded bark, Pine straw.

B. Mineral Mulch: Crushed Coquina.

1. Size Range: 1-1/2 inches maximum, 3/4 inch minimum.

2.4 WEED-CONTROL BARRIERS

A. Nonwoven Geotextile Filter Fabric: Polypropylene or polyester fabric, 3 oz./sq. yd. minimum, composed of fibers formed into a stable network so that fibers retain their relative position. Fabric shall be inert to biological degradation and resist naturally encountered chemicals, alkalis, and acids.

2.5 PESTICIDES

A. General: Pesticide registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as

required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

PART 3 - EXECUTION

3.1 PLANTING AREA ESTABLISHMENT

A. General: Prepare planting area for soil placement and mix planting soil.

B. Placing Planting Soil: Place and mix planting soil in-place over exposed subgrade or blend planting soil in place.

C. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.2 EXCAVATION FOR TREES AND SHRUBS

A. Planting Pits and Trenches: Excavate circular planting pits.

1. Excavate planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are unacceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.
2. Excavate approximately three times as wide as ball diameter.
3. Excavate at least 3 times wider than root spread and deep enough to accommodate vertical roots for bare-root stock.
4. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.

B. Backfill Soil: Topsoil removed from excavations may be used as backfill soil unless otherwise indicated.

3.3 TREE, SHRUB, AND VINE PLANTING

A. Inspection: At time of planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.

B. Roots: Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.

C. Set each plant plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.

1. Backfill: For trees, use excavated topsoil for backfill.
2. Balled and Burlapped Stock: After placing some backfill around root ball to stabilize plant, carefully cut and remove burlap, rope, and wire baskets from tops of root balls and

from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.

3. Container-Grown Stock: Carefully remove root ball from container without damaging root ball or plant.
4. Fabric Bag-Grown Stock: Carefully remove root ball from fabric bag without damaging root ball or plant. Do not use planting stock if root ball is cracked or broken before or during planting operation.
5. Bare-Root Stock: Support stem of each plant and spread roots without tangling or turning toward surface. Plumb before backfilling, and maintain plumb while working. Carefully work backfill around roots by hand. Bring roots into close contact with the soil.
6. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
7. Place planting tablets equally distributed around each planting pit when pit is approximately one-half filled. Place tablets beside the root ball about 1 inch from root tips; do not place tablets in bottom of the hole.

    a. Bare-Root Stock: Place tablets beside soil-covered roots; do not place tablets touching the roots.
    b. Quantity: Three for each caliper inch of plant.

8. Continue backfilling process. Water again after placing and tamping final layer of soil.

D. Slopes: When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.

3.4 TREE, SHRUB, AND VINE PRUNING

A. Remove only dead, dying, or broken branches. Do not prune for shape.

B. Prune, thin, and shape trees, shrubs, and vines as directed by Architect.

C. Prune, thin, and shape trees, shrubs, and vines according to standard professional horticultural and arboricultural practices. Unless otherwise indicated by Architect, do not cut tree leaders; remove only injured, dying, or dead branches from trees and shrubs; and prune to retain natural character.

D. Do not apply pruning paint to wounds.

3.5 GROUND COVER AND PLANT PLANTING

A. Set out and space ground cover and plants other than trees, shrubs, and vines as indicated on Drawings.

B. Use planting soil for backfill.

C. Dig holes large enough to allow spreading of roots.

D. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.

E. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.

F. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.6 PLANTING AREA MULCHING

A. Install weed-control barriers before mulching according to manufacturer's written instructions. Completely cover area to be mulched, overlapping edges a minimum of 6 inches and secure seams with galvanized pins.

B. Mulch backfilled surfaces of planting areas and other areas indicated.

1. Trees in Turf Areas: Apply mulch ring of 3-inch average thickness, with 30-inch radius around trunks or stems. Do not place mulch within 3 inches of trunks or stems.
2. Mulch in Planting Areas: Apply 3-inch average thickness of organic mulch over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within 3 inches of trunks or stems.

3.7 PLANT MAINTENANCE

A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings.

B. Fill in, as necessary, soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.

C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices when possible to minimize use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

D. Apply pesticides and other chemical products and biological control agents according to authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

E. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.

F. At time of Substantial Completion, verify that tree-watering devices are in good working order and leave them in place. Replace improperly functioning devices.

3.8 MAINTENANCE SERVICE

A. Maintenance Service: Provide maintenance by skilled employees of landscape Installer. Maintain as required in "Plant Maintenance" Article. Begin maintenance immediately after

plants are installed and continue until plantings are acceptably healthy and well established, but for not less than maintenance period below:

1. Maintenance Period for Trees and Shrubs: Begin after installation and continue for 90 days following acceptance by owner.

2. Maintenance Period for Ground Cover and Other Plants: Begin after installation and continue for 90 days following acceptance by owner.

END OF SECTION 32 93 00

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Division 33
Utilities

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SECTION 33 05 00
COMMON WORK RESULTS FOR UTILITIES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. All material and construction shall comply with all applicable FDOT, FAA, and OSHA requirements and standards (latest editions).

C. Refer to Geotechnical Report for additional information and requirements for site clearing, fill, pavement, underdrain and other geotechnical components.

D. All construction shall be in accordance with DEP. City of Port Orange requirements with the most restrictive governing. The lift station standards shall meet City of Port Orange requirements.

1.2 SUMMARY

A. This Section includes the following:

1. Piping joining materials.
2. Transition fittings.
3. Dielectric fittings.
4. Sleeves.
5. Identification devices.
6. Grout.
7. Flowable fill.
8. Piped utility demolition.
9. Piping system common requirements.
10. Equipment installation common requirements.
11. Painting.
12. Concrete bases.
13. Metal supports and anchorages.

1.3 DEFINITIONS

A. Exposed Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions.

B. Concealed Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

C. ABS: Acrylonitrile-butadiene-styrene plastic.

D. CPVC: Chlorinated polyvinyl chloride plastic.

E. PE: Polyethylene plastic.

F. PVC: Polyvinyl chloride plastic.

1.4 ACTION SUBMITTALS

A. Product Data: For the following:

1. Dielectric fittings.
2. Identification devices.

1.5 INFORMATIONAL SUBMITTALS

A. Welding certificates.

1.6 QUALITY ASSURANCE

A. Steel Support Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Steel Piping Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."

1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

C. Comply with ASME A13.1 for lettering size, length of color field, colors, and viewing angles of identification devices.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.

B. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

1.8 COORDINATION

A. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.

B. Coordinate installation of identifying devices after completing covering and painting if devices are applied to surfaces.

C. Coordinate size and location of concrete bases. Formwork, reinforcement, and concrete requirements are specified in [Section 03 30 00 "Cast-in-Place Concrete."]

PART 2 - PRODUCTS

2.1 PIPING JOINING MATERIALS

A. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.

1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch maximum thickness, unless otherwise indicated.

a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.

2. AWWA C110, rubber, flat face, 1/8 inch thick, unless otherwise indicated; and full-face or ring type, unless otherwise indicated.

B. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.

C. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

D. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

E. Brazing Filler Metals: AWS A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing, unless otherwise indicated; and AWS A5.8, BAg1, silver alloy for refrigerant piping, unless otherwise indicated.

F. Welding Filler Metals: Comply with AWS D10.12/D10.12M for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

G. Solvent Cements for Joining Plastic Piping:

1. ABS Piping: ASTM D 2235.

2. CPVC Piping: ASTM F 493.
3. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
4. PVC to ABS Piping Transition: ASTM D 3138.

H. Fiberglass Pipe Adhesive: As furnished or recommended by pipe manufacturer.

2.2 TRANSITION FITTINGS

A. Transition Fittings, General: Same size as, and with pressure rating at least equal to and with ends compatible with, piping to be joined.

B. Transition Couplings NPS 1-1/2 and Smaller:

1. Underground Piping: Manufactured piping coupling or specified piping system fitting.
2. Aboveground Piping: Specified piping system fitting.

C. AWWA Transition Couplings NPS 2 and Larger:

1. Description: AWWA C219, metal sleeve-type coupling for underground pressure piping.

D. Plastic-to-Metal Transition Fittings:

1. Description: [CPVC] [CPVC and PVC] [PVC] one-piece fitting with manufacturer's Schedule 80 equivalent dimensions; one end with threaded brass insert, and one solvent-cement-joint [or threaded] end.

E. Plastic-to-Metal Transition Unions:

1. Description: MSS SP-107, CPVC and PVC four-part union. Include brass threaded end, solvent-cement-joint plastic end, rubber O-ring, and union nut.

F. Flexible Transition Couplings for Underground Nonpressure Drainage Piping:

1. Description: ASTM C 1173 with elastomeric sleeve, ends same size as piping to be joined, and corrosion-resistant metal band on each end.

2.3 DIELECTRIC FITTINGS

A. Dielectric Fittings, General: Assembly of copper alloy and ferrous materials or ferrous material body with separating nonconductive insulating material suitable for system fluid, pressure, and temperature.

B. Dielectric Unions:

1. Description: Factory fabricated, union, NPS 2 and smaller.

    a. Pressure Rating: 150 psig minimum at 180 deg F
    b. End Connections: Solder-joint copper alloy and threaded ferrous; threaded ferrous.

C. Dielectric Flanges:

1. Description: Factory-fabricated, bolted, companion-flange assembly, NPS 2-1/2 to NPS 4 and larger.

    a. Pressure Rating: 150 psig minimum
    b. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.

D. Dielectric-Flange Kits:

1. Description: Nonconducting materials for field assembly of companion flanges, NPS 2-1/2 and larger.

    a. Pressure Rating: 150 psig minimum
    b. Gasket: Neoprene or phenolic.
    c. Bolt Sleeves: Phenolic or polyethylene.
    d. Washers: Phenolic with steel backing washers.

E. Dielectric Couplings:

1. Description: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining, NPS 3 and smaller.

    a. Pressure Rating: 300 psig at 225 deg F.
    b. End Connections: Threaded.

F. Dielectric Nipples:

1. Description: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining.

    a. Pressure Rating: 300 psig at 225 deg F
    b. End Connections: Threaded or grooved.

2.4 SLEEVES

A. Mechanical sleeve seals for pipe penetrations are specified in Section 22 05 17 "Sleeves and Sleeve Seals for Plumbing Piping."

B. Galvanized-Steel Sheet Sleeves: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.

C. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized, plain ends.

D. Cast-Iron Sleeves: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

E. Molded PVC Sleeves: Permanent, with nailing flange for attaching to wooden forms.

F. PVC Pipe Sleeves: ASTM D 1785, Schedule 40.

G. Molded PE Sleeves: Reusable, PE, tapered-cup shaped, and smooth outer surface with nailing flange for attaching to wooden forms.

2.5 IDENTIFICATION DEVICES

A. General: Products specified are for applications referenced in other utilities Sections. If more than single type is specified for listed applications, selection is Installer's option.

B. Equipment Nameplates: Metal permanently fastened to equipment with data engraved or stamped.

1. Data: Manufacturer, product name, model number, serial number, capacity, operating and power characteristics, labels of tested compliances, and essential data.
2. Location: Accessible and visible.

C. Stencils: Standard stencils prepared with letter sizes complying with recommendations in ASME A13.1. Minimum letter height is 1-1/4 inches for ducts, and 3/4 inch for access door signs and similar operational instructions.

1. Material: Brass.
2. Stencil Paint: Exterior, oil-based, alkyd-gloss black enamel, unless otherwise indicated. Paint may be in pressurized spray-can form.
3. Identification Paint: Exterior, oil-based, alkyd enamel in colors according to ASME A13.1, unless otherwise indicated.

D. Snap-on Plastic Pipe Markers: Manufacturer's standard preprinted, semirigid, snap-on type. Include color-coding according to ASME A13.1, unless otherwise indicated.

E. Pressure-Sensitive Pipe Markers: Manufacturer's standard preprinted, color-coded, pressure-sensitive-vinyl type with permanent adhesive.

F. Pipes with OD, Including Insulation, Less Than 6 Inches: Full-band pipe markers, extending 360 degrees around pipe at each location.

G. Pipes with OD, Including Insulation, 6 Inches and Larger: Either full-band or strip-type pipe markers, at least three times letter height and of length required for label.

H. Lettering: Manufacturer's standard preprinted captions as selected by Architect.

I. Lettering: Use piping system terms indicated and abbreviate only as necessary for each application length.

1. Arrows: Either integrally with piping system service lettering to accommodate both directions of flow, or as separate unit on each pipe marker to indicate direction of flow.

J. Plastic Tape: Manufacturer's standard color-coded, pressure-sensitive, self-adhesive vinyl tape, at least 3 mils thick.

1. Width: 1-1/2 inches on pipes with OD, including insulation, less than 6 inches; 2-1/2 inches for larger pipes.
2. Color: Comply with ASME A13.1, unless otherwise indicated.

K. Valve Tags: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch sequenced numbers. Include 5/32-inch hole for fastener.

1. Material: 0.032-inch- thick, polished brass or aluminum.
2. Material: 0.0375-inch- thick stainless steel.
3. Material: 3/32-inch- thick plastic laminate with 2 black surfaces and a white inner layer.
4. Material: Valve manufacturer's standard solid plastic.
5. Size: 1-1/2 inches in diameter, unless otherwise indicated.
6. Shape: As indicated for each piping system.

L. Valve Tag Fasteners: Brass, wire-link or beaded chain; or brass S-hooks.

M. Engraved Plastic-Laminate Signs: ASTM D 709, Type I, cellulose, paper-base, phenolic-resin-laminate engraving stock; Grade ES-2, black surface, black phenolic core, with white melamine subcore, unless otherwise indicated. Fabricate in sizes required for message. Provide holes for mechanical fastening.

1. Engraving: Engraver's standard letter style, of sizes and with terms to match equipment identification.
2. Thickness: 1/8 inch, unless otherwise indicated.
3. Thickness: 1/16 inch, for units up to 20 sq. in. or 8 inches in length, and 1/8 inch for larger units.
4. Fasteners: Self-tapping, stainless-steel screws or contact-type permanent adhesive.

N. Plastic Equipment Markers: Manufacturer's standard laminated plastic, in the following color codes:

1. Green: Cooling equipment and components.
2. Yellow: Heating equipment and components.
3. Brown: Energy reclamation equipment and components.
4. Blue: Equipment and components that do not meet criteria above.
5. Hazardous Equipment: Use colors and designs recommended by ASME A13.1.
6. Terminology: Match schedules as closely as possible. Include the following:

a. Name and plan number.
b. Equipment service.

c. Design capacity.
d. Other design parameters such as pressure drop, entering and leaving conditions, and speed.

7. Size: 2-1/2 by 4 inches for control devices, dampers, and valves; 4-1/2 by 6 inches for equipment.

O. Plasticized Tags: Preprinted or partially preprinted, accident-prevention tags, of plasticized card stock with mat finish suitable for writing.

1. Size: 3-1/4 by 5-5/8 inches
2. Fasteners: Brass grommets and wire.
3. Nomenclature: Large-size primary caption such as DANGER, CAUTION, or DO NOT OPERATE.

P. Lettering and Graphics: Coordinate names, abbreviations, and other designations used in piped utility identification with corresponding designations indicated. Use numbers, letters, and terms indicated for proper identification, operation, and maintenance of piped utility systems and equipment.

1. Multiple Systems: Identify individual system number and service if multiple systems of same name are indicated.

2.6 GROUT

A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.

1. Characteristics: Post hardening, volume adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
2. Design Mix: 5000-psi, 28-day compressive strength.
3. Packaging: Premixed and factory packaged.

2.7 FLOWABLE FILL

A. Description: Low-strength-concrete, flowable-slurry mix.

1. Cement: ASTM C 150, Type I, Portland.
2. Density: 115- to 145-lb/cu. ft.
3. Aggregates: ASTM C 33, natural sand, fine and crushed gravel or stone, coarse.
4. Aggregates: ASTM C 33, natural sand, fine.
5. Admixture: ASTM C 618, fly-ash mineral.
6. Water: Comply with ASTM C 94/C 94M.
7. Strength: 100 to 200 psig at 28 days.

PART 3 - EXECUTION

3.1 PIPED UTILITY DEMOLITION

A. Refer to Section 02 41 19 "Selective Demolition" for general demolition requirements and procedures.

B. Disconnect, demolish, and remove piped utility systems, equipment, and components indicated to be removed.

1. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
2. Piping to Be Abandoned in Place: Drain piping. Fill abandoned piping with flowable fill, and cap or plug piping with same or compatible piping material.
3. Equipment to Be Removed: Disconnect and cap services and remove equipment.
4. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make operational.
5. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

C. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

3.2 DIELECTRIC FITTING APPLICATIONS

A. Dry Piping Systems: Connect piping of dissimilar metals with the following:

1. NPS 2 and Smaller: Dielectric unions.
2. NPS 2-1/2 to NPS 12: Dielectric flanges.

B. Wet Piping Systems: Connect piping of dissimilar metals with the following:

1. NPS 2 and Smaller: Dielectric couplings or dielectric nipples.
2. NPS 2-1/2 to NPS 4: Dielectric nipples.
3. NPS 2-1/2 to NPS 8: Dielectric nipples [or dielectric flange kits].
4. NPS 10 and NPS 12: Dielectric flange kits.

3.3 PIPING INSTALLATION

A. Install piping according to the following requirements and utilities Sections specifying piping systems.

B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on the Coordination Drawings.

C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping to permit valve servicing.

E. Install piping at indicated slopes.

F. Install piping free of sags and bends.

G. Install fittings for changes in direction and branch connections.

H. Select system components with pressure rating equal to or greater than system operating pressure.

I. Sleeves are not required for core-drilled holes.

J. Permanent sleeves are not required for holes formed by removable PE sleeves.

K. Install sleeves for pipes passing through concrete and masonry walls and concrete floor and roof slabs.

1. Cut sleeves to length for mounting flush with both surfaces.

a. Exception: Extend sleeves installed in floors of equipment areas or other wet areas 2 inches above finished floor level.

2. Install sleeves in new walls and slabs as new walls and slabs are constructed.

a. PVC Pipe Sleeves: For pipes smaller than NPS 6.
b. Steel Sheet Sleeves: For pipes NPS 6 and larger, penetrating gypsum-board partitions.

L. Verify final equipment locations for roughing-in.

M. Refer to equipment specifications in other Sections for roughing-in requirements.

3.4 PIPING JOINT CONSTRUCTION

A. Join pipe and fittings according to the following requirements and utilities Sections specifying piping systems.

B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

D. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

E. Welded Joints: Construct joints according to AWS D10.12/D10.12M, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.

F. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

G. Grooved Joints: Assemble joints with grooved-end pipe coupling with coupling housing, gasket, lubricant, and bolts according to coupling and fitting manufacturer's written instructions.

H. Soldered Joints: Apply ASTM B 813 water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy (0.20 percent maximum lead content) complying with ASTM B 32.

I. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.

J. Pressure-Sealed Joints: Assemble joints for plain-end copper tube and mechanical pressure seal fitting with proprietary crimping tool to according to fitting manufacturer's written instructions.

K. Plastic Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:

1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
2. ABS Piping: Join according to ASTM D 2235 and ASTM D 2661 appendixes.
3. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
4. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
5. PVC Nonpressure Piping: Join according to ASTM D 2855.
6. PVC to ABS Nonpressure Transition Fittings: Join according to ASTM D 3138 Appendix.

L. Plastic Pressure Piping Gasketed Joints: Join according to ASTM D 3139.

M. Plastic Nonpressure Piping Gasketed Joints: Join according to ASTM D 3212.

N. Plastic Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657.

1. Plain-End PE Pipe and Fittings: Use butt fusion.
2. Plain-End PE Pipe and Socket Fittings: Use socket fusion.

O. Bonded Joints: Prepare pipe ends and fittings, apply adhesive, and join according to pipe manufacturer's written instructions.

3.5 PIPING CONNECTIONS

A. Make connections according to the following, unless otherwise indicated:

1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.
3. Install dielectric fittings at connections of dissimilar metal pipes.

3.6 EQUIPMENT INSTALLATION

A. Install equipment level and plumb, unless otherwise indicated.

B. Install equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference with other installations. Extend grease fittings to an accessible location.

C. Install equipment to allow right of way to piping systems installed at required slope.

3.7 PAINTING

A. Painting of piped utility systems, equipment, and components is specified in Section 09 91 13 "Exterior Painting," Section 09 91 23 "Interior Painting," and Section 09 96 00 "High-Performance Coatings."

B. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

3.8 IDENTIFICATION

A. Piping Systems: Install pipe markers on each system. Include arrows showing normal direction of flow.

1. Stenciled Markers: According to ASME A13.1.
2. Plastic markers, with application systems. Install on insulation segment if required for hot noninsulated piping.

3. Locate pipe markers on exposed piping according to the following:

    a. Near each valve and control device.
    b. Near each branch, excluding short takeoffs for equipment and terminal units. Mark each pipe at branch if flow pattern is not obvious.
    c. Near locations where pipes pass through walls or floors or enter inaccessible enclosures.
    d. At manholes and similar access points that permit view of concealed piping.
    e. Near major equipment items and other points of origination and termination.

B. Equipment: Install engraved plastic-laminate sign or equipment marker on or near each major item of equipment.

1. Lettering Size: Minimum 1/4 inch high for name of unit if viewing distance is less than 24 inches, 1/2 inch high for distances up to 72 inches, and proportionately larger lettering for greater distances. Provide secondary lettering two-thirds to three-fourths of size of principal lettering.
2. Text of Signs: Provide name of identified unit. Include text to distinguish among multiple units, inform user of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.

C. Adjusting: Relocate identifying devices that become visually blocked by work of this or other Divisions.

3.9 CONCRETE BASES

A. Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.

1. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit.
2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of base.
3. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
5. Install anchor bolts to elevations required for proper attachment to supported equipment.
6. Install anchor bolts according to anchor-bolt manufacturer's written instructions.
7. Use 3000-psi, 28-day compressive-strength concrete and reinforcement as specified in Section 03 30 00 "Cast-in-Place Concrete."

3.10 ERECTION OF METAL SUPPORTS AND ANCHORAGES

A. Refer to Section 05 50 00 "Metal Fabrications" for structural steel.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor piped utility materials and equipment.

C. Field Welding: Comply with AWS D1.1/D1.1M.

3.11 GROUTING

A. Mix and install grout for equipment base bearing surfaces, pump and other equipment base plates, and anchors.

B. Clean surfaces that will come into contact with grout.

C. Provide forms as required for placement of grout.

D. Avoid air entrapment during placement of grout.

E. Place grout, completely filling equipment bases.

F. Place grout on concrete bases and provide smooth bearing surface for equipment.

G. Place grout around anchors.

H. Cure placed grout.

END OF SECTION 33 05 00

CITY COUNCIL AGENDA ITEM

COUNCIL MEETING DATE 1/21/2025

SUBJECT: (B7b) Approval of Task Authorization No. 6 with Schenkel & Shultz, Inc. under the Master Contract for Architectural Services as it relates to the Construction Administration Phase for the Public Utilities Field Operations Facility

DEPARTMENT: Engineering

GOAL: 2 - Infrastructure

RECOMMENDED MOTION: Move to approve Task Authorization No. 6 with Schenkel & Shultz, Inc. under the Master Contract for Architectural Services as it relates to the Construction Administration Phase for the Public Utilities Field Operations Facility in the amount not to exceed $492,502 and authorize the Mayor and City Clerk to execute contract documents.

SUMMARY: The Engineering Department is requesting approval of Task Authorization (TA) No. 6 with Schenkel & Shultz, Inc. under the Master Contract for Architectural Services CA7525 in an amount not to exceed $492,502.

Construction on the Public Utilities Field Operations Facility is ready to begin. The Exhibit A - Guaranteed Maximum Price (GMP) Amendment to Wharton-Smith for Construction Manager at Risk services for the construction of the facility is also on this agenda. Schenkel & Shultz, Inc. is the Architect of Record for the project and will be providing the Construction Administration Services.

PRESENTER: Junos Reed

ATTACHMENTS:

1.	Schenkel Shultz Inc. TA No 6 - Field Ops Facility - Additional Service No 3	Schenkel Shultz Inc. TA No 6 - Field Ops Facility - Additional Service No 3 for upload.pdf
2.	TA No 6 Supporting Documentation	TA No 6 Supporting Documentation.pdf
3.	EXECUTED Master Contract CA7525 Schenkel and Schultz Architectural Services eff 6 15 2021 to 6 14 2026	EXECUTED Master Contract CA7525 Schenkel and Schultz Architectural Services eff 6 15 2021 to 6 14 2026.pdf
4.	Schenkel Schultz - Affidavit for Human Trafficking 9.24.2024	Schenkel Schultz - Affidavit for Human Trafficking 9.24.2024.pdf
5.	Schenkel Schultz COI 2025	Schenkel Schultz COI 2025.pdf

Julia Wiggins	Created/Initiated - 12/19/2024
Richard Colby	Approved - 12/19/2024
Junos Reed	Approved - 12/31/2024
Linda Truitt	Approved - 12/31/2024
Matthew Jones	Approved - 1/14/2025
Wayne Clark	Final Approval - 1/14/2025

TASK AUTHORIZATION NO. 6
Master Contract for Architectural Services dated June 15, 2021
Between the City of Port Orange, Florida and Schenkel & Shultz, Inc.

THIS Task Authorization is entered into by and between the **CITY OF PORT ORANGE, FLORIDA**, a chartered municipal corporation with its principal place of business at 1000 City Center Circle, Port Orange, Florida 32129 (the "City") and **SCHENKEL & SHULTZ, INC.**, a Florida corporation with its principal place of business at 200 East Robinson Street, Suite 300, Orlando, Florida 32801 ("Architect"), and hereinafter collectively referred to as the "Parties," and is to that certain Master Contract for Architectural Services as dated above, and any amendments thereto, hereinafter collectively referred to as the "Contract." The Parties, in exchange for the mutual covenants contained herein and in the Contract, agree as follows:

1. This Task Authorization expressly modifies the Contract and in the event of a conflict, the terms and conditions of this Task Authorization No. 6 shall prevail.

2. In addition to all other terms and conditions contained in the Contract, Architect shall provide services relating to **Port Orange Field Operations Facility Construction Administration Services**, and as more particularly described in the proposal dated January 14, 2025, attached hereto and incorporated herein as Task Authorization Exhibit "1."

3. Architect shall complete the services to be provided herein within **2 years (730 days)** from the date of issuance of a written Notice to Proceed by the City to the Architect.

4. In return for the services identified above, the City agrees to compensate Architect at the prices set forth in Exhibit "1" attached hereto and made a part hereof for all purposes, subject to a limit not to exceed **$492,502.00**. All payments shall be governed by the Local Government Prompt Payment Act as set forth in Sections 218.70 through 218.79, Florida Statutes, as amended.

5. This Task Authorization may be executed in one or more counterparts, each of which shall be deemed to be an original but all of which together shall constitute one and the same instrument. The delivery by facsimile or e-mail of an executed copy of this Task Authorization shall be deemed valid as if an original signature was delivered. No contract shall be formed between the Architect and the City until the City signs this Task Authorization.

IN WITNESS WHEREOF, the Parties have made and executed this Task Authorization for the purposes herein expressed on the dates set forth below.

Witnesses:

SCHENKEL & SHULTZ, INC.

_____ By: _____

Printed Name: _____ Daniel C. Laggan, President

_____ Date: _____

Printed Name: _____

CITY OF PORT ORANGE

By:_____
Scott Stiltner, Mayor

Date:_____

ATTEST:

By:_____
Robin L. Fenwick, MMC, City Clerk

Date:_____

SCHENKEL & SHULTZ TASK AUTHORIZATION No. 6

EXHIBIT “1”

Consisting of 8 Pages

PROPOSAL REQUEST

~~December 12, 2024~~ January 14, 2025 (final)

Junos Reed, P.E.
City Engineer
City of Port Orange Public Works & Utilities
1395 Dunlawton Avenue
Port Orange, FL 32129
Tel: (386) 506-5754

SUBJECT: **Port Orange Field Operations Facility-Additional Service No. 3**
Construction Administration Services
Comm No. 2021815

Dear Junos,

Schenkel Shultz is pleased to present a Not-To-Exceed (NTE) Additional Services Fee Proposal Request for the above-mentioned project. This request is to provide Construction Administration (CA) services through the duration of the project construction through close out.

Construction Administration Services Scope of Work

Typical Construction Administration services include, but are not necessarily limited to, responses to Requests For Information (RFIs), review of shop drawings and submittals, review of Owner Direct Purchases (ODP) and CM Payment Applications, review of all close-out documents, reports and inspections. A substantial completion site visit and preparation of an AIA G704 Certificate of Substantial Completion with punch list of deficiencies, certification of as-built surveys as required for agency approval, a Final Completion site visit, and verification of CM's final pay application. A pre-one year warranty walk of the project scope will be conducted at and with the City's request.

Typical Construction Administration field services include in-person attendance at bi-weekly Owner Architect Contractor (OAC) meetings and site visits unless virtual is agreed upon. Design Team consultants will be invited to the OAC meeting(s) on an as-needed basis. In addition to the architect's site visits, the civil engineer, landscape architect, structural, mechanical, electrical, and plumbing engineers, security and communication consultant will make periodic visits appropriate to their discipline. A field report will be generated and forwarded to the construction team after each visit. The number of visits is based on the OAC meeting schedule anticipated to be the construction duration of eighteen (18) months, and includes a 30 day period of time between substantial completion and final completion.

Record Documents (drawings and specifications) will be prepared utilizing the CM's to scale as-built construction drawings and marked-up specifications. Record drawings shall be prepared utilizing a computer aided drafting program from CM's mark-ups of changes to the documents. Record Documents will be submitted to the City in PDF and ACAD (.dwg) formats prior to final invoice.

For the City of Port Orange Utility Operations Facility-Additional Service No. 3, we propose the following Not-To-Exceed fee of $492,502.00 (Four Hundred Ninety Two Thousand Five Hundred and Two Dollars and Zero Cents). This fee includes:

Zev Cohen – Civil Engineering	$ 39,400.00
BBM – Structural Engineering	$ 24,625.00
TLC – MEP/FP, IT, Security Engineering	$ 58,100.00
Schenkel Shultz Architecture	$ 370,377.00
CA Subtotal	$ 492,502.00

Clarifications:
- The proposed Schedule of Compensation is based on an equal division of NTE fees based on a construction duration of 18 months. Extension of the construction duration may require additional fees.
- City approval to conduct work under the Allowance will be requested prior to work being conducted.
- Deliverables will be submitted electronically except those hard copies as required for permitting.
- Base-line services include travel expenses from Consultant offices to the job site for bi-weekly meetings and site visits.
- Project Record Drawings will be completed using Revit (BIM) and CAD for civil.
- This proposal does not constitute a contract until the City approves it.

PROPOSAL REQUEST

Exclusions:
• Major document revisions in response to constructability recommendations. Minor revisions can be addressed under the Basic Services.
• Value Engineering (VE) of current 100% Construction Documents in response to Construction Manager's Guaranteed Maximum Price (GMP).
• Further client changes or unforeseen conditions may require additional services.
• Design scope other than work already performed is not included.
• Permitting and application fees are not included.

Thank you for considering Schenkel Shultz as a partner for this project. If you have any questions regarding the above, please do not hesitate to call. Let us know if you agree with this proposal. We look forward to collaborating with you.

Sincerely,

SCHENKEL SHULTZ



Gay Geiger, AIA

Principal

Attachments: Consultant Proposals (6 pages)

Cc: Iris Zayas & Daniel Laggan / SCHENKEL SHULTZ

ZEVCOHEN & ASSOCIATES INC
300 Interchange Blvd., Suite C
Ormond Beach, FL 32174
386-677-2482 • Fax: 386-677-2505
www.ZevCohen.com

VIA EMAIL
(GGeiger@schenkelshultz.com)

December 31, 2024

Ms. Gay Geiger
Principal
Schenkel Shultz
834 N. Orange Ave.
Winter Park, Florida 32789

RE: Port Orange Public Works Facility
Construction Administration
Change Order #2
ZC 20035 CO#2

Dear Gay:

Thank you for requesting this change order to our contract dated January 19, 2022. As requested, ZCA shall provide the following construction administration services for the civil and landscape components. We anticipate eighteen (18) months for construction with more intense needs in the beginning and end of the project and less intense effort during the middle portion.

We propose a change order in the amount of $39,400.00 for the above services. If this meets with your approval, please process a TA for execution.

Construction Administration Services

ZCA shall provide the following construction administration services for civil site and landscape architectural improvements:

1. Engineering

   a. Review Contractor's pay applications once per month for ZCA design documents.
   b. Review Contractor's shop drawings for ZCA design documents, maximum of one (1) review.
   c. Respond to Contractor's request for additional information, clarification or interpretations of the Construction Documents.
   d. Site visits to verify construction as in general accordance with the approved Plans and specifications, maximum of ten (10) site visits.
   e. Review of "As-built" survey documents.
   f. Provide Engineering Certifications to the appropriate agencies (if applicable) based upon As-built Surveys prepared and certified by the Contractor's or Client's Registered Land Surveyor which will be in accordance with the regulatory agency and ZCA's requirements. The As-built survey shall be provided in both hard copy and electronic

Client Initials_____

format. The As-built survey shall be prepared on ZCA's approved base plans with changes and location of design information shown.

g. Regularly scheduled construction progress meetings (monthly).

2. Landscape Architecture

a. Review Contractor's pay applications for ZCA design documents, maximum of two (2) applications at the end of the project.
b. Respond to Contractor's requests for additional information, clarification or interpretations of the Construction Documents.
c. Site visits to verify construction is in general accordance with the ZCA design documents (two (2) site visits).
d. Review of Contractor modification requests to ensure that any proposed substitutions are of the same watering needs, growth rates, and are generally of the same aesthetic character and form as the substituted material.
e. Review Contractor's redline mark-ups of ZCA design documents showing any landscape and irrigation modifications, if applicable.
f. Provide Registered Landscape Architect certification as required by the local jurisdiction reflecting on-site changes to approved plans.
g. ZCA shall prepare record drawings in ACAD of the landscape and irrigation improvements on the ZCA construction plans. The record drawings will be based on the "redline" mark-ups of the landscape and irrigation improvements which are to be provided by the Contractor.
h. ZCA shall review shop drawings, cut sheets, and material supply information as provided by the Contractor.

If you have any questions, please feel free to contact either Randy or myself.

Sincerely,
ZEV COHEN & ASSOCIATES, INC.

Robert J. Ball, P.E.
President

Accepted on: _____
Date

Accepted by: _____
Signature

_____
Print Name

_____
Print/Type Company Name

RJB/ns
20035c03 CO#2
cc: Robert J. Ball, P.E.
Samuel C. Hamilton, Jr., P.E.
Randy M. Hudak, P.E.
Viviana Vargas
File

BBM STRUCTURAL

ORLANDO
(407) 645-3423
2300 Maitland Center Parkway
Suite 201
Maitland, FL 32751

ADDITIONAL SERVICES PROPOSAL MEMORANDUM (21156-AS2)

DATE: DECEMBER 16, 2024

TO: MS. GAY GEIGER - SCHENKEL SHULTZ

FROM: BORA ERBILEN, P.E., S.E.

RE: CITY OF PORT ORANGE; FIELD OPERATIONS FACILITY; NEW UTILITIES ADMIN BUILDING; CA FEES - PORT ORANGE, FL

Please find below our understanding of the above-referenced additional services project, proposed fee and associated scope of work.

- The **proposed additional services for this project** will consist of construction administration fees.
- Based upon the information supplied to, and reviewed by, our office, BBM's **proposed fee** shall be Twenty-Four Thousand Six Hundred Twenty-Five Dollars and No Cents ($24,625.00).
- Our **scope of services** associated with the above-referenced fee is as follows:
  - As noted above. All other provisions of the original proposal remain intact.

Should you find this proposal acceptable, please indicate so below with your signature and return to us (via email to kpetersen@bbmstructural.com).

Please call me with any questions and thank you for considering BBM Structural Engineers, Inc.

"Pursuant to Section 558.0035 of the Florida Statutes, BBM Structural Engineers, Inc. is the responsible party for the professional services, including all drawings, details and calculations provided under this agreement. No individual professional, employee, agent, associate, officer or principal may be held individually liable for negligence of any sort arising out of this contractual agreement."

PROPOSAL REVIEWED, APPROVED AND ACCEPTED BY:

_____(Signature)

_____(Date)

Ms. Gay Geiger_____(Printed Name)

SCHENKEL SHULTZ_____

December 12, 2024

Ms. Gay Geiger, AIA
Principal
Schenkel Shultz Architecture
200 E Robinson Street, Suite 300
Orlando, FL 32801
Delivered via email: ggeiger@schenkelshultz.com

Re: Port Orange Public Utilities Field Ops Facility
Professional Engineering Services Proposal

Dear Gay:

TLC Engineering Solutions, Inc. (TLC) is pleased to submit the following fee proposal to provide engineering services for the above-referenced project. We look forward to and appreciate the opportunity to work with you and your design team on this project.

PROJECT SCOPE

We understand the project is to consist of the construction of the Port Orange Utilities Field Operation facility located in Port Orange, Florida. It is estimated 18 months construction schedule.

BASIC SCOPE OF SERVICES

Basic Scope of Services shall be as outlined in AIA Document B101 – 2017 Edition – Standard Form of Agreement Between Owner and Architect, Article 3. TLC shall provide professional engineering and design services for:

a. Heating, Ventilating and Air-Conditioning (HVAC) Engineering
b. Plumbing Engineering
c. Electrical Engineering access control and, CCTV
d. Fire Protection Engineering
e. Communications and Technology (CT) Engineering for Voice/Data, Audio/Visual, Security Systems, Paging, and Video Conference System

CONSTRUCTION PHASE SERVICES

Construction Phase Services provided for this project shall include:

1. Response to bidder questions.
2. Response to local permitting official's comments.
3. Response to Contractor's Request for Information (RFI) during the construction period.
4. Participation in OAC meetings as requested via teleconference.

5. A total of six (6) site visits to become generally familiar with the progress and quality of the construction work in order to determine if the work is being performed in general accordance with the construction documents. (The mix of mechanical and electrical field representation may change based on the needs of the project during the construction phase). Substantial completion and final inspection, if requested, would each constitute a site visit.

FEE

Due to the currently undefined nature of the expected project scope, we propose fees for only the initial conceptual planning and schematic design phases.

We propose to provide the above-described basic scope of services for a lump sum fee of **$58,100.00**

Reimbursable expenses will be assessed at 1.1 times direct cost. Reimbursable expenses include all out-of-county travel-related costs, (TLC's Cocoa office to be considered point-of-origin for all trips), airfare, mileage, meals, lodging, plotting and printing (except as required for in-house coordination), photography, courier services, shipping and express mail.

Billing will be monthly, based upon percentage of services completed and reimbursable expenses. Payment is due within fifteen (15) days of receipt of payment from client.

If our proposal is acceptable, your signature below will confirm our authorization to proceed. Retain one copy and return one copy to TLC Engineering Solutions, Inc. at the address on page 1 of this proposal. This authorization constitutes your commitment to pay the fee and reimbursable expenses, and represents that approval has been received by your firm from the client. Alternatively, we can enter into a contract agreement using AIA Document C401 – 2017 Edition – Standard Form of Agreement Between Architect and Consultant.

We look forward to your favorable selection of TLC and the opportunity to assist your team for this and future projects. Please give me a call with any questions or comments.

Sincerely,

TLC Engineering Solutions, Inc.

Jim C. Mullen, PE, LEED AP
Principal

Justin P. Mulhollan, PE, LEED AP BD+C, CEM, GGP, WELL AP
Principal / Regional Director

Authorization

By: _____

_____
Print Name and Title

Date: _____

ZEVCOHEN & ASSOCIATES INC
300 Interchange Blvd., Suite C
Ormond Beach, FL 32174
386-677-2482 • Fax: 386-677-2505
www.ZevCohen.com

VIA EMAIL
(GGeiger@schenkelshultz.com)

December 31, 2024

Ms. Gay Geiger
Principal
Schenkel Shultz
834 N. Orange Ave.
Winter Park, Florida 32789

RE: Port Orange Public Works Facility
Construction Administration
Change Order #2
ZC 20035 CO#2

Dear Gay:

Thank you for requesting this change order to our contract dated January 19, 2022. As requested, ZCA shall provide the following construction administration services for the civil and landscape components. We anticipate eighteen (18) months for construction with more intense needs in the beginning and end of the project and less intense effort during the middle portion.

We propose a change order in the amount of $39,400.00 for the above services. If this meets with your approval, please process a TA for execution.

Construction Administration Services

ZCA shall provide the following construction administration services for civil site and landscape architectural improvements:

1. Engineering

   a. Review Contractor's pay applications once per month for ZCA design documents.
   b. Review Contractor's shop drawings for ZCA design documents, maximum of one (1) review.
   c. Respond to Contractor's request for additional information, clarification or interpretations of the Construction Documents.
   d. Site visits to verify construction as in general accordance with the approved Plans and specifications, maximum of ten (10) site visits.
   e. Review of "As-built" survey documents.
   f. Provide Engineering Certifications to the appropriate agencies (if applicable) based upon As-built Surveys prepared and certified by the Contractor's or Client's Registered Land Surveyor which will be in accordance with the regulatory agency and ZCA's requirements. The As-built survey shall be provided in both hard copy and electronic

Client Initials_____

format. The As-built survey shall be prepared on ZCA's approved base plans with changes and location of design information shown.

g. Regularly scheduled construction progress meetings (monthly).

2. Landscape Architecture

a. Review Contractor's pay applications for ZCA design documents, maximum of two (2) applications at the end of the project.
b. Respond to Contractor's requests for additional information, clarification or interpretations of the Construction Documents.
c. Site visits to verify construction is in general accordance with the ZCA design documents (two (2) site visits).
d. Review of Contractor modification requests to ensure that any proposed substitutions are of the same watering needs, growth rates, and are generally of the same aesthetic character and form as the substituted material.
e. Review Contractor's redline mark-ups of ZCA design documents showing any landscape and irrigation modifications, if applicable.
f. Provide Registered Landscape Architect certification as required by the local jurisdiction reflecting on-site changes to approved plans.
g. ZCA shall prepare record drawings in ACAD of the landscape and irrigation improvements on the ZCA construction plans. The record drawings will be based on the "redline" mark-ups of the landscape and irrigation improvements which are to be provided by the Contractor.
h. ZCA shall review shop drawings, cut sheets, and material supply information as provided by the Contractor.

If you have any questions, please feel free to contact either Randy or myself.

Sincerely,
ZEV COHEN & ASSOCIATES, INC.

Robert J. Ball, P.E.
President

Accepted on: _____
Date

Accepted by: _____
Signature

_____
Print Name

_____
Print/Type Company Name

RJB/ns
20035c03 CO#2
cc: Robert J. Ball, P.E.
Samuel C. Hamilton, Jr., P.E.
Randy M. Hudak, P.E.
Viviana Vargas
File

BBM STRUCTURAL

ORLANDO
(407) 645-3423
2300 Maitland Center Parkway
Suite 201
Maitland, FL 32751

ADDITIONAL SERVICES PROPOSAL MEMORANDUM (21156-AS2)

DATE: DECEMBER 16, 2024

TO: MS. GAY GEIGER - SCHENKEL SHULTZ

FROM: BORA ERBILEN, P.E., S.E.

RE: CITY OF PORT ORANGE; FIELD OPERATIONS FACILITY; NEW UTILITIES ADMIN BUILDING; CA FEES - PORT ORANGE, FL

Please find below our understanding of the above-referenced additional services project, proposed fee and associated scope of work.

- The **proposed additional services for this project** will consist of construction administration fees.
- Based upon the information supplied to, and reviewed by, our office, BBM's **proposed fee** shall be Twenty-Four Thousand Six Hundred Twenty-Five Dollars and No Cents ($24,625.00).
- Our **scope of services** associated with the above-referenced fee is as follows:
  - As noted above. All other provisions of the original proposal remain intact.

Should you find this proposal acceptable, please indicate so below with your signature and return to us (via email to kpetersen@bbmstructural.com).

Please call me with any questions and thank you for considering BBM Structural Engineers, Inc.

"Pursuant to Section 558.0035 of the Florida Statutes, BBM Structural Engineers, Inc. is the responsible party for the professional services, including all drawings, details and calculations provided under this agreement. No individual professional, employee, agent, associate, officer or principal may be held individually liable for negligence of any sort arising out of this contractual agreement."

PROPOSAL REVIEWED, APPROVED AND ACCEPTED BY:

_____(Signature)

_____(Date)

Ms. Gay Geiger_____(Printed Name)

SCHENKEL SHULTZ_____

December 12, 2024

Ms. Gay Geiger, AIA
Principal
Schenkel Shultz Architecture
200 E Robinson Street, Suite 300
Orlando, FL 32801
Delivered via email: ggeiger@schenkelshultz.com

Re: Port Orange Public Utilities Field Ops Facility
Professional Engineering Services Proposal

Dear Gay:

TLC Engineering Solutions, Inc. (TLC) is pleased to submit the following fee proposal to provide engineering services for the above-referenced project. We look forward to and appreciate the opportunity to work with you and your design team on this project.

PROJECT SCOPE

We understand the project is to consist of the construction of the Port Orange Utilities Field Operation facility located in Port Orange, Florida. It is estimated 18 months construction schedule.

BASIC SCOPE OF SERVICES

Basic Scope of Services shall be as outlined in AIA Document B101 – 2017 Edition – Standard Form of Agreement Between Owner and Architect, Article 3. TLC shall provide professional engineering and design services for:

a. Heating, Ventilating and Air-Conditioning (HVAC) Engineering
b. Plumbing Engineering
c. Electrical Engineering access control and, CCTV
d. Fire Protection Engineering
e. Communications and Technology (CT) Engineering for Voice/Data, Audio/Visual, Security Systems, Paging, and Video Conference System

CONSTRUCTION PHASE SERVICES

Construction Phase Services provided for this project shall include:

1. Response to bidder questions.
2. Response to local permitting official's comments.
3. Response to Contractor's Request for Information (RFI) during the construction period.
4. Participation in OAC meetings as requested via teleconference.

5. A total of six (6) site visits to become generally familiar with the progress and quality of the construction work in order to determine if the work is being performed in general accordance with the construction documents. (The mix of mechanical and electrical field representation may change based on the needs of the project during the construction phase). Substantial completion and final inspection, if requested, would each constitute a site visit.

FEE

Due to the currently undefined nature of the expected project scope, we propose fees for only the initial conceptual planning and schematic design phases.

We propose to provide the above-described basic scope of services for a lump sum fee of **$58,100.00**

Reimbursable expenses will be assessed at 1.1 times direct cost. Reimbursable expenses include all out-of-county travel-related costs, (TLC's Cocoa office to be considered point-of-origin for all trips), airfare, mileage, meals, lodging, plotting and printing (except as required for in-house coordination), photography, courier services, shipping and express mail.

Billing will be monthly, based upon percentage of services completed and reimbursable expenses. Payment is due within fifteen (15) days of receipt of payment from client.

If our proposal is acceptable, your signature below will confirm our authorization to proceed. Retain one copy and return one copy to TLC Engineering Solutions, Inc. at the address on page 1 of this proposal. This authorization constitutes your commitment to pay the fee and reimbursable expenses, and represents that approval has been received by your firm from the client. Alternatively, we can enter into a contract agreement using AIA Document C401 – 2017 Edition – Standard Form of Agreement Between Architect and Consultant.

We look forward to your favorable selection of TLC and the opportunity to assist your team for this and future projects. Please give me a call with any questions or comments.

Sincerely,

TLC Engineering Solutions, Inc.

Jim C. Mullen, PE, LEED AP
Principal

Justin P. Mulhollan, PE, LEED AP BD+C, CEM, GGP, WELL AP
Principal / Regional Director

Authorization

By: _____

_____
Print Name and Title

Date: _____

CITY OF PORT ORANGE
MASTER CONTRACT
FOR ARCHITECTURAL SERVICES

This Master Contract for Architectural Services ("Contract") is entered into this 15 day of JUNE, **2021**, by and between the **CITY OF PORT ORANGE**, a Florida municipal corporation, whose principal address is 1000 City Center Circle, Port Orange, Florida 32129 (the "City"), and **SCHENKEL & SHULTZ, INC.**, a Florida corporation whose principal address is 200 East Robinson Street, Suite 300, Orlando, Florida 32801 ("Architect"). The City and Architect are collectively referred to herein as the "Parties."

1. *Provision of Services*

(a) The Architect hereby agrees to provide Public Utilities Field Operations Facility Architectural Services, and as further described in Request for Statement of Qualifications 20-03 ("RFSQ 20-03"). This Contract together with RFSQ 20-03, Addendum No. 1, and Addendum No. 2, all of which may be referred to as the "Contract" and all of which are made a part hereof by reference, shall constitute the formal written contract between the City and Architect. For convenience, Section 3, Scope of Services/Work and Requirements from RFSQ 20-03, is available in the Office of the City Clerk. Architect represents that they are familiar with the documents that make up the Contract, as referenced hereinabove.

(b) The time, manner and place for performance of such services shall be:

Term: The term of this Contract shall become effective on the last date the Contract is signed by the Parties and shall continue for a period of Five (5) years ("Term").

Manner and Place: The work shall be performed in accordance with and in a manner as required by all current federal, state, county, fire, building and land development codes, laws, ordinances and regulations, and with applicable permits and licenses per the City Code of Ordinances.

Time and Essence: Architect acknowledges that time is of the essence in the completion of the services contemplated by this Contract, and shall complete all services within the timeline specified by this Contract, and shall complete all services within the timeline specified in the project, and as reflected on the Notice to Proceed.

2. *Authorization for Services* This Contract standing alone does not authorize the performance of any work or services to be provided by the Architect or require the City to place any orders for work or service. Authorization for performance of services by the Architect under this Contract shall be in the form of written Task Authorization(s) ("Task Authorization") issued and executed by the City and signed by the Architect. A sample Task Authorization is attached hereto as Exhibit "2."

a. All Task Authorizations issued under this Contract shall terminate at the expiration of the term of the Task Authorization, unless amended in writing by the parties. If a Task Authorization issued before the expiration of this Contract cannot be completed until after the expiration of this Contract, then this Contract shall expire on the Completion of Services under said Task Authorization, including any Amendments thereto, and after all work or services under the Task Authorization have been approved and accepted by the City's

Contract Administrator. The obligations entered herein by both parties under this Contract and said Task Authorizations shall remain in full force and effect until completion of all work or services performed under this Contract and/or the Task Authorization.

b. No new or additional Task Authorization shall be issued after the original expiration date of this Contract. The extension of this Contract to coincide with the completion of an existing Task Authorization issued prior to the original expiration date of this Contract shall not be construed as or constitute authorization by the City or the Architect to enter into a new or additional Task Authorization after the original expiration date of this Contract, unless this Contract is renewed prior to entering into a Contract for a new or additional Task Authorization.

3. *City Obligations*. In return for the services identified above, the City agrees to compensate the Architect at the pricing set forth in Task Authorizations; and reserves the right to utilize lump sum or hourly rate compensation, in amounts not to exceed the budget appropriation for each fiscal year. The fee shall be negotiated for each project Task Authorization to this Contract. The Architect shall submit a monthly statement for professional services rendered and expenses incurred to date of statement. Statements for lump sum shall be based upon Architect's estimate of the proportion of the total services actually completed at the time of billing to the total services performed. Such estimates are to be prepared by the Architect and accompanied by such supporting data, as may be required by the Contract Administrator. All payments shall be governed by the Local Government Prompt Payment Act as set forth in Sections 218.70 through 218.79, Florida Statutes, as amended.

4. *Contract Administration*. The Public Works and Utilities Director, Lynn Stevens, shall perform contract administration of this Contract. The City may change the contract administrator, from time to time and at any time, upon written notice to Architect. For notice provisions, see the paragraph below entitled "Notice." The work shall be under the direction of the authorized Contract Administrator who shall have the final decision authority for all phases of the work, including general direction, review, and approval of the work. Neither the Contract Administrator's review, approval or acceptance of, nor payment for, any of the services required under this Contract shall be construed to operate as a waiver of any rights under this Contract or of any cause of action arising out of the performance of this Contract, and the Architect shall be and remain liable to the City for all costs of any kind which were incurred by the City as a result of the Architect's negligent performance of the services furnished under this Contract.

5. *Responsibility of the Architect*. The Architect shall be responsible for the professional and technical accuracy and the coordination of all designs, drawings, and specifications and other work or materials furnished by the Architect under this Contract. The Architect shall without additional cost or fee to the City, correct or revise any errors or deficiencies in their performance.

6. *Reuse of Documents*. The City shall have unlimited rights, for the benefit of the City in all drawings, designs, specifications, notes and other architect's work produced in the performance of this Contract, or in contemplation thereof, and all as-built drawings produced after completion of work, including the right to use same on any other City work without additional cost to the City, All documents including Drawings and Specifications prepared by Architect pursuant to this Contract are instruments of service in respect to the project Task Authorization. They are not intended or represented to be suitable for reuse by City or others for any other project. Reuse for another project without written verification or adaption by Architect for the specific purpose intended will be at City's risk. Any such verification or adaptation will entitle the Architect to further compensation at rates to be agreed upon by the City and Architect. A reproducible set of plans and specifications shall be delivered to and become the property of the City upon completion of the Project by the Architect.

7. *Expert Witness*. The Architect shall serve as an expert witness for the City in any legal proceedings regarding this project if the City so requests. The expert witness fee for Architects shall be negotiated att the time the Architect is called as an expert.

8. *Subcontractors or Sub-Subcontractors*

(a) Any subcontractors and outside associates or consultants required by the Architect in connection with the services covered by the Contract will be limited to such individuals or firms as are specifically identified in an amendment to this Contract. Any substitution in such subcontractors, associates, or consultants shall be subject to the prior approval of the Contract Administrator.

(b) Architect shall save and hold the City harmless from any and all claims or actions by Architect's Subcontractors or Sub-subcontractors for payment of monies such Subcontractor of Sub-subcontractor claims to be owed by Architect for work performed under this Contract.

(c) Nothing in this Contract shall create any obligation on the part of the City to pay directly to any Subcontractors of Sub-subcontractors or claims of a Subcontractor or Sub-subcontractors for amounts owed by Architect to Subcontractor or Sub-subcontractor for work performed under this Contract.

(d) Architect shall be fully responsible for all negligent acts and omissions of it Subcontractors and Sub-subcontractors and of persons directly or indirectly employed by them and of persons of whose negligent acts any of them may be liable to the same extent that it is responsible for the negligent acts and omissions of persons directly employed by it. Nothing in the Contract documents shall create any contractual relationship between any subcontractor and the City or any obligation on the part of the City to pay or to see to the payment of any moneys due any subcontractor to the extent practicable, evidence of amounts paid to the Architect on account of specific work done in accordance with the schedule of values.

(e) The Architect shall require all subcontractors or sub-subcontractors or outside associates employed in connection with the performance of this Contract to comply fully with the terms and conditions of this Contract between the City and the Architect.

9. *Liens*. Architect acknowledges that Architect shall not be entitled to lien the City or other public property.

10. *Termination for Convenience of the City*

(a) The parties agree that the City may terminate this Contract, or any work or delivery required hereunder, from time to time either in whole or part, whenever the City Manager of Port Orange shall determine that such termination is in the best interest of the City.

(b) Termination, in whole or in part, shall be effected by delivery of a Notice of Termination signed by the City Manager or his designee, mailed or delivered to the Architect, and specifically setting forth the effective date of termination.

(c) Upon receipt of such Notice, the Architect shall:

(i) cease any further deliveries or work due under this Contract, on the date, and to the extent, which may be specified in the Notice;

(ii) place no further orders with any subcontractors except as may be necessary to perform that portion of this Contract not subject to the Notice;

(iii) terminate all subcontracts except those made with respect to contract performance not subject to the Notice;

(iv) settle all outstanding liabilities and claims which may arise out of such termination, with the ratification of the Finance Director of Port Orange; and

(v) use best efforts to mitigate any damages which may be sustained by the Architect as a consequence of termination under this clause.

(d) After complying with the provisions of subparagraph (c), above, the Architect shall submit a termination claim, in no event later than six (6) months after the effective date of termination, unless one or more extensions of three (3) months each are granted by the Finance Director.

(e) The Finance Director, with the approval of the City Manager, shall pay from the using department's budget, reasonable costs of termination, including a reasonable amount for profit on supplies or services delivered or work completed. In no event shall this amount be greater than the original contract price, reduced by any payments made prior to Notice of Termination, and further reduced by the price of the supplies not delivered or the services not provided. This Contract shall be amended accordingly, and the Architect shall be paid the agreed amount.

(f) In the event that the parties cannot agree on the whole amount to be paid to the Architect by reason of termination under this clause, the Finance Director shall pay the Architect the amounts determined as follows, without duplicating any amounts which may have already been paid under the preceding paragraph of this clause:

(i) With respect to all Contract performance prior to the effective date of Notice of Termination, the total of:

(1) the cost of work performed or supplies delivered;

(2) the cost of settling and paying any reasonable claims as provided in paragraph (c) (iv), above;

(3) a sum as profit on (a) determined by the Finance Director to be fair and reasonable.

(ii) The total sum to be paid under (i) above shall not exceed the contract price, as further reduced by the contract price of work or supplies not terminated.

(g) In the event that the Architect is not satisfied with any payments which the Finance Director shall determine to be due under this clause, the Architect may appeal any claim to the City Council in accordance with Paragraph 23 of this contract concerning disputes.

11. *Termination for Convenience for Subcontractors*. In accordance with the termination for the convenience of the City provision of this contract, the Architect shall include similar provisions in any subcontract, and shall specifically include a requirement that subcontractors make all reasonable efforts to mitigate damages which may be suffered. Failure to include such provisions shall bar the Architect from any recovery from the City whatsoever of loss or damage sustained by a subcontractor as a consequence of termination for convenience.

12. *Termination for Default*. Either party may terminate this Contract, without further obligation, for the default of the other party or its agents or employees with respect to any agreement or provision contained herein. In the event of default by the Architect, the City reserves the right to procure the item(s) bid from other sources and holds the bidder responsible for excess costs incurred as a result. City Council may elect to refrain from doing business with the bidder as stipulated in City Code 2-276 Suspension and Disbarment.

13. *Architect's Records*. The design, permits and all other records prepared by the Architect, assembled for the City, subcontracted for the City, and any other records related to the scope of work in the possession of the Architect shall be retained by the Architect for the requisite time set forth in Florida Administrative Code Rule 1 B-24 http://dos.myflorida.com/library-archives/records-management/. Architect may dispose of the records in accordance

with Florida law, upon receipt of a signed written release signed by the City Attorney. During the term of this Contract, as amended from time to time, Architect agrees to indemnify the City for failure to comply with the requirements of this paragraph including costs of litigation and legal fees incurred through all appeals. City reserves the right to select and approve the defense attorney. The Architect's obligations pursuant to this paragraph shall survive the termination of this Contract, and as amended from time to time.

14. *Examination of Records*

(a) The Architect agrees that the City, or any duly authorized representative, shall, until the expiration of five (5) years after final payment hereunder, have access to and the right to examine and copy any pertinent books, documents, papers and records of the Architect involving transactions related to this Contract.

(b) The Architect further agrees to include in any subcontract for more than $10,000 entered into as a result of this Contract, a provision to the effect that the subcontractor agrees that the City or any duly authorized representative shall, until the expiration of five (5) years after final payment under the subcontract, have access to and the right to examine and copy any pertinent books, documents, papers and records of such Architect involved in transactions related to such subcontract, or this Contract. The term subcontract as used herein shall exclude purchase orders for public utility services at rates established for uniform applicability to the general public.

(c) The period of access provided in subparagraphs (a) and (b) above for records, books, documents and papers which may relate to any arbitration, litigation, or the settlement of claims arising out of the performance of this contract or any subcontract shall continue until any appeals, arbitration, litigation or claims shall have been finally disposed of.

15. *Public Records Compliance*. Architect shall comply with public records laws as set forth in Chapter 119, Florida Statutes, and shall specifically:

(a) Keep and maintain public records required by the City to perform the service.

(b) Upon request from the City's custodian of public records, provide the City with a copy of the requested record or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Section 119, Florida Statutes, or as otherwise provided by law.

(c) Ensure that public records that are exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the Contract term and following completion of the Contract if the Architect does not transfer the records to the City.

(d) Upon completion of the Contract, Architect shall transfer to the City, at no cost, all public records in possession of the Architect and destroy any duplicate public records that are exempt from public records disclosure requirements. All records stored electronically must be provided to the City, upon request from the City's custodian of public records, in a format that is compatible with the information technology systems of the City.

If Architect does not comply with a public records request, the City shall deem the non-compliance a breach of this Contract, and the Architect may be subject to penalties under Section 119.0701, Florida Statutes.

ARCHITECT QUESTIONS RELATING TO ARCHITECT'S DUTIES TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT MUST BE FORWARDED TO THE OFFICE OF THE CITY CLERK, CITY HALL, 1000 CITY CENTER CIRCLE, PORT ORANGE, FLORIDA 32129; TELEPHONE: (386) 506-5563; E-MAIL: CITYCLERK@PORT-ORANGE.ORG.

16. *Termination for Non-Appropriation of Funds*

(a) If funds are not appropriated for any succeeding fiscal years subsequent to the one in which this contract is entered into, for the purpose of this Contract, then the City may terminate this Contract upon thirty (30) days prior written notice to the Architect. Should termination be accomplished in accordance with this Section, the City shall be liable only for payments due through the date of termination.

(b) The City agrees that should it terminate in accordance with this Section, it shall not obtain services which are substantially equal to or similar to those for which this contract was entered into. This provision shall survive any termination of the Contract.

17. *Insurance*. Architect shall maintain insurance, as required herein, during the life of this Contract. Architect shall provide to the City, a certificate of insurance endorsing the City of Port Orange as an additional named insured. All insurance coverages of the Architect shall be primary and non-contributory. All insurance coverages of the Architect shall not seek contribution from any other insurance or self-insurance available to the City. For workers' compensation coverage, the Architect's insurance certificate shall include the insurer's waiver of subrogation in lieu of endorsing the City as an additional insured for workers' compensation. The City shall not accept Workers' Compensation Exemptions Architect may use leased employees if the Architect ensures that all workers who access the jobsite are employees covered by the employee leasing company, and no non-employees are permitted to access the jobsite. Any Architect using a leased employee shall complete the City's Leased Employee Affidavit Form Exhibit. Policies for Workers' Compensation may be issued by companies authorized as a group self-insurer by F.S. 440.572.

Policies other than Workers' Compensation shall be issued by insurers licensed and/or duly authorized under Florida Law to do business in the State of Florida and all insuring companies are required to have a minimum rating of "A-" in the "Best Key Rating Guide" published by A.M. Best & Company, Inc. Architect shall not commence work under this Contract until the City has received a certificate or certificates of insurance with endorsement evidencing the required insurance. Insurer shall provide the City written notice of cancellation, nonrenewal or any other changes in coverage no later than thirty (30) days prior to the effective date of the change and shall provide notice to the City no later than 10 days after non-payment. The Certificates of Insurance and required insurance policies shall contain provisions that thirty (30) days prior written notice shall be given to the City of any cancellation, intent not to renew, or reduction in the policies or coverages.

Architect shall require and ensure each of its subcontractors to maintain, until the completion of the subcontractor's work, insurance of the types and to the limits set forth herein. All insurance coverages shall be primary and non-contributory. All insurance coverages of the subcontractors shall not seek contribution from any other insurance or self-insurance available to the City. The Architect is responsible for ensuring that its subcontractors maintain the required coverage. Failure of the Architect to ensure the subcontractors maintain the required coverage, shall not relieve the Architect of any contractual responsibility, obligation or liability.

The City reserves the right to increase insurance coverage as determined for higher risk contracts.

The acceptance by the City of any Certificate of Insurance does not constitute approval or agreement by the City that the insurance requirements have been satisfied or that the insurance policy shown on the Certificate of Insurance is in compliance with this Contract and does not waive the insurance required by this Contract.

Should at any time the Architect or subcontractors not maintain the insurance coverages required herein, the City may terminate the Contract or at its sole discretion shall be authorized to purchase such coverages and charge the Architect for such coverages purchased. The City shall be under no obligation to purchase such insurance, nor shall it be responsible for the coverages purchased or the insurance company or companies used. The decision of

the City to purchase such insurance coverages shall in no way be construed to be a waiver of any of its rights under the Contract.

Standard Insurance Requirements			
	Insurance	**Standards**	**Additional Requirements**
☒	Workers' Compensation The Architect shall maintain coverage for its employees with statutory workers' compensation limits, and no less than the limits indicated in the Schedule of Limits for Employers' Liability. Said coverage shall include a waiver of subrogation in favor of the City. **The City will not accept elective exemptions**. Any Architect using an employee leasing company shall complete the Leased Employee Affidavit Form Exhibit.	Contract Amount — Limits Up to $10 million — Statutory/$500,000 $10 - $20 million — Statutory/$1,000,000 Contracts over $20 million To Be Determined by the City.	☐If Contract requires work on or about navigable waters, Longshoreman's and Harbor Workers' Coverage required. ☐If vessels involved, Jones Act coverage with limits of $500,000 required.
☒	Comprehensive General Liability (including Completed Operations and Contractual Liability	Limits: Combined Single Limit Bodily Injury and Property damage $1,000,000 occurrence $1,000,000 aggregate	☐When work is on or under Railroad rights of way or properties, the Architect shall take out and maintain during the life of the Contract, Railroad protective liability and property damage insurance in amounts as requested by the Railroad.
☒	Comprehensive Business, Automobile Liability to include all owned, hired and non-owned automobiles.	Limits: Auto Liability Body Injury and Property Damage: $1,000,000 each occurrence $1,000,000 aggregate	
Additional Insurance Requirements			
☐	Property Insurance Builders Risk. Additional Coverage:	Limits: Buildings - Completed value of Contract. "All Risk" coverage on latest ISO for or its equivalent. Permission granted to occupy. Owner named as insured AIMA	If Agreement requires handling or installation of Owner's equipment, coverage should be furnished on "All Risk" form, including transit and Owner shall be named.
☒	Professional Liability	Limits: Coverage - $1,000,000	
☐	Installation Floater (IT)	Limits: Coverage - $ To be determined.	
☐	Architect Pollution Liability	Limits: Coverage - $1,000,000	
☒	Errors and Omissions	Limits: Coverage - $1,000,000	
☐	Umbrella Policy	Limits: Coverage – $ To be determined.	
☐	Payment and Performance Bond Required	Limits: Coverage - Equal to amount of Contract.	
☐	**City Manager waives Payment and Performance Bond for work under $100,000.00.**		

☐	**Unless otherwise required by law, City Manager waives Insurance for FOB goods under $25,000.00.**

18. *A Contract for the purchase* of supplies shall be governed by the City of Port Orange Code of Ordinances, as amended, and such supplies shall be deemed "goods," as defined therein.

19. *Assignability of Contract*. Neither this contract, nor any part hereof, may be assigned by the Architect to any other party without the express written approval of the City Council.

20. *Modifications or Changes to this Contract*

(a) Change Orders. The Department Head, with the concurrence of the City's signatory as required by the City's Purchasing Policy, shall without notice to any sureties, have the authority to order changes in this Contract which affect the cost or time of performance. Such changes shall be ordered in writing specifically designated to be a change order. Such orders shall be limited to reasonable changes in the services to be performed or the time of the performance. The City will not be held liable for any changes which have not been properly authorized and approved in accordance with this Contract.

(b) If any change under this clause causes an increase or decrease in Architect's cost of, or time required for the performance of the work hereunder, Architect shall receive an equitable adjustment in accordance with subparagraph (d), which shall include all compensation to the Architect, or the City, of any kind in connection with such change, including all costs and damages related to or incidental to such change.

(c) Architect need not perform any work described in any change order unless it has received a certification from the City that there are funds budgeted and appropriated sufficient to cover the cost of such changes.

(d) No claim for changes ordered hereunder shall be considered if made after final payment in accordance with the Contract.

21. *Sovereign Immunity*. The City expressly retains all rights, benefits and immunities of sovereign immunity in accordance with Section 768.28, Florida Statutes. Notwithstanding anything set forth in any section of this Contract to the contrary, nothing in this Contract shall be deemed as a waiver of immunity or limits of liability of the City beyond any statutory limited waiver of immunity or limits of liability which may have been adopted by the Florida Legislature or may be adopted by the Florida Legislature and the cap on the amount and liability of the City for damages regardless of the number or nature of claims in tort or equity shall not exceed the dollar amount set by the legislature for tort. Nothing in this Contract shall inure to the benefit of any third party for the purpose of allowing any claim against the City which would otherwise be barred under the Doctrine of Sovereign Immunity or operation of law.

22. *Liability for Loss or Damage*. Architect shall be liable for any loss of, or damage to, City property caused by the negligence, recklessness, or intended wrongful misconduct of Architect, his/its agents, servants and employees and shall indemnify and save the City harmless against all actions, proceedings, claims, demands, costs, damages and expenses, including attorney's fees, by reason of any suit or action brought for any actual or alleged injury to or death of any person or damage to property other than City property, to the extent caused by negligent performance of the Contract by Architect, his/its agents, servants and employees. Architect shall submit a full written report to the Finance Director within twenty-four (24) hours following the occurrence of such damage, loss or injury.

23. *Non-discrimination*. During the performance of this Contract, Architect agrees as follows:

(a) Architect will not discriminate against any employee or applicant for employment because of race, religion, color, sex, disability, marital status, age or national origin, except where such is a bona-fide occupational qualification reasonably necessary to the normal operation of Architect. Architect agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this non-

discrimination clause. Architect agrees and fully supports and complies with the Americans with Disabilities Act of 1990.

(b) Architect shall state in all solicitations or advertisements for employees placed by or on behalf of Architect that Architect is an equal opportunity employer.

(c) Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient compliance with this provision. Architect shall include the provisions of the foregoing subparagraphs (a), (b), and (c) in every subcontract or purchase order of over $10,000 so that the provisions will be binding upon each subcontractor or vendor.

24. *E-Verify*. Architect shall utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the Architect on or after the effective date of this Contract and thereafter during the remaining term of this Contract, including all subcontractors. Any subcontract entered into by Architect with any subcontractor performing work under this Contract shall include the following language: "The Sub-Architect shall utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the Architect on or after the effective date of this Contract and thereafter during the remaining term of the Contract." The Architect covenants and agrees that if it is found in violation of this section of the Executive Order, such violation shall be a material breach of this Contract and Architect shall indemnify, defend and hold harmless the City from any fines or penalties levied by a government agency, including the loss or repayment of grant funds by the City.

25. *Disputes*. The City Manager, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to Architect, shall decide disputes with respect to this Agreement. The decision by the City Manager shall be final and binding unless, within five (5) business days from the date of delivery of the decision of the City Manager, appeal is made to the City Council in writing and delivered to the City Clerk, Robin L. Fenwick, MMC. The decision of the City Council shall be final and binding unless set aside by a court of competent jurisdiction as fraudulent, capricious, arbitrary, or so grossly erroneous as necessary to imply bad faith, or not to be supported by any evidence.

26. *Force Majeure*. Neither party shall be liable for any delay in performance or failure to perform any obligation hereunder if, and to the extent that, such failure or delay is caused by an event of Force Majeure. Force Majeure shall mean any act, event or condition that is beyond the party's reasonable control, that materially and adversely affects the party's ability to perform its obligations hereunder, and that is not the result of the party's willful neglect, error, omission or failure to exercise reasonable due diligence.

27. *Controlling Law*. **THIS AGREEMENT CONTAINS IMPORTANT MATTERS AFFECTING LEGAL RIGHTS AND IS ACCEPTED AND ENTERED INTO IN FLORIDA AND ANY QUESTION REGARDING ITS VALIDITY, CONSTRUCTION, ENFORCEMENT, OR PERFORMANCE SHALL BE GOVERNED BY FLORIDA LAW. ANY LEGAL PROCEEDING ARISING FROM OR IN ANY WAY REGARDING THE AGREEMENT SHALL HAVE ITS VENUE LOCATED EXCLUSIVELY IN THE CIRCUIT COURT OF VOLUSIA COUNTY, FLORIDA, AND THE PARTIES HEREBY EXPRESSLY CONSENT AND SUBMIT THEMSELVES TO THE PERSONAL JURISDICTION AND VENUE OF THE COURT.**

28. *Additional Provisions*. This Contract includes all additional provisions as may have been outlined in written quotes and purchase orders and any attachments or exhibits to this Contract whether delivered herewith or subsequently approved as a part hereof, such as drawings or technical specifications prepared in the performance of this work. In the event of a conflict between any attachments or exhibits to this Contract, and this Contract, the language of this Contract shall control.

29. *Integration*. This Contract and the documents incorporated herein by reference shall constitute the whole agreement between the parties. There are no promises, terms, conditions, or obligations other than those contained herein, and this Contract shall supersede all previous communications, representations, or agreements, written or verbal, between the parties hereto.

30. *Notice*. For purposes of this agreement, notices shall be sent as follows:

City: City of Port Orange
Attention: City Manager
1000 City Center Circle
Port Orange, Florida 32129
(386) 506-5501

Copy to: City of Port Orange
Attention: Lynn Stevens, Public Works and Utilities Director
1000 City Center Circle
Port Orange, Florida 32129
(386) 506-5750

Architect: Schenkel & Shultz, Inc.
Attention: Daniel C. Laggan, President
200 East Robinson Street
Suite 300
Orlando, Florida 32801
(407) 872-3322 – Telephone
(407) 872-3303 – Facsimile
jlohrum@schenkelshultz.com

Any notice or other communication given under the Contract will be in writing and delivered by hand, sent by facsimile (provided acknowledgement of receipt thereof is delivered to the sender), sent by certified, registered mail, or sent by any nationally recognized overnight courier service to the addresses provided herein. The parties may, from time to time and at any time, change their respective addresses and each will have the right to specify as its address any other address by at least 10 days written notice to the other party.

31. *Truth-in-Negotiations*

(a) For any fixed fee, cost-plus-a-fixed-fee or guaranteed maximum-not-to-exceed compensation professional service contract or compensation in a Task Authorization over $150,000.00, Architect shall execute a truth-in-negotiation certificate stating that wage rates and other factual unit costs supporting the compensation are accurate, complete, and current at the time of contracting. Any professional service contract or Task Authorization under which such certificate is required must contain a provision that the original contract price or compensation and any additions thereto will be adjusted to exclude any significant sums by which the City determines the contract price or compensation was increased due to inaccurate, incomplete, or noncurrent wage rates and other factual unit costs. All such contract or compensation adjustments must be made within one (1) year following the end of the Contract. Otherwise, such adjustments shall be deemed waived by the Architect and null and void for the purposes of this Contract or Task Authorization. The signature on this Contract by the Architect shall act as the execution of a truth-in-negotiation certificate stating that the wage rates and other factual unit costs supporting the compensation of this Contract are accurate, complete, and current at the time of contracting.

(b) Architect's signature on this Contract or a Task Authorization shall act as execution of a truth-in-negotiation certificate stating that wage rates and other factual unit costs supporting the compensation set forth in this Contract or a Task Authorization are accurate, complete, and current at the time of contract. The certification shall also constitute an affirmation that Architect has disclosed all debts or fees owed to or that are pending before the City prior to the execution of this Contract of Task Authorization.

32. *Waiver of Breach and Materiality* Failure to enforce any provision of this Contract shall not be deemed a waiver of such provision or modification of this Contract. A waiver of any breach of a provision of this Contract shall not be deemed a waiver of any subsequent breach and shall not be construed as a modification of the terms of this Contract.

33. *Contract Construction*

This Agreement may be executed in one or more counterparts, each of which shall be deemed to be an original but all of which together shall constitute one and the same instrument. The delivery by facsimile or e-mail of an executed copy of this Agreement shall be deemed valid as if an original signature was delivered. No contract shall be formed between Architect and the City until the City signs this Agreement.

34. *Authority to Sign*. Each person signing this Agreement warrants that he or she is duly authorized to do so and to bind the respective party to the Agreement.

[Remainder of Page Intentionally Left Blank]

Witnesses:

Printed Name: JEFFY G. PORTER

Printed Name: Jesus Maldonado

SCHENKEL & SHULTZ, INC.

By: _____
Daniel C. Laggan, President

If this Contract is signed by an individual not identified as the President of the corporation in the records of the Florida Department of State, Division of Corporations, please provide written authorization for that individual to enter into contracts on behalf of the corporation.

Date: June 1, 2021

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me by means of ✓ physical presence or ___ online notarization, this 1st day of June, 2021, by Daniel C. Laggan, as President of Schenkel & Shultz, Inc., a Florida corporation. He is ✓ personally known or ___ produced _____ as identification.

_____
Notary Public, State of Florida
Printed, typed or stamped name, commission and expiration:

IRIS ELIZABETH ZAYAS
Notary Public - State of Florida
Commission # HH 076467
My Comm. Expires Apr 20, 2025
Bonded through National Notary Assn.

Witnesses:

CITY OF PORT ORANGE

Printed Name: Matt Jones

By: _____
Donald O. Burnette, Mayor

Printed Name: Jamie Miller

Date: 6/15/2021

STATE OF FLORIDA
COUNTY OF VOLUSIA

The foregoing instrument was acknowledged before me by means of ✓ physical presence or ___ online notarization, this 15th day of June, 2021, by Donald O. Burnette, as Mayor of the City of Port Orange, a Florida municipal corporation, on behalf of the city. He is ✓ personally known or ___ produced _____ as identification.

MATTHEW J. JONES
Commission # GG 931831
Expires January 23, 2024
Bonded Thru Troy Fain Insurance 800-385-7019

Notary Public, State of Florida
Printed, typed or stamped name, commission and expiration:

Witnesses:

ATTEST:

Printed Name: Matt Jones

By: _____
Robin L. Fenwick, MMC, City Clerk

Printed Name: Jamie Miller

Date: 6/15/2021

CITY OF PORT ORANGE 1867 FLORIDA

STATE OF FLORIDA
COUNTY OF VOLUSIA

The foregoing instrument was acknowledged before me, by means of ✓ physical presence or ___ online notarization, this 15th day of June, 2021, by Robin L. Fenwick, as City Clerk of the City of Port Orange, a Florida municipal corporation, on behalf of the city. She is ✓ personally known or ___ produced _____ as identification.

MATTHEW J. JONES
Commission # GG 931831
Expires January 23, 2024
Bonded Thru Troy Fain Insurance 800-385-7019

Notary Public, State of Florida
Printed, typed or stamped name, commission and expiration:

EXHIBIT "1"

RFSQ 20-03 Scope of Services, Addendum No. 1
and Addendum No. 2

Consisting of 9 Pages

SECTION 3 – SCOPE OF SERVICES/WORK AND REQUIREMENTS

Introduction:

The City of Port Orange Public Works & Utilities requests statements of qualifications from architectural firms for the design of a new Public Utilities Operations Facility. The facility will be located on an eight (8)-acre site which will include office space, meeting space, warehouse space, indoor and outdoor equipment storage areas. Site improvements will include stormwater collection and management along with utilities site grading and other necessary site improvements. The current site is unimproved.

Scope:

The Public Utilities Field Operations Facility scope of services shall consist of, but not be limited to, the following:

- Facility offices for employees, warehouse, and equipment storage needs
- Building(s) design
- Site design
- Permitting
- Construction phase services
- As-built preparation and certification

Qualifications/Certifications:

The preferred firm will have a current Professional Registration Certificate from the appropriate governing board. The firm must be properly registered at the time of submittal to practice their profession in the State of Florida. The preferred firm shall provide professional certifications of staff such as Licensed Architect, Professional Engineer (P.E) and other relevant professional titles/accomplishments related to the proposed project.

Evaluation Method:

The City will appoint a committee consisting of department staff to evaluate the proposals and to make recommendation to the City Council. The City will be the sole judge of its own best interests, the proposals, and the resulting contract. The City's decisions will be final. Award will be made to the proposal, which presents the best value to the City based on the entire evaluation process and all the information gathered. The City may require the short-listed firm(s) to do an oral presentation or have discussions by proposed team relative to their specific experience on similar projects. Although each member of the evaluation committee independently examines the proposals prior to the meeting, the short-listing or selection of the firm(s) is determined by the consensus of the committee.

Evaluation Criteria:

In determining a firm's qualifications, the following criteria will be considered based on qualifications, experience and project approach:

- Company profile including size, location(s), and primary area of professional focus;
- Credentials, qualifications and years' experience of the staff for both the prime and sub consultants and key personnel as presented by resumes, education, and training;
- Number of years prime and sub consultants worked together;
- Professional license, certifications, titles, resumes, and accomplishments of staff designated to this project;
- Location of office facilities and staff whom will be assigned to this project.

- Experience designated project staff has in providing similar projects;
- Overall project approach to support the needs and objectives of the project;
- Documentation that the firm can perform the contract and provide the service within budget and scheduling requirements;
- Quality, availability and adaptability of the contractual services to the particular use required;
- Sufficiency of the financial resources and ability of the firm to perform the contract or provide the services;
- Previous and existing compliance by the firm with laws and ordinance relating to contracts or services;
- The number of professional staff, education, and years' experience in public facilities design including support staff such as GIS specialists, surveyors, CADD Techs, Construction Inspectors (CEI), etc.;
- Documented projects (with at least 3 references) which demonstrate proficiency and experience in projects of a similar nature in scope and complexity to the proposed project;
- Quality of performance on previous contracts or services with similar scope

[End of Scope of Work - Remainder of this page left intentionally blank]

CITY OF PORT ORANGE
PURCHASING DIVISION
1000 CITY CENTER CIRCLE
PORT ORANGE, FLORIDA 32129
TELEPHONE 386-506-5740
purchdiv@port-orange.org

ADDENDUM NO. # 1
August 7, 2020
RFSQ #20-03 PUBLIC UTILITIES FIELD OPERATIONS FACILITY ARCHITECTURAL SERVICES

To All Bidders:

The following changes, clarifications and additions are hereby made part of the bidding and specifications for the above referenced project dated July 23, 2020 and prepared by the City of Port Orange Purchasing Division as fully and completely as if the same were fully set forth therein. It is the sole responsibility of bidder to confirm that all addenda have been received prior to submitting bid and acknowledge such in the bid documents.

A. **CLARIFICATIONS:**
N/A
B. **CHANGES TO SPECIFICATIONS:**
N/A
C. **QUESTIONS AND ANSWERS:**

Question 1: Will the pre-proposal conference be available for virtual participation/televised?
Answer: No, there will not be a virtual attendance or call in option for the pre-proposal conference. The pre-proposal conference is non-mandatory, and all questions asked at the conference will appear on Addendum #1. We will also have the audio to the pre-proposal conference available upon request.

Question 2: Will you please clarify how location will affect the point scale under the evaluation criteria? Is location a part of "able to meet City's needs" (page 40)?
Answer: There is no specific formula for how location will affect the point scale under the evaluation criteria and no specific instruction is given to the Evaluation Committee as to how location should affect the point scale. The location of a submitting firms office(s) is primarily used for reference and is not considered a major factor in the five (5) points available under that section of the evaluation criteria.

Question 3: The RFSQ states on page 3 "one (1) original and one (1) identical digital (CD or flash drive) version in PDF format" and then on page 37 it requests "provide one (1) original, six (6) identical copies and one (1) identical digital version in PDF format on CD or USB flash/thumb drive". Can you please confirm the number of submittals that the City is requiring?
Answer: Please provide one (1) original and one (1) identical digital (CD or flash drive) version in PDF format as stated on Page 3. The requested number of submittals found on Page 37 is outdated and is no longer applicable.

Question 4: Has it been determined if the construction portion will be advertised as an ITB for a lump sum bid or an RFQ for Construction Management at Risk Services?
Answer: The subsequent solicitation will be advertised as an ITB for the construction of the Public Utilities Field Operations Facility.

Question 5: Will the Sign-In Sheet be available?
Answer: Yes, the Sign-In Sheet is available on DemandStar and the City of Port Orange website as of 8/6/2020.

Question 6: Can you please discuss the scope of the project and what is anticipated to be included?
Answer: The general scope as it is outlined in the solicitation is for Architectural Services to design, permit, and provide bidding assistance for a brand-new Field Operations Facility located on a designated property that is owned by the City of Port Orange. The zoning is appropriate so there will be no zoning issues. A decent amount of civil work will be required. The facility will be an all-inclusive facility that includes office space, storage space (enclosed and open storage), and other civil work such as a potential Vac Truck Pump-out pit connected to the sanitary system.

Question 7: What is the approximate budget of the project?
Answer: The approximate budget for Construction is $3,000,000.00. At the end of the design, the City of Port Orange expects a full estimate of the Construction costs.

Question 8: Can you clarify which tab of Section 7 will be for the required forms?
Answer: The required forms are their own separate section of the solicitation, which is Section 9 on Page 44. They are not under any tabs for Section 7. Tab E of Section 7 is not to be confused with Section 9's *Form 9.8 – Professional References for Previous Experience*. Additionally, the selection committee does not see the required forms as that is under the purview of the Purchasing Division when opening the received proposals.

Question 9: Will "Due Diligence" (Geotechnical and Environmental) be included in this RFSQ?
Answer: Yes.

Question 10: Can you confirm which tab that you will want a proposer's project experience/project sheet to be listed?
Answer: Please list project experience/project sheet under Tab E - Documented Projects (with at least 3 references) which Demonstrate Proficiency and Experience in Projects of a Similar Nature in Scope and Complexity to the Proposed Project.

Question 11: Is Geotech and Surveying apart of the Architectural team?
Answer: The City of Port Orange will not be supplying Geotech or Surveying. Geotech and Surveying will be provided by a proposer's subconsultant.

Question 12: Will a firm be selected from their written documentation? Will there be a shortlist or presentation?

Answer: The City of Port Orange has the right to select a firm in how it sees fit—either by a firm's written documentation if the Selection Committee sees them as "head and shoulders" above the other firm's proposals or by a shortlist and subsequent presentation if the Selection Committee deems multiple firms to be close with their submitted proposals. Language on this topic can be found in the RFSQ on pages 42 and 43 under "EVALUATION PROCEDURE".

Michael Hall
Buyer
mhall@port-orange.org

In all other respects, except as specifically stated herein, the subject RFSQ #20-03 PUBLIC UTILITIES FIELD OPERATIONS FACILITY ARCHITECTURAL SERVICES remains unchanged.

END OF ADDENDUM NO. #1

CITY OF PORT ORANGE
PURCHASING DIVISION
1000 CITY CENTER CIRCLE
PORT ORANGE, FLORIDA 32129
TELEPHONE 386-506-5740
purchdiv@port-orange.org

ADDENDUM NO. #2
August 14, 2020
RFSQ #20-03 PUBLIC UTILITIES FIELD OPERATIONS FACILITY ARCHITECTURAL SERVICES

To All Bidders:

The following changes, clarifications and additions are hereby made part of the bidding and specifications for the above referenced project dated July 23, 2020 and prepared by the City of Port Orange Purchasing Division as fully and completely as if the same were fully set forth therein. It is the sole responsibility of bidder to confirm that all addenda have been received prior to submitting bid and acknowledge such in the bid documents.

A. **CLARIFICATIONS:**
N/A
B. **CHANGES TO SPECIFICATIONS:**
N/A
C. **QUESTIONS AND ANSWERS:**

Question 1: Will the pre-proposal conference be available for virtual participation/televised?
Answer: No, there will not be a virtual attendance or call in option for the pre-proposal conference. The pre-proposal conference is non-mandatory, and all questions asked at the conference will appear on Addendum #1. We will also have the audio to the pre-proposal conference available upon request.

Question 2: Will you please clarify how location will affect the point scale under the evaluation criteria? Is location a part of "able to meet City's needs" (page 40)?
Answer: There is no specific formula for how location will affect the point scale under the evaluation criteria and no specific instruction is given to the Evaluation Committee as to how location should affect the point scale. The location of a submitting firms office(s) is primarily used for reference and is not considered a major factor in the five (5) points available under that section of the evaluation criteria.

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Answer: Please provide one (1) original and one (1) identical digital (CD or flash drive) version in PDF format as stated on Page 3. The requested number of submittals found on Page 37 is outdated and is no longer applicable.

Question 4: Has it been determined if the construction portion will be advertised as an ITB for a lump sum bid or an RFQ for Construction Management at Risk Services?
Answer: The subsequent solicitation will be advertised as an ITB for the construction of the Public Utilities Field Operations Facility.

Question 5: Will the Sign-In Sheet be available?
Answer: Yes, the Sign-In Sheet is available on DemandStar and the City of Port Orange website as of 8/6/2020.

Question 6: Can you please discuss the scope of the project and what is anticipated to be included?
Answer: The general scope as it is outlined in the solicitation is for Architectural Services to design, permit, and provide bidding assistance for a brand-new Field Operations Facility located on a designated property that is owned by the City of Port Orange. The zoning is appropriate so there will be no zoning issues. A decent amount of civil work will be required. The facility will be an all-inclusive facility that includes office space, storage space (enclosed and open storage), and other civil work such as a potential Vac Truck Pump-out pit connected to the sanitary system.

Question 7: What is the approximate budget of the project?
Answer: The approximate budget for Construction is $3,000,000.00. At the end of the design, the City of Port Orange expects a full estimate of the Construction costs.

Question 8: Can you clarify which tab of Section 7 will be for the required forms?
Answer: The required forms are their own separate section of the solicitation, which is Section 9 on Page 44. They are not under any tabs for Section 7. Tab E of Section 7 is not to be confused with Section 9's *Form 9.8 – Professional References for Previous Experience*. Additionally, the selection committee does not see the required forms as that is under the purview of the Purchasing Division when opening the received proposals.

Question 9: Will "Due Diligence" (Geotechnical and Environmental) be included in this RFSQ?
Answer: Yes.

Question 10: Can you confirm which tab that you will want a proposer's project experience/project sheet to be listed?
Answer: Please list project experience/project sheet under Tab E - Documented Projects (with at least 3 references) which Demonstrate Proficiency and Experience in Projects of a Similar Nature in Scope and Complexity to the Proposed Project.

Question 11: Is Geotech and Surveying apart of the Architectural team?
Answer: The City of Port Orange will not be supplying Geotech or Surveying. Geotech and Surveying will be provided by a proposer's subconsultant.

Question 12: Will a firm be selected from their written documentation? Will there be a shortlist or presentation?
Answer: The City of Port Orange has the right to select a firm in how it sees fit—either by a firm's written documentation if the Selection Committee sees them as "head and shoulders" above the other firm's proposals or by a shortlist and subsequent presentation if the Selection Committee deems multiple firms to be close with their submitted proposals. Language on this topic can be found in the RFSQ on pages 42 and 43 under "EVALUATION PROCEDURE".

Question 13: Can you share the parcel number or address for the site?
Answer: The Parcel Number for the Public Utilities Field Operations Facility site is PID: 630600000062.

Michael Hall
Buyer
mhall@port-orange.org

In all other respects, except as specifically stated herein, the subject RFSQ #20-03 PUBLIC UTILITIES FIELD OPERATIONS FACILITY ARCHITECTURAL SERVICES remains unchanged.

END OF ADDENDUM NO. #2

EXHIBIT "2"

RFSQ 20-03 SAMPLE TASK AUTHORIZATION

Consisting of 4 Pages

TASK AUTHORIZATION NO. __
Master Contract for Architectural Services dated _____
Between the City of Port Orange, Florida and Schenkel & Shultz, Inc.

THIS Task Authorization is entered into by and between the **CITY OF PORT ORANGE, FLORIDA**, a chartered municipal corporation with its principal place of business at 1000 City Center Circle, Port Orange, Florida 32129 (the "City") and **SCHENKEL & SHULTZ, INC.**, a Florida corporation with its principal place of business at 200 East Robinson Street, Suite 300, Orlando, Florida 32801 ("Architect"), and hereinafter collectively referred to as the "Parties," and is to that certain Master Contract for Architectural Services as dated above, and any amendments thereto, hereinafter collectively referred to as the "Contract." The Parties, in exchange for the mutual covenants contained herein and in the Contract, agree as follows:

1. This Task Authorization expressly modifies the Contract and in the event of a conflict, the terms and conditions of this Task Authorization shall prevail.

2. In addition to all other terms and conditions contained in the Contract, Architect shall provide services relating to _____ as more particularly described in the Scope of Services attached hereto and incorporated herein as Task Authorization Exhibit "1."

3. Architect shall complete the services to be provided herein within _____ days of a written Notice to Proceed issued by the City, to the Architect.

4. In return for the services identified above, the City agrees to compensate Architect at the prices set forth in Exhibit "__" attached hereto and made a part hereof for all purposes, subject to a limit up to but not to exceed $_____. All payments shall be governed by the Local Government Prompt Payment Act as set forth in Sections 218.70 through 218.79, Florida Statutes, as amended.

5. *Truth-in-Negotiations*

(a) For any fixed fee, cost-plus-a-fixed-fee or guaranteed maximum-not-to-exceed compensation professional service contract or compensation in a Task Authorization over $150,000.00, Architect shall execute a truth-in-negotiation certificate stating that wage rates and other factual unit costs supporting the compensation are accurate, complete, and current at the time of contracting. Any professional service contract or Task Authorization under which such certificate is required must contain a provision that the original contract price or compensation and any additions thereto will be adjusted to exclude any significant sums by which the City determines the contract price or compensation was increased due to inaccurate, incomplete, or noncurrent wage rates and other factual unit costs. All such contract or compensation adjustments must be made within one (1) year following the end of the Contract. Otherwise, such adjustments shall be deemed waived by the Architect and null and void for the purposes of this Contract or Task Authorization. The signature on this Contract by the Architect shall act as the execution of a truth-in-negotiation certificate stating that the wage rates and other factual unit costs supporting the compensation of this Contract are accurate, complete, and current at the time of contracting.

(b) Architect's signature on this Contract or a Task Authorization shall act as execution of a truth-in-negotiation certificate stating that wage rates and other factual unit costs supporting the compensation set forth in this Contract or a Task Authorization are accurate, complete, and current at the time of contract. The certification shall also constitute an affirmation that Architect has

disclosed all debts or fees owed to or that are pending before the City prior to the execution of this Contract of Task Authorization.

6. This Task Authorization may be executed in one or more counterparts, each of which shall be deemed to be an original but all of which together shall constitute one and the same instrument. The delivery by facsimile or e-mail of an executed copy of this Task Authorization shall be deemed valid as if an original signature was delivered. No contract shall be formed between the Architect and the City until the City signs this Task Authorization.

IN WITNESS WHEREOF, the Parties have made and executed this Task Authorization for the purposes herein expressed on the dates set forth below.

[Remainder of page intentionally left blank]

Witnesses:

SCHENKEL & SHULTZ, INC.

_____ By:_____

Printed Name:_____ Daniel C. Laggan, President

If this Contract is signed by an individual not identified as the President of the corporation in the records of the Florida Department of State, Division of Corporations, please provide written authorization for that individual to enter into contracts on behalf of the corporation.

_____

Printed Name:_____ Date:_____

Witnesses:

CITY OF PORT ORANGE

_____ By: _____
Printed Name: _____ Wayne Clark, City Manager OR
Donald O. Burnette, Mayor

_____
Printed Name: _____ Date: _____

Witnesses:

ATTEST:

_____ By: _____
Printed Name: _____ Robin L. Fenwick, MMC, City Clerk

_____ Date: _____
Printed Name: _____

[CA 7525]

HUMAN TRAFFICKING AFFIDAVIT
(SECTION 787.06, FLORIDA STATUTES)

STATE OF Florida §
§
COUNTY OF Orange §

The undersigned ("Affiant"), on behalf of the entity listed below ("Entity"), after being duly sworn, hereby attests as follows:

1. My name is Daniel C. Laggan. I am over the age of Twenty-one years old. I am the President (Title) of Schenkel & Shultz, Inc. (Business Name), a non-governmental entity which does business in the State of Florida, hereinafter called the "Entity."

2. I have personal knowledge of each and every statement of fact contained herein, and each and every statement of fact is true and correct.

3. Entity does not use coercion, as defined in Section 787.06, Florida Statutes, for labor or services.

4. The undersigned is an officer or representative of the entity and is authorized to execute this affidavit on behalf of the Entity.

5. Under penalties of perjury, I declare that I have read the foregoing Human Trafficking Affidavit and that the facts stated herein are true.

Further Affiant sayeth not.

Date: September 24, 2024

Signed: _____
Print Name: Daniel C. Laggan
Title: President

SUBSCRIBED AND SWORN before me by means of [__] physical presence or [__] online notarization on the 24th day of September, 2024 by Daniel C. Laggan as President on behalf of Schenkel & Shultz, Inc. who is personally known to me or who has produced _____ as identification.

(Notary Seal)

IRIS ELIZABETH ZAYAS
Notary Public - State of Florida
Commission # HH 076467
My Comm. Expires Apr 20, 2025
Bonded through National Notary Assn.

_____
Notary Public, State of Florida
Printed name, commission and expiration of commission term
Iris Zayas, HH 0764667, April 20, 2025

SKB.7.8.2024. Rev. 9.6.2024
CA7985

SCHE&SH-01 JNGUYEN

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 3/6/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Ames & Gough
8300 Greensboro Drive
Suite 980
McLean, VA 22102

CONTACT NAME:
PHONE (A/C, No, Ext): (703) 827-2277 FAX (A/C, No): (703) 827-2279
E-MAIL ADDRESS: admin@amesgough.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : National Fire Insurance Company of Hartford A(XV)	20478
INSURER B : Continental Casualty Company (CNA) A, XV	20443
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED
Schenkel & Shultz, Inc.
200 East Robinson Street
Suite 300
Orlando, FL 32801

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	$ 1,000,000
	CLAIMS-MADE X OCCUR			7036672442	3/22/2024	3/22/2025	DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 1,000,000
							MED EXP (Any one person)	$ 15,000
							PERSONAL & ADV INJURY	$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 2,000,000
	POLICY X PRO-JECT LOC						PRODUCTS - COMP/OP AGG	$ 2,000,000
	OTHER:							$
B	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	ANY AUTO						BODILY INJURY (Per person)	$
	OWNED AUTOS ONLY / SCHEDULED AUTOS			7036672456	3/22/2024	3/22/2025	BODILY INJURY (Per accident)	$
	X HIRED AUTOS ONLY / X NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
B	X UMBRELLA LIAB X OCCUR						EACH OCCURRENCE	$ 5,000,000
	EXCESS LIAB CLAIMS-MADE			7036672487	3/22/2024	3/22/2025	AGGREGATE	$ 5,000,000
	DED X RETENTION $ 10,000							$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y/N						X PER STATUTE / OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) N	N / A		7036672473	3/22/2024	3/22/2025	E.L. EACH ACCIDENT	$ 1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
B	Professional Liab.			AEH288393689	3/22/2024	3/22/2025	Per Claim/Aggregate	3,000,000
B	Professional Liab.			AEH288393689	3/22/2024	3/22/2025	Deductible	10,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
RE: City of Port Orange - RFSQ 20-03

City of Port Orange is included as additional insured with respect to General Liability, Automobile Liability and Umbrella Liability when required by written contract. General Liability, Automobile Liability and Umbrella Liability is primary and non-contributory over any existing insurance and limited to liability arising out of the operations of the named insured and when required by written contract. Workers Compensation policy includes a waiver of subrogation in favor of the additional insureds where permissible by state law and when required by written contract.

CERTIFICATE HOLDER

City of Port Orange
1000 City Center Circle
Port Orange, FL 32129

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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CITY COUNCIL AGENDA ITEM

COUNCIL MEETING DATE 1/21/2025

SUBJECT: (B7c) Resolution No. 25-02 - Reimbursement Resolution for Public Utilities Field Operations Facility

DEPARTMENT: Finance

GOAL: 5 - Fiscal Sustainability

RECOMMENDED MOTION: Move to approve Resolution No. 25-02.

SUMMARY: The Fiscal Year 2025 budget includes funding for capital expenditures for the construction cost of the Public Utilities Field Operations Facility. The new facility will consist of an Administration Building, a warehouse with workshops, and all associated site improvements. (See related items on this agenda).

The cost of the project requires the issuance of debt to fund the full cost of construction. The debt issuance will be paid for by water, sewer, and reclaimed charges for services and the cost to finance this project was included in the utility rate study completed in 2024 and has been incorporated into the utility rate structure.

This Resolution allows the City to reimburse itself for incurred project expenditures of up to $20,000,000 prior to the issuance of the debt with proceeds from bonds, notes or other obligations to be issued in the future.

PRESENTER: Linda Truitt

ATTACHMENTS:

1.	Reso 25-2 - Reimbursement Reso - Public Utilities Operations Facility (1)	Reso 25-2 - Reimbursement Reso - Public Utilities Operations Facility (1).docx

John McKinney	Created/Initiated - 11/7/2024
Junos Reed	Approved - 11/13/2024
Linda Truitt	Approved - 12/31/2024
Matthew Jones	Approved - 1/7/2025
Wayne Clark	Final Approval - 1/14/2025

RESOLUTION NO. 25-2

A RESOLUTION EXPRESSING THE INTENT OF THE CITY OF PORT ORANGE, FLORIDA TO ISSUE DEBT OBLIGATIONS IN AN AGGREGATE PRINCIPAL AMOUNT NOT EXCEEDING $20,000,000 TO REIMBURSE THE CITY FOR AMOUNTS ADVANCED BY THE CITY TO PAY THE COSTS FOR THE ACQUISITION, DESIGN, CONSTRUCTION, AND IMPROVEMENT OF THE PUBLIC UTILITIES OPERATIONS FACILITY; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the City intends to finance or refinance the costs of the acquisition, design, construction, rehabilitation, improvement and equipping of one or more operations facilities for the Public Utilities Department (the "Public Utilities Operations Facility") with the proceeds of bonds, notes or other obligations to be issued in the future in one or more series (the "Debt Financing");

WHEREAS, the City expects to initially pay certain costs of such acquisition, design, construction, rehabilitation, improvement and equipping of the Public Utilities Operations Facility with the proceeds of debt or other legally available funds of the City (collectively, the "Advanced Funds") and to reimburse itself for such expenditures with proceeds from the Debt Financing; and

WHEREAS, the City desires to set forth such intent in this Resolution for the purpose of compliance with United States Treasury Regulation Section 1.150-(2)(e).

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF PORT ORANGE, FLORIDA, THAT:

SECTION 1. AUTHORITY. This Resolution is adopted pursuant to Chapter 166, Part II, Florida Statutes, and other applicable provisions of law (collectively, the "Act").

SECTION 2. FINDINGS. The City Council hereby finds, determines and declares as follows:

A. The City is authorized under law, including, without limitation, the Act, to issue the Debt Financing for the valid public purpose of the acquisition, design, construction, rehabilitation, improvement and equipping of the Public Utilities Operations Facility.

B. It is desirable, convenient and in the interest of the City that the acquisition, design, construction, rehabilitation, improvement and equipping of the Public Utilities Operations Facility be financed as contemplated in this Resolution.

C. The City intends to finance the acquisition, design, construction, rehabilitation, improvement and equipping of the Public Utilities Operations Facility with the proceeds of its Debt Financing to be issued in the future.

D. The City expects to initially pay certain costs of the acquisition, design, construction, rehabilitation, improvement and equipping of the Public Utilities Operations Facility with Advanced Funds before the issuance of the Debt Financing.

SECTION 3. EXPRESSION OF INTENT. The City reasonably expects to use the proceeds of the Debt Financing to reimburse itself for all expenditures described herein made with the Advanced Funds. This Resolution is a declaration of the official intent of the City in that regard, within the contemplation of Section 1.150-(2)(e) of the Income Tax Regulations promulgated by the United States Department of the Treasury.

SECTION 4. MAXIMUM AMOUNT OF REIMBURSEMENT DEBT. The maximum principal amount of the Debt Financing reasonably expected to be issued to reimburse the City for the cost of the acquisition, design, construction, rehabilitation, improvement and equipping of the Public Utilities Operations Facility is $20,000,000.

SECTION 5. FURTHER ACTION. The officers, agents and employees of the City are hereby authorized to do all acts and things required of them by this Resolution for the full, punctual and complete performance of all the terms, covenants and agreements necessary or convenient to the issuance of the Debt Financing in order to reimburse the expenditure of the Advanced Funds for the costs of the Public Utilities Operations Facility as provided herein.

SECTION 6. EFFECTIVE DATE. This Resolution shall take effect immediately upon its adoption.

DULY PASSED AND ADOPTED at a regular meeting this ____day of January 2025.

CITY OF PORT ORANGE, FLORIDA

_____
Scott Stiltner, Mayor

ATTEST:

_____
Robin L. Fenwick, MMC, City Clerk

CITY COUNCIL AGENDA ITEM

COUNCIL MEETING DATE 1/21/2025

SUBJECT: (B8) Resolution No. 25-03 - Approval of First Quarter Budget Amendments for Fiscal Year 2024-2025

DEPARTMENT: Finance

GOAL: 5 - Fiscal Sustainability

RECOMMENDED MOTION: Move to approve Resolution No. 25-03.

SUMMARY: This item is the first quarter of the fiscal year budget review covering the period from October 1 to December 31, 2024. Staff performed a review covering the revenue and expenditure figures through the first quarter to compare the current amounts with the amount budgeted. In addition, a review of departmental operating needs was performed to see if adjustments were warranted. Additionally, there were a couple of project related carry forwards that required adjustment that are a part of this request.

Staff requests the Council amend the Fiscal Year 2024-2025 budget by revising the budget in total pursuant to itemization contained in Exhibit "A" of the Resolution.

Notable items in the budget amendments include:

- Fire Training Tower Project – Allocation of funds from Fire Impact Fees to complete the interior room to protect electronics from water streams during training
- Water/Sewer - Funding needed to cover interim repairs required before the construction of the Lowes/Gateway Lift Station Rehabilitation project
- Stormwater - Capital encumbrance amounts for stormwater improvements, rolled forward in November from FY24, were inadvertently doubled and these changes adjust the fund balance to the correct amount
- Golf Course at Cypress Head – Capital encumbrance from the Golf Course Fund in FY24 was not rolled forward into FY25 for bunker repairs and mower purchase
- Establish funding for future Stormwater Projects - Initial funding is from Hurricane Irma proceeds of $1,721,610 that were received in late 2024

PRESENTER: Linda Truitt

ATTACHMENTS:

1.	Resolution No. 25-03 with exhibit	Resolution No. 25-03.pdf

Linda Truitt	Created/Initiated - 1/2/2025
Linda Truitt	Approved - 1/6/2025
Matthew Jones	Approved - 1/9/2025
Wayne Clark	Final Approval - 1/14/2025

RESOLUTION NO. 25-03

A RESOLUTION OF THE CITY OF PORT ORANGE, VOLUSIA COUNTY, FLORIDA, PERTAINING TO BUDGET ADJUSTMENTS FOR FISCAL YEAR 2024-25; PROVIDING APPROVAL FOR ADJUSTMENTS OF 2024-2025 BUDGET ADJUSTMENTS; PROVIDING FOR SCRIVENER'S ERRORS; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, on September 18, 2024, the City of Port Orange, adopted Resolution 24-39 approving the City's total operating and capital budgets for Fiscal Year 2024-25; and

WHEREAS, the City of Port Orange adopted Resolution 24-47 on November 19, 2024; amending the total operating budget for Fiscal Year 2024-25; and

WHEREAS**,** in order to recognize unanticipated revenues and expenditures, it is necessary to make adjustments to the City's 2024-25 operating budget.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF PORT ORANGE, VOLUSIA COUNTY, FLORIDA:

Section 1. Section 1. The above Recitals are incorporated by reference into the body of this Resolution.

Section 2. Approval of 2024-2025 Budget Adjustments. The City's 2024-25 Operating Budget is hereby adjusted as set forth in **Exhibit "A"** attached hereto. As applicable, the transfer of funds may be made from any legally acceptable source.

Section 2. T h e budget items adopted in the preceding section shall govern the expenditures relating to such items for the City during the ensuing fiscal year effective October 1, 2024, through September 30, 2025.

Section 3. Supplemental appropriations, reductions of appropriations, emergency appropriations, and interdepartmental transfers of appropriations may be affected by the City Council and the City Manager as deemed necessary in strict compliance with the procedures specified in Chapter 2, Article VI, Division 3, Code of Ordinances, City of Port Orange, Florida.

Section 4. Scrivener's Errors. Typographical errors and other matters of a similar nature that do not affect the intent of this Resolution, as determined by the City Clerk and City Attorney, may be corrected.

Section 5. This resolution shall become effective immediately upon adoption.

_____
MAYOR SCOTT STILTNER

ATTEST:

_____
Robin Fenwick, MMC, City Clerk

Adopted on the _____day of _____

Reviewed and Approved: _____
Matthew J. Jones, City Attorney

Exhibit "A"

AMENDED BUDGET FISCAL YEAR 2024-25

Fund	Description	Adopted Resolution 24-39	Resolution 24-47	Resolution 25-03	Amended Budget
001	General Fund	$ 61,190,570	$ 4,061,756	$1,671,610	$ 66,923,936
010	National Opioid Litigation	44,687	83,445		128,132
011	Recreation Scholarship	22,450	-		22,450
019	Federal Disaster Fund	135,895	3,061,737		3,197,632
102	Tax Increment - Eastport	633,196	-		633,196
103	Tax Increment - Town Center	431,297	-		431,297
106	Recreational Facilities	246,700	32,363		279,063
109	Building & Inspections	2,649,016	-		2,649,016
111	Police Impact Fee	109,785	-		109,785
112	Fire Impact Fee	72,660	-	27,000	99,660
113	Transportation Impact Fee	273,530	-		273,530
313	Recreation Impact Fee	212,774	-		212,774
120	Police Benefit Trust	4,500	-		4,500
121	Police Forfeiture	70,000	-		70,000
122	Police Education Trust	10,000	-		10,000
123	Federal Police Forfeiture	15,000	-		15,000
199	Grant Special Revenue	5,134,124	-		5,134,124
214	Debt Services GO	901,838	-		901,838
217	Debt Services Eastport Tax Note	234,511	-		234,511
218	Debt Services Town Center Bonds	402,369	-		402,369
220	Debt Services Bonds	1,147,356	-		1,147,356
221	202X GO Bond Debt	30,000,000	-		30,000,000
301	Capital Projects	7,475,829	3,256,707		10,732,536
317	General Capital Replacement	5,827,865	8,761,063	84,414	14,673,342
321	Parks Bond Capital Projects	10,000,000	-		10,000,000
401	Water/Sewer	31,644,162	49,190,543	69,675	80,904,380
402	Wetland Mitigation	96,968	-		96,968
403	Water/Sewer R&R	5,450,000	48,053,563	69,675	53,573,238
404	SRF Debt Service	784,846	-		784,846
405	Water Impact Fee	679,627	-		679,627
406	WasteWater Impact Fee	0	-		0
409	Forestry	319,536	430,325		749,861
410	Solid Waste	10,708,138	-		10,708,138
412	Stormwater Utility	5,988,199	6,618,675	(841,571)	11,765,303
413	Stormwater Capital	9,252,488	6,954,949	880,039	17,087,476
414	Drainage Bond Sinking	699,004	-		699,004
450	Golf Course Operating	2,619,067	-	300,000	2,919,067
501	Information Technology	3,833,844	25,728		3,859,572
503	Fleet Maintenance	1,693,226	-		1,693,226
504	Risk Management	2,238,409	-		2,238,409
505	Lease & Replacement	2,466,256	2,154,663	411,805	5,032,724
	Grand Total:	**$ 205,719,722**	**$ 132,685,517**	**$2,672,647**	**$ 341,077,886**

Exhibit "A" DETAIL FOR RES. 25-3
FY25 1ST QUARTER BUDGET ADJUSTMENT REQUEST

FUND	ACCOUNT DESCRIPTION		ADJUSTMENT REQUEST	DESCRIPTION
GENERAL FUND - 001				
	APPROPRIATED FUND BALANCE		1,721,610	APPROPRIATED FUND BALANCE FY24 HURRICANE IRMA FUNDS
	APPROPRIATED FUND BALANCE		(50,000)	APPROPRIATED FUND BALANCE
		REVENUES	1,671,610	
	TRANSFER OUT - FUND 413		1,721,610	STORMWATER PROJECT FUNDING
	CAPITAL OUTLAY - PUBLIC WORKS		(50,000)	PW231 WOODEN BRIDGE R&R - REDUCE ROLL FORWARD
	CAPITAL OUTLAY - FIRE		(57,941)	FR221 STATION BASED ALERTING SYSTEM MOVE TO FUND 317
	TRANSFER OUT - FUND 317		57,941	FR221 STATION BASED ALERTING SYSTEM MOVE TO FUND 317
		EXPENDITURES	1,671,610	
FIRE IMPACT FEES - 311				
	APPROPRIATED FUND BALANCE		27,000	APPROPRIATED FUND BALANCE
		REVENUES	27,000	
	TRANSFER OUT - FUND 317		27,000	TRANSFER FOR FIRE TRAINING TOWER
		EXPENDITURES	27,000	
GENERAL CAPITAL REPLACEMENT - 317				
	TRANSFER IN - FUND 311		27,000	TRANSFER IN
	TRANSFER IN - FUND 001		57,414	TRANSFER IN
		REVENUES	84,414	
	CAPITAL OUTLAY/CIP - FIRE		57,414	FR221 STATION BASED ALERTING SYSTEM MOVE PROJECT FROM 001
	CAPITAL OUTLAY/CIP - FIRE		27,000	FR176 TRAINING TOWER, CONSTUCTION OF INTERIOR ROOM
		EXPENDITURES	84,414	
WATER AND SEWER - 401				
	APPROPRIATED FUND BALANCE		69,675	APPROPRIATED FUND BALANCE
		REVENUES	69,675	
	TRANSFER OUT - FUND 403		69,675	TRANSFER OUT
		EXPENDITURES	69,675	
WATER AND SEWER R&R - 403				
	TRANSFER IN - FUND 401		69,675	TRANSFER IN
		REVENUES	69,675	
	WATER & SEWER ENGINEERING		(430,325)	PU224 STORAGE BARN FOR FORESTRY EQUIPMENT, DUPLICATED IN ROLL FORWARD

WATER & SEWER ENGINEERING		500,000	PU233 LOWES/GATEWAY LIFTSTATION REHAB
	EXPENDITURES	69,675	
STORMWATER UTILITY - 412			
APPROPRIATED FUND BALANCE		(841,571)	APPROPRIATED FUND BALANCE
	REVENUES	(841,571)	
TRANSFER OUT - 412		(841,571)	STORMWATER CIP PROJECTS, ADJUSTED FROM FY24 ROLL FORWARD
	EXPENDITURES	(841,571)	
STORMWATER UTILITY CAPITAL PROJECTS - 413			
TRANSFER IN - 001		1,721,610	STORMWATER PROJECT FUNDING, HURRICANE IRMA PROCEEDS RECEIVED IN FY24
TRANSFER IN - 412		(841,571)	TRANSFER IN
	REVENUES	880,039	
STORMWATER PROJECT FUNDING		1,721,610	STORMWATER PROJECT FUNDING, HURRICANE IRMA PROCEEDS RECEIVED IN FY24
CAPITAL OUTLAY/CIP - STORMWATER		(1,235,681)	SW213 CITY CENTER IMPROVEMENTS REDUCTION OF FY24 ROLL FORWARD
CAPITAL OUTLAY/CIP - STORMWATER		394,110	SW181 DRAINAGE R&R ADJUSTMENT TO FY24 ROLLFORWARD
	EXPENDITURES	880,039	
GOLF COURSE - 450			
APPROPRIATED FUND BALANCE		300,000	APPROPRIATED FUND BALANCE, FUNDED FY24
	REVENUES	300,000	
CAPITAL OUTLAY - GOLF COURSE		300,000	BUNKER REPAIR FROM FY24 ROLLFORWARD
	EXPENDITURES	300,000	
LEASE & REPLACEMENT - 505			
APPROPRIATED FUND BALANCE		411,805	APPROPRIATED FUND BALANCE, FUNDED FY24
	REVENUES	411,805	
CAPITAL OUTLAY - PUBLIC WORKS/STORMWATER		352,800	DUMP TRUCKS FROM FY24 PO ROLL FORWARD
CAPITAL OUTLAY - GOLF COURSE		59,005	GREEENS MOWER FROM FY24 PO ROLL FORWARD
	EXPENDITURES	411,805	

REVENUES	2,672,647
EXPENDITURES	2,672,647
VARIANCE	-

-

CITY COUNCIL AGENDA ITEM

COUNCIL MEETING DATE 1/21/2025

SUBJECT: (E11) Parks and Recreation Advisory Board Report

DEPARTMENT: City Clerk

GOAL:

RECOMMENDED MOTION:

SUMMARY:

PRESENTER:

ATTACHMENTS:

Robin Fenwick Created/Initiated - 1/6/2025

CITY COUNCIL AGENDA ITEM

COUNCIL MEETING DATE 1/21/2025

SUBJECT: (F12) Second Reading - Ordinance No. 2024-25 - Comprehensive Plan Amendment/Annual Capital Improvements Element Update (Case No. CPAM-24-0004)

DEPARTMENT: Community Development

GOAL: 5 - Fiscal Sustainability

RECOMMENDED MOTION: Move to approve Ordinance No. 2024-25, amending the Capital Improvements Element of the City's Comprehensive Plan, in accordance with Florida Statutes

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SUMMARY: PLANNING COMMISSION ACTION (11/21/24): Recommended approval 6-0

Each year the City is required to amend it's Comprehensive Plan Capital Improvements Element (CIE) to include projects from the City's current FY25-30 Capital Improvements Program (CIP). The projects copied from the CIP are primarily improvements needed to maintain the City's adopted level of service (LOS) standards for public facilities. These facilities include water, sewer, stormwater, solid waste, roads, parks, and schools. The CIP was adopted by City Council as part of the FY25 Operating and Capital Budgets on September 18, 2024, by Resolution No. 24-39. The FY 25-30 CIP includes various projects to support the LOS for City public facilities. The proposed amendments take these projects previously approved by the Council with the CIP and add them to the CIE.

State law requires that local governments update their Comprehensive Plan Capital Improvements Element (CIE) every year to show that they have funded or planned to fund the public facility improvements needed to support their population. The proposed amendments in Exhibit A are required to be in the underline/strikethrough format. For each table or text that is to be updated from the prior year CIP (FY24 – FY29) to the current year CIP (FY25 – FY30) the deleted prior year text is shown in strikethrough (~~strikethrough~~) format and the added current year text is underlined (underlined). Text that is not struck through or underlined remains as existing text in the FY 25-30 CIE.

The Staff Report is attached for more information.

PRESENTER: Penelope Cruz, Tim Burman

ATTACHMENTS:

1.	Ordinance No. 2024-25 with exhibit	Ordinance No. 2024-25 with exhibit.pdf
2.	STAFF REPORT	STAFF REPORT .pdf
3.	Business Impact Estimate - ORD 2024-25- CPAM-24-0004	Business Impact Estimate - ORD 2024-25- CPAM-24-0004.pdf

Penelope Cruz	Created/Initiated - 12/12/2024
Amanda Bonin	Final Approval - 1/2/2025

ORDINANCE NO. 2024-25

AN ORDINANCE OF THE CITY OF PORT ORANGE, VOLUSIA COUNTY, FLORIDA, AMENDING THE COMPREHENSIVE PLAN CAPITAL IMPROVEMENT ELEMENT; PROVIDING FOR THE FY2025-2030 FIVE-YEAR SCHEDULE OF CAPITAL IMPROVEMENTS AND SUPPORTING DATA; PROVIDING FOR REPEAL OF CONFLICTING ORDINANCES AND RESOLUTIONS; PROVIDING FOR SEVERABILITY; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, after careful review, the Planning Commission, sitting as the Local Planning Agency, has forwarded a recommendation to the City Council regarding the adoption of the Five Year Schedule of Capital Improvements as set forth in the Capital Improvement Element of the Comprehensive Plan for the City of Port Orange including supporting data; and

WHEREAS, Section 163.3177(3), Florida Statutes (2024) requires the City to review the Capital Improvement Element annually, together with other elements or sub-elements that are directly related to the Five Year Schedule of Capital Improvements; and

WHEREAS, the attached documents incorporate data from the Transportation Planning Organization (TPO) Transportation Improvements Program (TIP) and the Volusia County School District Five-Year Work Program; and

WHEREAS, the City Council has provided an opportunity to receive comments and proposals from the general public with regard to the adoption of the Five-Year Schedule of Capital Improvements; and

WHEREAS, the City has determined that this ordinance may be published in accordance with Section 166.041(3)(a), Florida Statutes (2024); and

WHEREAS, the City Council has received comments on the proposed amendment to the Comprehensive Plan; and

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF PORT ORANGE, VOLUSIA COUNTY, FLORIDA:

Section 1. For purposes herein, the term “Comprehensive Plan”, shall mean the Comprehensive Plan for the City of Port Orange, entitled “Port Orange Comprehensive Plan 2022-2045”, consisting of eleven (11) elements, including Future Land Use; Transportation; Housing; Public Facilities; Public Schools Facilities; Coastal Zone Management; Conservation; Recreation and Open Space; Intergovernmental Coordination; Capital Improvements; Property Rights; and Appendix 1 – Map Series, all as adopted by Ordinance Nos. 2024-04, 2024-12, and this ordinance.

Section 2. The City Council hereby adopts an amendment setting forth the Five-Year Schedule of Improvements for the Capital Improvements Element for the Comprehensive Plan City of Port Orange Comprehensive Plan 2022-2045, as attached hereto as **Exhibit “1”**, and incorporated herein by this reference.

Section 3. The Community Development Director or designee is hereby authorized to transmit copies of the proposed amendment to the Capital Improvement Element of the Comprehensive Plan City of Port Orange 2022-2045 to the appropriate agencies and to any other unit of local government.

Section 4. All ordinances or resolutions or parts of ordinances or resolutions in conflict with the provisions of this ordinance are hereby repealed to the extent of such conflict.

Section 5. If any provision of this ordinance or the application thereof to any person or circumstance is held invalid, the invalidity shall not affect other provisions or

applications of the ordinance which can be given effect without the invalid provision or application, and to this end the provisions of this ordinance are declared severable.

Section 6. This ordinance shall become effective immediately upon adoption.

_____
MAYOR SCOTT STILTNER

ATTEST:

_____
Robin L. Fenwick, MMC, City Clerk

Passed on first reading on the day of

Passed and adopted on second and final reading on the day of

Reviewed and Approved: _____
Shannon K. Balmer, Senior Assistant City Attorney

Exhibit 1

Annual Update to the Capital Improvements Element

~~Strikethrough~~ indicates text is to be deleted; Underline indicates text is to be added

Please Note: No changes after page 10-27

Chapter 10

CAPITAL IMPROVEMENTS

Goals, Objectives, & Policies

This Element, intended to demonstrate the financial feasibility of the City of Port Orange's Comprehensive Plan, commences in the fiscal year ~~2023-24~~2024-25 and identifies potential projects for the initial five-year planning period. Individual Capital Improvement needs identified in this Element are, for the most part, those improvements which cost $25,000 or more and are generally non-recurring purchase items. The capital improvements as may be identified in the other Elements of this Comprehensive Plan or provided in the City's annual update, pursuant to Section 163.3177(3)(b), Florida Statutes, are listed with a brief description in Table 1 (Capital Improvements Schedule) along with their estimated cost, funding source, and projected year of expenditure. The improvements are listed by type of service, related to the various Elements of the Comprehensive Plan. The Capital Improvements Element addresses existing and future capital improvements needed for at least the first five fiscal years after the adoption of the comprehensive plan. Therefore, Table 1 lists improvements identified for the years ~~2023-2028~~2024-2029.

The capital improvements projects listed in Table 1 are not inclusive of all anticipated capital expenditures by the City during the designated time period. For the most part, the list of improvements has been limited to the capital projects required to meet or maintain adopted LOS standards or implement the Goals, Objectives, and Policies of the Comprehensive Plan. Improvements on a smaller scale (generally under $25,000 in cost) are outlined in the City's five-year Capital Improvement Program and annual budget as they are needed over time.

Capital Improvements Highlights

1. Requires the adoption of the Capital Improvements Schedule to ensure public improvements meet adopted Level of Service (LOS) Standards;
2. Identifies sound fiscal means to ensure the timely and necessary installation and maintenance of public facilities needed; and
3. Requires prioritization criteria for capital improvement projects.

TABLE 1.
CAPITAL IMPROVEMENTS SCHEDULE

Project #	Description	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Total
WATER							
URP001	Water System Replacement/Upsizing	1,500,000	500,000	500,000	500,000	500,000	3,000,000
Water/Sewer R&R (403)		1,500,000	500,000	500,000	500,000	500,000	3,500,000
-	Total	1,500,000	500,000	500,000	500,000	500,000	3,500,000
Planned replacement of undersized galvanized steel piping in older sections of the city and peninsula area. Target areas to be accomplished based on current priorities.							
URP200	South Peninsula Force Main Upgrades	150,000	1,000,000	–	–	–	1,150,000
Water/Sewer R&R (403)		150,000	1,000,000	–	–	–	1,150,000
-	Total	150,000	1,000,000	–	–	–	1,150,000
The sewer system in Ponce Inlet is owned and operated by the City of Port Orange. This wastewater transmission system improvement project involves replacing approximately 2,100 LF existing Ductile Iron Pipe (DIP) force main with new HPDE/PVC force main along S. Peninsula Dr from Beach Street to the Ponce Inlet Master lift station The existing force main pipe material is ductile iron and has begun to corrode from the inside due to the corrosive sewer gasses. As the pipe continues to deteriorate, the possibility of a failure increases dramatically. The new force main will be sized to handle all of the existing flow, plus any additional future flow from the Town of Ponce Inlets septic to sewer program.							
WWP003	Water Treatment Plant R&R - Equipment	200,000	200,000	200,000	250,000	250,000	850,000
Water/Sewer R&R (403)		200,000	200,000	200,000	250,000	250,000	1,100,000
-	Total	200,000	200,000	200,000	250,000	250,000	1,100,000
Planned improvements for City's water treatment plant and various wells per Table 2A Water Treatment Plant Improvements.							
WWP008	Water Treatment Plant-Raw Water Main Replacement	–	–	3,000,000	–	–	3,000,000
Water/Sewer R&R (403)		–	–	3,000,000	–	–	3,000,000
-	Total	–	–	3,000,000	–	–	3,000,000
There is currently only one pipeline from the wellfield on Shuntz Road to the Garnsey Water Treatment Plant. This pipeline provides 80% of the well water into the treatment plant. The 30-inch diameter, 5 mile long prestressed concrete pipeline has been in service over 30 years. It is a specialty pipe that staff cannot repair in house. In fact, there are very few specialty firms that can repair this type of pipeline. Should the pipe fail, damages would be significant to the surrounding area and significantly impair the treatment plants ability to supply drinking water to the customers. This project would provide a secondary pipeline to the treatment plant to provide reliability on the system.							
WRP001	City-Wide Class Pipe Replacement	750,000	750,000	750,000	750,000	750,000	3,000,000
Water/Sewer R&R (403)		750,000	750,000	750,000	750,000	750,000	3,750,000
-	Total	750,000	750,000	750,000	750,000	750,000	3,000,000
Identify and replace critical sections of large diameter (10" and greater) potable water transmission mains that are construction out of Class Pipe. Class Pipe water mains are an industry wide problem in water distribution. Over time the pipe can fail prematurely causing outages for large areas of a service area and require expensive emergency repairs. Failures have already occurred on Spruce Creek Road and Taylor Road, causing significant damage.							
-	TOTAL - WATER	2,600,000	2,450,000	4,450,000	1,500,000	1,500,000	9,850,000

Project #	Description	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Total
SANITARY SEWER							
URH001	Sewer System Rehabilitation	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	4,000,000
Water/Sewer R&R (403)		1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	5,000,000
	Total	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	5,000,000
There are currently 110 lift stations in the collection system. This is an on-going repair and rehabilitation project for the sewer collection system at each lift station. The scope of work will depend upon the condition, age and capacity of the pipeline.							
SSP002	Water Reclamation Facility R&R	500,000	500,000	550,000	550,000	500,000	2,100,000
Water/Sewer R&R (403)		500,000	500,000	550,000	550,000	500,000	2,600,000
	Total	500,000	500,000	550,000	550,000	500,000	2,600,000
Scheduled facility repair and equipment replacement of electrical and mechanical system components for the City's wastewater treatment plant per Table 2D Wastewater Treatment Plant Improvements.							
URH003	Sewer System Rehab - Force Main River Crossing	2,500,000	-	-	-	-	2,500,000
Future Grant/Bonds		2,500,000	-	-	-	-	2,500,000
	Total	2,500,000	-	-	-	-	2,500,000
Scheduled facility repair and equipment replacement of electrical and mechanical system components for the City's wastewater treatment plant per Table 2D Wastewater Treatment Plant Improvements.							
SSP017	Water Reuse Program	150,000	150,000	-	-	-	300,000
Water/Sewer R&R (403)		150,000	150,000	-	-	-	300,000
	Total	150,000	150,000	-	-	-	300,000
A three million gallon ground storage tank with pump station to provide additional reuse supply for irrigation and minimize discharge to the Halifax River. Location to be identified in utility master plan. Staff will apply for grant funding. Current grant funding from SFRWMD is 33% for shovel ready projects.							
SLS002	WRF Replace Existing Lift Stations	100,000	100,000	100,000	100,000	100,000	400,000
Water/Sewer R&R (403)		100,000	100,000	100,000	100,000	100,000	500,000
	Total	100,000	100,000	100,000	100,000	100,000	500,000
There are 110 sewage lift stations located throughout the city which pump sewage from the gravity collection system to the wastewater treatment plant. Life expectancy of the equipment is 15 years. Much of the existing equipment is at the end of their useful life. Costs for repair/rehabilitation/replacement currently averages $60,000 per station. Each year the stations are evaluated based on age, capacity, and overall condition. In FY 20, the stations located at Halifax Estates, Devon St., Town Homes West and Sugar Forest are anticipated to require capital R&R. This is an ongoing R&R program with the anticipation of work on 5 to 6 stations per year.							
SLS203	Williams Regional Lift Station Rehab	1,500,000	-	-	-	-	1,500,000
Water/Sewer R&R (403)		1,500,000	-	-	-	-	1,500,000
	Total	1,500,000	-	-	-	-	1,500,000
This wastewater transmission system improvement project involves the design, permitting, and construction of mechanical, electrical, Odor control, building, and site upgrades to the Williamson Regional Lift Station (Station No. 95). This project is necessary to insure uninterrupted collection and transmission of wastewater. Williamson is a regional lift station that ultimately provides service to residences in the southwest portion of the City. The proposed improvements include installation of an advance odor control system, installation of static mixers in the wet well, replacement of electrical equipment damaged by the excessive hydrogen sulfide gasses, and rehabilitation of the existing electrical building.							

Project #	Description	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Total
SLS204	Sugar Forest Lift Station Rehab	700,000	—	–	–	–	700,000
Water/Sewer R&R (403)		700,000	—	–	–	–	700,000
-	Total	700,000	—	–	–	–	700,000
This wastewater transmission system improvement project involves the design, permitting, and construction of mechanical, electrical, and site upgrades to the Sugar Forest Lift Station (Station No. 40). This project is necessary to insure uninterrupted collection and transmission of wastewater. Sugar Forest lift station provides service to residences and businesses in the Sugar Mill Gardens section of the City. Due do the shallow existing wet well, the gravity sewer lines in the area of the lift station are often surcharged, additionally the lift station is constructed in the center median at the entrance of the Sugar Forest neighborhood. This location makes it difficult to properly maintain the lift station. The proposed improvements include installing a new, deeper wet well, converting from suction lift pumping to submersible pumping, installation of a new electrical control panel, and site improvements.							
SLS206	Halifax Estates Lift Station Rehab	640,000	—	–	–	–	640,000
Water/Sewer R&R (403)		640,000	—	–	–	–	640,000
-	Total	640,000	—	–	–	–	640,000
This wastewater transmission system improvement project involves the design, permitting, and construction of mechanical, electrical, and site upgrades to the Halifax Estates lift station (Station No. 9). This project is necessary to insure uninterrupted collection and transmission of wastewater. Halifax Estates lift station provides service to approximately 50 residences and businesses in the Halifax Mobile Estates. The proposed improvements include converting from suction lift pumping to submersible pumping, installation of a new control panel, and site improvements including raising the wet well top and electrical control panel above the 100-year flood plain.							
SLS207	Ponce Inlet Master Lift Station	180,000	1,750,000	–	–	–	1,930,000
Water/Sewer R&R (403)		180,000	1,750,000	–	–	–	1,930,000
-	Total	180,000	1,750,000	–	–	–	1,930,000
The sewer system in Ponce Inlet is owned and operated by the City of Port Orange. This wastewater transmission system improvement project involves the design, permitting, and construction of complete mechanical, electrical, and odor control upgrades to the Ponce Inlet Master Lift Station (Station No. 195). This project is necessary to insure uninterrupted collection and transmission of wastewater. the Ponce Inlet Master is a regional lift station that ultimately provides service to approximately 1,700 residences in Ponce Inlet and Wilber-by-the-Sea. The station was originally constructed in 1991 and was last upgraded in 2006.							
SLS208	Southern Pines Lift Station Rehab	700,000	—	–	–	–	700,000
Water/Sewer R&R (403)		700,000	—	–	–	–	700,000
-	Total	700,000	—	–	–	–	700,000
This wastewater transmission system improvement project involves the design, permitting, and construction of mechanical, electrical, and site upgrades to the Southern Pines lift station (Station No. 22). This project is necessary to insure uninterrupted collection and transmission of wastewater. Southern Pines lift station provides service to approximately 300 residences and businesses in the Southern Pines & Spruce Creek Village subdivisions and surrounding area. The proposed improvements include converting from suction lift pumping to submersible pumping, installation of a new control panel, and site improvements including raising the wet well top and electrical control panel above the 100-year flood plain.							
SLS209	Waters Edge Lift Station #38	1,025,000	—	–	–	–	1,025,000
Water/Sewer R&R (403)		1,025,000	—	–	–	–	1,025,000
-	Total	1,025,000	—	–	–	–	1,025,000
This wastewater transmission system improvement project involves the design, permitting, and construction of mechanical, electrical, and site upgrades to the Water's Edge 2 Lift Station (Station No. 38). This project is necessary to insure uninterrupted collection and transmission of wastewater. Water's Edge 2 lift station provides service to approximately 610 residences and businesses in the Water's Edge subdivision. The proposed improvements include converting from suction lift pumping to submersible pumping, installation of a new control panel, and site improvements including raising the wet well top and electrical control panel above the 100-year flood plain.							

Project #	Description	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Total
SLS210	Waters Edge Lift Station #42	1,025,000	—	–	–	–	1,025,000
Water/Sewer R&R (403)		1,025,000	—	–	–	–	1,025,000
-	Total	1,025,000	—	–	–	–	1,025,000
This wastewater transmission system improvement project involves the design, permitting, and construction of mechanical, electrical, and site upgrades to the Water's Edge 1 Lift Station (Station No. 42). This project is necessary to insure uninterrupted collection and transmission of wastewater. Water's Edge 1 lift station provides service to approximately 550 residences and businesses in the Water's Edge subdivision. The proposed improvements include converting from suction lift pumping to submersible pumping, installation of a new control panel, and site improvements including raising the wet well top and electrical control panel above the 100-year flood plain.							
SSP201	Leisure Circle Sewer Improvement	500,000	—	–	–	–	500,000
Water/Sewer R&R (403)		500,000	—	–	–	–	500,000
-	Total	500,000	—	–	–	–	500,000
This project will include removal and replacement of three sanitary manholes and approximately 600 LF of failing 10" clay gravity sewer main. This gravity sewer collection system, constructed in the late 1970's is failing and needs to be replaced. Due to the depth and level of failure, this line is not able to be rehabilitated in place by pipe lining.							
SSP202	Reclaimed Lake Improvements (Lake A & Lake B)	2,000,000	—	–	–	–	2,000,000
Water/Sewer R&R (403)		2,000,000	—	–	–	–	2,000,000
-	Total	2,000,000	—	–	–	–	2,000,000
City currently stores treated reclaimed water in Lake A and Lake B. To provide additional reclaimed water storage, the Lake B reservoir with be evaluated and designed with higher berms to match the Lake A berm elevation and both lakes are proposed to operate with 1-ft of additional staging. This is anticipated to require extensive permitting and modification of the existing control and drainage structures to accommodate the new hydraulic profile. A draft Preliminary Design Report (PDR) evaluating the feasibility and wetland impacts of raising the Lake B berm height to match Lake A's berm height and for both Lakes to operate at a higher high-water level (HWL), providing additional reclaimed water storage.							
SSP203	Water Reclaimed Facility Upgrades	2,500,000	—	70,000,000	–	–	72,500,000
Water/Sewer R&R (403)		2,500,000	—	70,000,000	–	–	72,500,000
-	Total	2,500,000	—	70,000,000	–	–	72,500,000
City currently stores treated reclaimed water in Lake A and Lake B. To provide additional reclaimed water storage, the Lake B reservoir with be evaluated and designed with higher berms to match the Lake A berm elevation and both lakes are proposed to operate with 1-ft of additional staging. This is anticipated to require extensive permitting and modification of the existing control and drainage structures to accommodate the new hydraulic profile. A draft Preliminary Design Report (PDR) evaluating the feasibility and wetland impacts of raising the Lake B berm height to match Lake A's berm height and for both Lakes to operate at a higher high-water level (HWL), providing additional reclaimed water storage.							
	TOTAL - SANITARY SEWER	15,020,000	3,500,000	71,650,000	1,650,000	1,600,000	91,820,000
WATER & SANITARY SEWER							
UCP001	City Cost Participation	–	—	50,000	50,000	50,000	100,000
Water Impact Fee (405)		–	—	25,000	25,000	25,000	75,000
Sewer Impact Fee (405)		–	—	25,000	25,000	25,000	75,000
-	Total	–	—	50,000	50,000	50,000	150,000
Citywide annual cost participation program with new development to upsize various water and sewer lines, extension of various mains, upsizing of lift stations, and other miscellaneous items.							
-	TOTAL - WATER & SANITARY SEWER	–	—	50,000	50,000	50,000	150,000

Project #	Description	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Total
TRANSPORTATION							
PCL205	Road Resurfacing and Reconstruction	800,000	800,000	800,000	800,000	800,000	3,200,000
Capital Projects (301)		800,000	800,000	800,000	800,000	800,000	4,000,000
-	Total	800,000	800,000	800,000	800,000	800,000	4,000,000
Multi Year Reconstruction Program. Ongoing routine maintenance program to repair/replace paving on existing streets throughout the city. This project also includes unexpected repairs that cannot be performed by in-house staff.							
200905	Williamson Blvd. N. of Pavilion	-	-	-	220,000	260,935	220,000
Developer Constructed		-	-	-	220,000	260,935	480,935
-	Total	-	-	-	220,000	260,935	480,935
This project involves adding 2 lanes to the existing 2 lane Williamson Blvd. roadway from the north boundary of the Pavilion project north to Town West Blvd., a 0.53 mile section. Project cost estimates are based on construction of an additional 2 travel lanes within the existing right-of-way with minimal impact to the existing roadway. The new construction will require stormwater treatment and it will be necessary to acquire an estimated 1 acre of off-site property for this purpose.							
200907	Coraci Blvd. Extension	-	-	-	257,000	2,150,000	257,000
Developer Constructed		-	-	-	257,000	2,150,000	2,407,000
-	Total	-	-	-	257,000	2,150,000	2,407,000
This project involves construction of a 1/2 mile 2-lane divided roadway extending Coraci Blvd. 2600' from the south limits of Coquina Cove III to Carmody Lake Drive within the existing undeveloped right-of-way. Drainage improvements are projected to be constructed in the right-of-way. This will serve as an alternate route and reliever route for traffic generated by the Forest Lakes subdivision and to a lesser extent to Coquina Cove and reduce impacts on Taylor Road. This roadway is indicated as a future collector road in the Comprehensive Plan.							
PNC015	Yorktowne Blvd North Section (Nautica Lakes)	-	-	-	2,131,414	-	2,131,414
Developer Fairshare Contr. (Planned)		-	-	-	2,131,414	-	2,131,414
-	Total	-	-	-	2,131,414	-	2,131,414
This project is proposed as either a 2-lane or 4-lane divided curb and gutter road designed to major collector street standards. The roadway design is complete and was done in conjunction with the Nautica Lakes development. This improvement is required to complete the Yorktowne Blvd. connection between Hidden Lakes Dr. and Willow Run Blvd. Completion of these sections would redirect traffic and relieve congestion at the I-95/Dunlawton Ave. intersection and Williamson Boulevard, south of Willow Run Boulevard.							
201015	Willow Run Boulevard Widening	-	200,000	-	-	1,125,000	200,000
Capital Projects (301)		-	200,000	-	-	-	200,000
TPO Funds		-	-	-	-	1,125,000	1,125,000
-	Total	-	200,000	-	-	1,125,000	1,325,000
A 1/4-mile segment of Willow Run east of Williamson Boulevard to the proposed intersection of the Yorktowne Boulevard extension will need to be improved to accommodate future traffic flows diverted from Williamson Boulevard and future traffic on the new Yorktowne north extension. A traffic circle or other improvements at the Willow Run/Yorktowne intersection will be considered as part of the design.							

Project #	Description	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Total
PNC200	Dunlawton and Yorktowne Turn Lane Bundle	259,500	-	1,774,588	-	-	2,034,088
Capital Projects (301)		259,500	-	177,459	-	-	436,959
TPO Funds		-	-	1,597,129	-	-	1,597,129
-	Total	259,500	-	1,774,588	-	-	2,034,088
This project is a bundle of three previous separate projects (PNC020, IMI011, PNC018, PNC019). This project consists of five turn lane projects: 1) Westbound Dunlawton Ave. right turn lane at Nova Road; extension of existing left turn lanes westbound Dunlawton Ave. at Clyde Morris Boulevard and eastbound Dunlawton Ave. at Nova Road and a right-turn lane on southbound Yorktowne Boulevard at the intersection with Dunlawton Avenue and modification to the left-turn lane on northbound Yorktowne Boulevard at the intersection with Dunlawton Avenue.							
PNC024	Clyde Morris Turn Lane Bundle	215,864	275,000	-	829,696	-	1,320,560
Capital Projects (301)		21,586	275,000	-	9,170	-	305,756
TPO Funds		194,278	-	-	820,526	-	1,014,804
-	Total	215,864	275,000	-	829,696	-	1,320,560
THIS PROJECT IS PART OF A BUNDLE OF CLYDE MORRIS TURNLANES. (PNC021, PNC022, PNC023). This project consists of a right turn lane on southbound Clyde Morris Boulevard at the intersection with Madeline Avenue to improve traffic flow, reduce delays for turning vehicles and through vehicles, and improve intersection safety. The project will add roadway capacity at the intersection and reduce delays for northbound vehicles turning right or through northbound traffic. Additional right-of-way is anticipated to be needed for this project. The City submitted the project for TPO funding in Spring 2019 and a feasibility study was completed in February 2020. Under current policy, the TPO will fund up to 90% of the project design, construction and CEI cost, and the City will fund 10% of the project. The project is now on the TPO's Project Priority List and is eligible for funding if the City commits to support the design and construction phases based on the feasibility study. The City's local match will be funded with restricted Gas Tax funds (Fund 301). The cost estimate was updated in March 2022 based on inflation and current cost data.							
PNC201	Widening of Madeline Avenue Between Clyde Morris Blvd & Nova Road	45,000	200,000	-	1,125,000	-	1,370,000
Transportation Impact Fee (312)		4,500	20,000	-	112,500	-	137,000
TPO Funds		40,500	180,000	-	1,012,500	-	1,233,000
-	Total	45,000	200,000	-	1,125,000	-	1,370,000
The project consists of widening the current vehicle travel lanes on Madeline Avenue between Clyde Morris Boulevard and Nova Road. The proposed improvements are anticipated to be constructed within the existing right-of-way of Madeline Avenue; additional right-of-way is not anticipated to be required for this project. Removal of existing trees within the right-of-way may be required to accommodate the widening to improve driver safety, maintain sidewalks, LOS capacity, safety conditions, and long-term maintenance. The City submitted the project for TPO funding in Spring 2020. Under the current policy, the TPO will fund up to 90% of the project design and construction cost and the City will fund 10% of the project. Once ranked by the TPO, a feasibility study will be conducted; upon completion, the project will be eligible for inclusion in the TPO program if the City commits to support the design and construction phases. The estimated design and construction cost of the project will be adjusted after the feasibility study is completed.							

Project #	Description	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Total
001	Madeline Avenue Eastbound & Westbound Turn Lane Improvement at Nova Road	-	155,800	-	-	-	155,800
Capital Projects (301)		-	15,580	-	-	-	15,580
TPO Funds		-	140,220	-	-	-	140,220
-	Total	-	155,800	-	-	-	155,800
The project consists of widening the current vehicle travel lanes on Madeline Avenue between Clyde Morris Boulevard and Nova Road. The proposed improvements are anticipated to be constructed within the existing right-of-way of Madeline Avenue; additional right-of-way is not anticipated to be required for this project. Removal of existing trees within the right-of-way may be required to accommodate the widening to improve driver safety, maintain sidewalks, LOS capacity, safety conditions, and long-term maintenance. The City submitted the project for TPO funding in Spring 2020. Under the current policy, the TPO will fund up to 90% of the project design and construction cost and the City will fund 10% of the project. Once ranked by the TPO, a feasibility study will be conducted; upon completion, the project will be eligible for inclusion in the TPO program if the City commits to support the design and construction phases. The estimated design and construction cost of the project will be adjusted after the feasibility study is completed.							
201859	Taylor Rd./Williamson Blvd. Intersection Improvement	-	2,000,000	4,521,736	-	-	6,521,736
Transportation Impact Fee (312)		-	1,775,000	452,174	-	-	2,227,174
TPO Funds		-	225,000	4,069,562	-	-	4,294,562
-	Total	-	2,000,000	4,521,736	-	-	6,521,736
A Feasibility Study was completed in April 2020. The Feasibility Study identified alternatives that provide effective Improvements to minimize delays to traffic, eliminate or reduce crashes, and improve sidewalks and crosswalks for pedestrians at the Taylor Road and Williamson Boulevard intersection, and along the Taylor Road/Dunlawton Avenue corridor al 1-95. Under current policy, the TPO will fund up to 90% of the project and the City will fund 10% of the project. the TPO does not provide matching funds for land acquisition. Now that the study is completed. the projects identified by the feasibility study will be eligible for inclusion in the TPO's Project Priority List for design and construction funding. The current estimated cost for the improvement recommended in the Feasibility Study is $4,137,135 and this cost does not include anticipated right-of-way needed for stormwater drainage at an anticipated 1.75 million dollars. The TPO does not provide matching funds for land or right-of-way acquisition. Staff plans to further discuss the recommendations in this Feasibility Study with FDOT to determine if these can be improvements completed by FOOT as they would add capacity, minimize delays to traffic, eliminate or reduce crashes, and improve sidewalks and crosswalks for pedestrians. The proposed improvements include Taylor Road at Williamson Boulevard: 1) Provide an additional southbound left tum lane (3rd tum lane) and 2) Modify the sidewalk and crosswalk on the north leg as shown to Improve pedestrian visibility. Taylor Road/Dunlawton Avenue at 1-95 SB Ramps: 1) Provide an additional southbound left tum lane, and 2) Remove the southbound channelized right tum lane and bring it under a signal, 3) Add a lane under the bridge in the westbound direction that will drop as outside westbound left tum lane at Taylor Road and Williamson Boulevard, and 4) Provide an eastbound right tum lane and remove the channelized right tum lane. Dunlawton Avenue at 1-95 NB Ramps: 1) Extend the existing storage lane for the westbound left turn lo 1-95 SB on-ramp to help mitigate the lane imbalance issue along westbound Taylor Road, 2) Add an exclusive westbound right tum for 1-95 NB on-ramp with the current westbound outside lane being dropped as a right tum lane to 1-95 NB on-ramp. and 3) Provide sidewalk south of Taylor Road between east of Williamson Boulevard and east of 1-95 NB Ramps.							

Project #	Description	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Total
OMI037	Taylor Rd./Clyde Morris Blvd. Intersection Improvements	39,000	—	90,000	–	385,000	129,000
Transportation Impact Fee (312)		3,900	—	9,000	–	38,500	51,400
TPO Funds		35,100	—	81,000	–	346,500	462,600
-	Total	39,000	—	90,000	–	385,000	514,000
The project consists of looking at options to modify the intersection at Taylor Road/Clyde Morris Boulevard to improve movement through the intersection, specifically the eastbound Taylor Road though movement and left tum onto Clyde Morris Boulevard. The intersection experiences congestion throughout the day, most notably in the morning and late afternoon. Additional right-of-way is anticipated to be needed for any intersection improvements. The City submitted the project for TPO funding to prepare a Feasibility Study in Spring 2018. A Feasibility Study will first need to be conducted to develop an estimated cost for design and construction. Under currer1t policy, the TPO will fund up to 90% of the project and the City will fund 10% of the project. Once the study is completed, the project will be eligible for inclusion In the TPO's Project Priority List for design and construction funding and the cost estimates will be updated. The City's local match will be funded with Transportation Impact Fee Fund 312.							
PNC016	EB & WB Herbert St. Turn Lanes at Nova Rd	215,864	275,000	–	911,696	–	1,402,560
Capital Projects (301)		21,586	275,000	–	91,170	–	387,756
TPO Funds		194,278	—	–	820,526	–	1,014,804
-	Total	215,864	275,000	–	911,696	–	1,402,560
The project consists of looking at options to modify the intersection of Nova Road and Herbert Street to improve movement through the intersection. The intersection experiences congestion throughout the day, most notably in the morning and late afternoon. Additional right-of-way is anticipated to be needed for any intersection improvements. The City submitted the project for TPO funding in Spring 2017 but as of March 2022, this project has not been selected to receive funds for a feasibility study. The estimated design and construction cost of the project is $760,000 but will be adjusted after the feasibility study is completed. Based on this estimated cost, the City's share would be $78,000 including $2,000 for feasibility study, $10,000 for design, $60,000 for construction, and $6,000 for CEI. The City's local match will be funded with restricted Gas Tax funds (Fund 301). As part application request for a feasibility study, the City requests that multiple options be evaluated. With improvements to the intersection, specifically, turn lane improvements on Herbert Street and Nova Road along with corresponding signal timing improvements more green time could be allocated to Nova Road.							
	TOTAL - TRANSPORTATION	1,575,228	3,905,800	7,186,324	6,274,806	4,720,935	18,942,158
DRAINAGE							
DIP200	Southwinds Stormwater Pond Outfall Retrofit	–	1,500,000	–	–	–	1,500,000
Stormwater Utility Capital Project Fund 413		–	1,500,000	–	–	–	1,500,000
-	Total	–	1,500,000	–	–	–	1,500,000
This project involves modification to the existing stormwater ponds of the Southwinds neighborhood stormwater system. Currently, the subdivision does not have a positive stormwater outfall discharge. An engineered plan will be required to design and permit an outfall.							
DIP201	White Place & Riverside Drive Drainage Improvement	50,000	1,250,000	–	–	–	1,300,000
Stormwater Utility Capital Project Fund 413		50,000	1,250,000	–	–	–	1,300,000
-	Total	50,000	1,250,000	–	–	–	1,300,000
Analyze, design, and construct improvements to White Place and Riverside Drive drainage system to improve storm water storage and conveyance to reduce potential for flooding. Improvements will include the boring and installation of properly sized pipe.							

Project #	Description	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Total
DIP075	Pipe Repair and Replacement	500,000	500,000	500,000	500,000	500,000	2,000,000
Stormwater Utility Capital Project Fund 413		500,000	500,000	500,000	500,000	500,000	2,500,000
-	Total	500,000	500,000	500,000	500,000	500,000	2,500,000
R & R funding to Replace/repair deteriorated and/or undersized corrugated metal pipes with properly sized reinforced concrete pipe or liners to improve storm water conveyance to reduce potential for flooding.							
DIP073	Storm Water Master Plan Phase II	-	1,500,000	1,500,000	1,500,000	1,500,000	4,500,000
Stormwater Utility Capital Project Fund 413		-	1,500,000	1,500,000	1,500,000	1,500,000	6,000,000
-	Total	-	1,500,000	1,500,000	1,500,000	1,500,000	6,000,000
The Stormwater Master plan update will identify corrective measures to alleviate existing deficiencies in the system and proactively plan for new improvements needed to accommodate future development. The Stormwater Master Plan will help prioritize spending for future capital drainage projects and ensure existing stormwater drainage systems are adequately and proactively maintained. The current estimated cost to update the Stormwater Master Plan is $605,000.00. Phase 1 of the plan began in Fiscal Year 2016 at a cost of $247,340.00. This phase only included the Eastern Basin and the vicinity of District I and IV. Phase 2 of the plan is anticipated to begin in Fiscal Year 2021 at a cost of $200,00.00.							
DIP204	Jackson St Stormwater Improvements	600,000	-	-	-	-	600,000
Stormwater Utility Capital Project Fund 413		600,000	-	-	-	-	600,000
-	Total	600,000	-	-	-	-	600,000
Install 2,000 feet of pipe in the open ditch on the west side of Jackson Street from Oak St. to Canal View Blvd. Currently the City maintains the open ditch by hand. The existing driveway culverts all have old and failing sand cement headwalls. Once the ditch is piped and filled in, the residents will take over the maintenance of the parkage in front of their residences. Install approximately 1,300 feet of pipe in the open ditch on the south side of Oak St. from Jackson St. to Dame St. The water elevation in this ditch is influenced by the Memorial Park Pond with reduces the capacity of the ditch. This causes local roadway flooding during heavy rain events.							
DIP205	Freemanville Drainage Improvements	180,000	-	-	-	-	180,000
Stormwater Utility Capital Project Fund 413		180,000	-	-	-	-	180,000
-	Total	180,000	-	-	-	-	180,000
This project is to pipe approximately 450LF of the open ditch from the Railroad Tracks east to Orange Ave in the Freemanville section of the City. The ditch is deep with greater that 4:1 side slope, which makes it very difficult to properly maintain. Once piped, the maintenance of the area will revert to the property owners and the City will maintain an easement over the pipe.							
DIP206	Viking Dr Stormwater Improvements	25,000	250,000	-	-	-	275,000
Stormwater Utility Capital Project Fund 413		25,000	250,000	-	-	-	275,000
-	Total	25,000	250,000	-	-	-	275,000
Presently, Viking Drive does not have a stormwater system in place, and the localized depression area near 112 Viking Dive experiences standing water over the roadway during most rain events. This project consists of design and permitting stormwater improvements within Viking Drive area. Construction cost estimates to follow completion of the design.							

Project #	Description	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Total
DIP207	Cambridge Canal Pump Station Upgrades	400,000	4,000,000	-	-	-	4,400,000
Stormwater Utility Capital Project Fund 413		400,000	4,000,000	-	-	-	4,400,000
-	Total	400,000	4,000,000	-	-	-	4,400,000
Hurricanes Ian and Nicole exposed vulnerabilities and limitations of the Cambridge Pump station. Originally constructed in 2006 in response to the flooding from the 2004 hurricane season, in which over 200 homes were damaged by the flooding. The existing pump station discharges to a concrete trough which overflows to Rose Bay via a weir structure. During extreme high tide events the elevation of the water in Rose Bay is higher than the elevation of the discharge weir, not allowing the pump station to operate. The proposed improvements will include construction of a new discharge structure, discharge piping, and raising the berm of the ponds to allow for pumping during the extreme high tide events.							
DIP208	Nova Canal Regional Stormwater Pump Station	400,000	-	-	-	-	400,000
Stormwater Utility Capital Project Fund 413		400,000	-	-	-	-	400,000
-	Total	400,000	-	-	-	-	400,000
Feasibility study for a stormwater pump station in the area of Dunlawton Ave and Spruce Creek Rd. In October of 2022, Hurricane Ian caused unprecedent flooding in the city. Much of this flooding was caused when the Nova Canal overtopped its banks and flooded the surrounding areas. This project is to study the feasibility of a regional stormwater pump station at or near the intersection of Dunlawton Ave and Spruce Creek Rd. The study will also include an estimate of probable cost for construction and assistance with identifying grant possibilities.							
DIP209	Portona Stormwater Improvements	150,000	750,000	-	-	-	900,000
Stormwater Utility Capital Project Fund 413		150,000	750,000	-	-	-	900,000
-	Total	150,000	750,000	-	-	-	900,000
This project includes purchasing a 7AC vacant piece of property in the Portona section of the City for the construction of a stormwater pond and additional drainage infrastructure needed in the area for conveyance to the pond. The purchase of this property and the construction of the pond would provide stormwater management for the area between 1st and 5th Streets south of Charles St.							
	TOTAL - DRAINAGE	2,305,000	9,750,000	2,000,000	2,000,000	2,000,000	16,055,000
PARKS AND RECREATION							
QIO204	Memorial Park Boardwalk Replacement	732,000	-	-	-	-	732,000
General Capital Replacement (317)		732,000	-	-	-	-	732,000
-	Total	732,000	-	-	-	-	732,000
The Memorial Park Piers are in bad condition and need to be completely replaced. The majority of the boards on both piers need constant maintenance and have reached their shelf life. The current condition of the piers creates a tripping hazard for citizens trying to enjoy to the park. They were also damaged by Hurricane Ian.							
QPC204	Restroom/Concession Facility (City Center Field 4&5)	-	427,000	-	-	-	427,000
General Capital Replacement (317)		-	427,000	-	-	-	427,000
-	Total	-	427,000	-	-	-	427,000
This project involves the design and construction of a sports complex to include 3 baseball fields, 4 - 6 soccer / football fields, lighting and support buildings. The project would encompass 100 acres with the construction of roadways, ponds, parking lots, playgrounds and picnic areas as well as trails and open space. The project would be eligible for FRDAP and ECHO grants and provide availability for partnerships with other public groups and private donors. This project will provide expanded recreational opportunities for the City.							

Project #	Description	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Total
QPC200	Coraci North	-	860,000	200,000	1,150,000	1,100,000	3,310,000
Grant Funding		-	860,000	200,000	1,150,000	1,100,000	3,310,000
-	Total	-	860,000	200,000	1,150,000	1,100,000	3,310,000
This project involves the design and construction of a sports complex to include 3 baseball fields, 4 - 6 soccer / football fields, lighting and support buildings. The project would encompass 100 acres with the construction of roadways, ponds, parking lots, playgrounds and picnic areas as well as trails and open space. The project would be eligible for FRDAP and ECHO grants and provide availability for partnerships with other public groups and private donors. This project will provide expanded recreational opportunities for the City.							
201795	West Side Community Center	-	630,000	-	5,250,000	-	5,880,000
Grant Funding - Unsecured		-	630,000	-	5,250,000	-	5,880,000
-	Total	-	630,000	-	5,250,000	-	5,880,000
This project will provide for the construction of a 15,000 SF community center to include two gyms, community rooms, after school areas and offices. The center would be equipped with technology, office furniture and miscellaneous equipment. Proposed funding is from grants, bonds or possibly a community foundation. This project will provide expanded recreational opportunities for the City.							
	TOTAL - PARKS AND RECREATION	732,000	1,917,000	200,000	6,400,000	1,100,000	9,922,000
	TOTAL - CAPITAL IMPROVEMENTS	22,232,228	21,522,800	85,536,324	17,874,806	10,970,935	146,739,158

Project #	Description	FY 24-25	FY 25-26	FY 26-27	FY 27-28	FY 28-29	Total
SANITARY SEWER							
PU251	Charles Street Lift Station Rehab	150,000	1,500,000				1,650,000
Water/Sewer R&R (403)		150,000	1,500,000				1,650,000
	Total	150,000	1,500,000				1,650,000
Design and construct improvements to the Charles St. Lift Station LS 5 and force main upgrades. Upgrades to the lift station include converting to a submersible station with full mechanical and electrical upgrades. In addition 1,200 feet of sanitary force main from the lift station to Herbert St. will be replaced. This force main has been in operation since the late 1960's and as at the end of its useful life.							
PU252	WWTP Effluent Discharge Improvements	400,000					400,000
Water/Sewer R&R (403)		400,000					400,000
	Total	400,000					400,000
Replace the river discharge 36" valve and associated piping at that Water Reclamation Facility.							
PU253	Garnsey WTP Lime Silos Dust Collector Replacement & Upgrade	1,000,000					1,000,000
Water/Sewer R&R (403)		1,000,000					1,000,000
	Total	1,000,000					1,000,000
Removal and disposal of existing dust collectors. Installation of mounting flange to existing silos. Installation of new dust collectors to new mounting flanges. Touch up paint to new mounting flange and dust collector as required.							
PU246	Leisure Circle Sewer Improvement	1,000,000					1,000,000
Water/Sewer R&R (403)		1,000,000					1,000,000
	Total	1,000,000					1,000,000
This project will include removal and replacement of three sanitary manholes and approximately 600 LF of failing 10" clay gravity sewer main. This gravity sewer collection system, constructed in the late 1970's is failing and needs to be replaced. Due to the depth and level of failure, this line is not able to be rehabilitated in place by pipe lining.							

Project #	Description	FY 24-25	FY 25-26	FY 26-27	FY 27-28	FY 28-29	Total
PU254	Leslie Dr Sewer Improvements	650,000					650,000
Water/Sewer R&R (403)		650,000					650,000
	Total	650,000					650,000
The Leslie Drive gravity sewer collection system was constructed in the late 1970's with some of the infrastructure constructed between lot and in rear yards. The manhole located located just up stream of the Souther Pines Lift Station LS 22 is located on the rear lot line between 479 Leslie Dr. and 28 Elda Ln. It appears that the manhole is settling and has compromised the gravity line between the manhole and the Lift Station. An emergency repair is currently underway but due to the depth and level of the failure, this current infrastructure is not able to be rehabilitated. This project will include replacing at least two sanitary manholes and approximately 300 LF of 8" gravity sewer main.							
PU255	Palm Shores Mobile Home Estates Septic to Sewer Cost Participation	1,000,000					1,000,000
Water/Sewer R&R (403)		1,000,000					1,000,000
	Total	1,000,000					1,000,000
This is a developer led septic to sewer conversion for the Palm Shores Mobile Home Estates. The city will participate in the project by converting an existing 4-inch water main into a sanitary force main. Additionally the city will participate in the extension of sanitary sewer to the existing residential and commercial properties adjacent to the Palm Shores MHP and along Harbor Rd. The project is located in unincorporated Voluisa County and within the Utility Service Area for the City of Port Orange. The city currently provides potable water service to this area. 6147 S Ridgewood Avenue							
	TOTAL - WATER & SANITARY SEWER	4,200,000	1,500,000				5,700,000
TRANSPORTATION							
CD251	Madeline Ave Turn Lanes at Nova Rd	225,000			801,450		1,026,450
Capital Projects (301)		45,000			801,450		846,450
TPO		106,470					
Transportation Impact Fees (312)		73,530					
	Total	225,000			801,450		846,450
This project consists of extension of the existing turn lanes for left turn lane traffic in the eastbound and westbound directions of Madeline Avenue at the intersection with Nova Road and the construction of turn lanes for right turn traffic in the eastbound and westbound directions of Madeline Avenue at the intersection with Nova Road. This project would also include accessible pedestrian signals and detector upgrades, ADA compliant sidewalks and crosswalk approaches, and upgrades to street lighting as needed.							
CD252	Willow Run Boulevard Widening	200,000			1,125,000		1,325,000
Capital Projects (301)		200,000			1,125,000		1,325,000
	Total	200,000			1,125,000		1,325,000
Improvements to Willow Run Boulevard will be needed as part of the proposed Yorktowne Boulevard improvements. A 1/4-mile segment of Willow Run east of Williamson Boulevard to the proposed intersection of the Yorktowne Boulevard extension will need to be improved to accommodate future traffic flows diverted from Williamson Boulevard and future traffic on the new Yorktowne north extension. Stormwater retention should be able to be provided in the existing 200-foot wide Willow Run Boulevard right-of-way so additional right-of-way acquisition is not anticipated. This project also includes improvements at the Willow Run/Yorktowne intersection which may include a signalized intersection, traffic circle, or other feasible options.							

Project #	Description	FY 24-25	FY 25-26	FY 26-27	FY 27-28	FY 28-29	Total
CD215	Dunlawton and Yorktowne Turn Lane Bundle	322,299		4,298,711			4,621,010
Capital Projects (301)		64,458		429,871			494,329
TPO		257,841		3,868,840			
	Total	322,299		4,298,711			494,329
This project consists of seven turn lane projects: 1) Westbound Dunlawton Ave. right turn lane at Nova Road; 2) Extension of existing left turn lane westbound Dunlawton Ave. at Clyde Morris Boulevard; 3) Extension of existing left turn lane eastbound Dunlawton Ave. at Nova Road; 4) Southbound Yorktowne Boulevard right turn lane at Dunlawton Avenue; 5) Modification to the left-turn lane on northbound Yorktowne Boulevard at the intersection with Dunlawton Avenue; 6) Eastbound Dunlawton Ave. right turn lane at Clyde Morris Blvd.; and 7) Westbound Dunlawton Ave. right turn lane at City Center Pkwy.							
CD205	Clyde Morris Turn Lane Bundle	215,864		275,000	911,696		1,402,560
Capital Projects (301)		43,172		27,500	91,170		161,842
TPO		172,692		247,500	820,526		1,240,718
	Total	215,864		275,000	911,696		1,402,560
This project consists of four (4) right turn lanes on Clyde Morris Boulevard Turn lane locations include: 1) SB Clyde Morris Blvd. Right Turn Lane at Willow Run Blvd.; 2) NB Clyde Morris Blvd. Right Turn Lane at Reed Canal Rd.; 3) NB Clyde Morris Blvd. Right Turn Lane at Madeline Ave.; and 4) SB Clyde Morris Blvd. Right Turn Lane at Madeline Ave. To improve traffic flow, reduce delays for turning vehicles and through vehicles, and improve intersection safety. The project will add roadway capacity at the intersections and reduce delays for vehicles turning right or through traffic.							
CD173	Yorktowne North Segment	200,000			1,125,000		1,325,000
Transportation Impact Fees (312)		200,000			1,125,000		1,325,000
	Total	200,000			1,125,000		1,325,000
The north Yorktowne Boulevard segment roadway project is required to complete the Yorktowne Boulevard extension between Hidden Lakes Drive and Willow Run Boulevard. The Yorktowne Boulevard extension consist of two segments, the north and central segment. The north Yorktowne Boulevard segment is +/- 3,000 ft from the B-19 tributary crossing to Willow Run Boulevard and is proposed to be located west of the homes along Chardonnay Lane on property currently owned by NLA Holdings, LLC. The current design plans for the north Yorktowne Blvd. segment were based on the Volusia County design standards for a 4-lane median divided collector roadway when the road was anticipated to be maintained by Volusia County. Since Yorktowne Blvd. is now a city collector roadway, the north Yorktowne Blvd. segment design plans need to be revised to meet the City's design standards for a 4-lane median divided collector roadway. The design portion of this project will include the redesign of the north Yorktowne Blvd. segment according to the city's design standards for a 4-lane median divided collector roadway, re-alignment of the north segment of Yorktowne Blvd. to increase the distance between the Williamson Boulevard/Willow Run Boulevard and Yorktowne Boulevard/Willow Run Boulevard intersections, and to combine the existing approved central Yorktowne Blvd. segment and the redesigned north segment of the Yorktowne Blvd. into a complete set of construction drawings for the Yorktowne Blvd. extension from Hidden Lake Drive to Willow Run Boulevard. The central segment has been permitted and the funds for construction already dedicated.							
	Coraci Blvd Extension				257,000	2,150,000	2,407,000
Developer Constructed					257,000	2,150,000	2,407,000
	Total				257,000	2,150,000	2,407,000
This project involves construction of a 1/2 mile 2-lane divided roadway extending Coraci Blvd. 2600' from the south limits of Coquina Cove III to Carmody Lake Drive within the existing undeveloped right-of way. Drainage improvements are projected to be constructed in the right-of-way. This will serve as an alternate route and reliever route for traffic generated by the Forest Lakes subdivision and to a lesser extent to Coquina Cove and reduce impacts on Taylor Road. This roadway is indicated as a future collector road in the Comprehensive Plan.							

Project #	Description	FY 24-25	FY 25-26	FY 26-27	FY 27-28	FY 28-29	Total
	Williamson Blvd North of Pavilion				**220,000**	**260,935**	**480,935**
Developer Constructed					220,000	260,935	480,935
	Total				**220,000**	**260,935**	**480,935**
This project involves adding 2 lanes to the existing 2 lane Williamson Blvd. roadway from the north boundary of the Pavilion project north to Townwest Blvd., a 0.53 mile section. Project cost estimates are based on construction of an additional 2 travel lanes within the existing right-of-way with minimal impact to the existing roadway. The new construction will require stormwater treatment and it will be necessary to acquire an estimated 1 acre of off-site property for this purpose.							
	TOTAL - TRANSPORTATION	**1,163,163**		**4,573,711**	**4,440,146**	**2,410,935**	**12,587,955**
STORMWATER							
SW251	**Virginia/Monroe Stormwater Pump Station Generator**	**1,250,000**					**1,250,000**
Stormwater Utility Capital Project Fund 413		1,250,000					1,250,000
	Total	**1,250,000**					**1,250,000**
Design and construct fixed mounted back up generators for the storm water pump stations located at Monroe St. behind Fire Station 71 and at the intersection of Monroe Pl and B St. These back up generators will provide critical back up power ensuring these stormwater pump stations continue to operate throughout storm events and power outages.							
SW181	**Drainage Pipe R&R**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**2,500,000**
Stormwater Utility Capital Project Fund 413		500,000	500,000	500,000	500,000	500,000	2,500,000
	Total	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**2,500,000**
R&R Funding to replace / repair deteriorated and/or undersized corrugated metal pipes with properly sized reinforced concrete pipe liners to improve storm water conveyance to reduce potential for flooding.							
SW211	**Southwinds Stormwater Pump Station Outfall**	**100,000**	**1,000,000**				**1,100,000**
Stormwater Utility Capital Project Fund 413		100,000	1,000,000				1,100,000
	Total	**100,000**	**1,000,000**				**1,100,000**
This project involves modification to the existing stormwater ponds of the Southwinds neighborhood stormwater system. Currently, the subdivision does not have a positive stormwater outfall discharge which causes sever roadway flooding. It also caused flooding to houses during Hurricane Ian. An engineered plan will be required to design and permit an outfall for the pond. The project will include retrofitting the existing reclaimed augmentation pump station into a stormwater pump station. Construction and permitting of a stormwater force main that will discharge to a city ditch at the south east corner of the Atlantic High School property.							
SW241	**Cambridge Canal Pump Station Upgrades**	**4,000,000**					**4,000,000**
Stormwater Utility Capital Project Fund 413		4,000,000					4,000,000
	Total	**4,000,000**					**4,000,000**
Hurricanes Ian and Nicole exposed vulnerabilities and limitations of the Cambridge Pump Station. Original constructed in 2006 in response to the flooding from the 2004 hurricane season, in which over 200 homes were damaged by flooding. The existing pump station discharges to a concrete trough which overflows to Rose Bay via a weir structure. during extreme high tide events the elevation of the water in Rose Bay is higher than the discharge weir, not allowing the pump station to operate. The proposed improvements will include construction of a new discharge structure, discharge piping, and raising the berm of the ponds to allow for pumping during the extreme high tide events.							
	TOTAL - DRAINAGE	**5,850,000**	**1,500,000**	**500,000**	**500,000**	**500,000**	**8,850,000**

Project #	Description	FY 24-25	FY 25-26	FY 26-27	FY 27-28	FY 28-29	Total
PARKS AND RECREATION							
PK257	Willow Run Expansion	850,000					850,000
Park Bond (321)		850,000					850,000
	Total	850,000					850,000
Construction of two lighted multipurpose fields, restroom/support building and a new parking facility. To provide additional fields for recreational activities for the public.							
	TOTAL - PARKS AND RECREATION	850,000					850,000
	TOTAL - CAPITAL IMPROVEMENTS	12,063,163	3,000,000	5,073,711	4,940,146	2,910,935	27,987,955

Note: All project reviewed and found to be consistent with the Comprehensive Plan.
Source: City of Port Orange, Department of Finance, Department of Community Development, ~~2023~~November 2024

TABLE 2
TRANSPORTATION PROPORTIONATE FAIR-SHARE AGREEMENTS BY PROJECT

Developer	Development	Agreement Approval	Date of Contribution	Total
Project 1: Dunlawton / Taylor at I-95				
Intervest Construction, Inc	Waters Edge Phase 9A and 11	08/17/04	01/26/06	50,000
Centerline Homes (Prev. Olson Assoc 4/25/06)	Port Orange Landings Phase I	03/29/05	03/29/05	32,878
Tomoka Farms Dev, LLC (DR Horton)	Coquina Cove Phase I	04/19/05	04/19/05	104,242
Airport Pharmacy LLC (Charles Wayne)	Walgreens at Taylor Road	08/16/05	02/23/07	13,763
Villages of Royal Palm (Winston-James)	Royal Palm PUD, Phase III	11/15/05	11/15/05	54,797
D.R. Horton	Port Orange Plantation Phase II	11/15/05	11/15/05	32,878
Holiday Builders	Port Orange Landings, Phase II	03/21/06	09/27/07	41,034
Viscomi and Associates (Paytas Homes)	Pinnacle PUD, Phase II	06/27/06	09/22/06	106,791
D.R. Horton	Port Orange Plantation Phases III, IV, V	07/25/06	12/06/06	49,445
D.R. Horton	Villas of P.O. Plantation Phases I, II	09/26/06	12/06/06	62,953
Intervest Construction, Inc	Waters Edge Phase 9B	06/05/07	07/05/07	27,526
Quest Design Group	Crystal Lake Business Park	08/07/07	09/19/07	16,567
Floridian Bank	Floridian Bank	08/28/07	08/28/07	10,959
All Aboard Storage	Nova Depot	09/18/07	09/18/07	10,959
Shoppes at Southwinds LLC	Shoppes at Southwinds	10/08/07	10/08/07	8,156
Port Orange Properties, LC	Port Orange Properties	11/13/07	11/16/07	38,486
Halifax Veterinary Clinic	Halifax Veterinary Clinic	12/18/07	01/04/08	2,804
Continental 217 Fund, LLC	Westport Square - Kohls	01/15/08	01/15/08	175,351
Atlantic Coast, LLC	Atlantic Coast Office Building	04/16/08	04/16/08	2,804
Cruz Investment Group	Nova Bella Piazza	04/22/08	04/23/08	10,959
City of Port Orange	Port Orange Business Park	05/06/08	08/05/09	235,756
Port Orange Apartment Assoc.	Reserve at Crystal Lake	05/27/08	02/24/09	2,804
K E M Associates, LLC	Countryside Commercial	08/19/08	09/17/08	2,804
Sun Glow Construction Inc.	Summer Trees Plaza - Site "B"	01/27/09	05/02/09	2,804
Sun Glow Construction Inc.	National City Bank	01/27/09	01/27/09	8,156
Four Lanes, LLC	CVS Pharmacy #4112 (Altamira CVS)	04/15/10	04/15/10	8,156
US Foodservice, Inc.	US Foodservice Facility Expansion	06/22/10	06/22/10	13,763
The Pavillion at Port Orange, LLC	Pavillion at Port Orange	08/19/09	09/30/09	500,000
Four Lanes, LLC	Altamira Shopping Center	01/24/12	Deferred	312,472
Dunlawton Yorktowne, LLC	Dunlawton-Yorktowne Shopping Center	01/24/12	Deferred	134,317
Ferber Construction Mgmt, LLC	Gateway Center Lot 6A – Multi-Tenant Retail	02/28/12	02/28/12	43,838
			Total - Approved Contribution Amounts for Project 1	**$2,118,222**
Project 2: Dunlawton / Clyde Morris				
D.R. Horton	Port Orange Plantation Phase II	11/15/05	11/15/05	19,788
Villages of Royal Palm (Winston-James)	Royal Palm PUD, Phase III	11/15/05	11/15/05	29,681
Holiday Builders	Port Orange Landings, Phase II	03/21/06	09/27/07	74,204
Viscomi and Associates (Paytas Homes)	Pinnacle PUD, Phase II	06/27/06	09/22/06	39,575
D.R. Horton	Port Orange Plantation Phases III, IV, V	07/25/06	12/06/06	34,628

Developer	Development	Agreement Approval	Date of Contribution	Total
Linen Group	Nova Oaks	09/26/06	09/26/06	9,894
D.R. Horton	Villas of P.O. Plantation Phases I, II	09/26/06	12/06/06	34,628
Intervest Construction, Inc	Waters Edge Phase 9B	06/05/07	07/05/07	14,841
Quest Design Group	Crystal Lake Business Park	08/07/07	09/19/07	9,894
Floridian Bank	Floridian Bank	08/28/07	08/28/07	54,416
All Aboard Storage	Nova Depot	09/18/07	09/18/07	9,894
Shoppes at Southwinds LLC	Shoppes at Southwinds	10/08/07	10/08/07	9,894
Port Orange Properties, LC	Port Orange Properties	11/13/07	11/16/07	29,681
Halifax Veterinary Clinic	Halifax Veterinary Clinic	12/18/07	01/04/08	4,947
CBL	Pavillion at Port Orange	12/18/07	01/08/08	317,447
Continental 217 Fund, LLC	Westport Square - Kohls	01/15/08	1/15/2008	34,628
Atlantic Coast, LLC	Atlantic Coast Office Building	04/16/08	04/16/08	9,894
Cruz Investment Group	Nova Bella Piazza	04/22/08	04/23/08	9,894
City of Port Orange	Port Orange Business Park	05/06/08	08/05/09	29,681
Port Orange Apartment Assoc.	Reserve at Crystal Lake	05/27/08	02/24/09	14,841
The Animal, LLC	Ravenwood Veterinary Clinic	08/18/08	09/05/08	4,947
K E M Associates, LLC	Countryside Commercial	08/19/08	09/17/08	4,947
ABC Liquors, Inc.	ABC Liquor Store and Bank	05/19/09	05/27/09	9,894
LaCour & Company (Southwind Villas)	Dollar General Store	01/19/10	01/19/10	4,947
Four Lanes, LLC	CVS Pharmacy #4112 (Altamira CVS)	04/15/10	04/15/10	29,681
Houligan's Port Orange, LLC	Houligan's Restaurant & Office Bldg.	06/03/10	06/03/10	4,947
Four Lanes, LLC	Altamira Shopping Center	01/24/12	04/15/12	59,363
Dunlawton Yorktowne, LLC	Dunlawton-Yorktowne Shopping Center	01/24/12	06/21/12	24,735
			Total - Approved Contribution Amounts for Project 2	**$935,811**
Project 3: Town West / Williamson Signalization				
D.R. Horton	Port Orange Plantation Phase II	11/15/05	11/15/05	82,994
D. R. Horton Refund	Port Orange Plantation Phase II	11/15/05	12/21/17	(9,969)
Villages of Royal Palm (Winston-James)	Royal Palm PUD, Phase III	11/15/05	11/15/05	66,736
Villages of Royal Palm (Winston-James) Refund	Royal Palm PUD, Phase III	11/15/05	09/27/17	(8,015)
D.R. Horton	Port Orange Plantation Phases III, IV, V	07/25/06	12/06/06	80,770
D. R. Horton Refund	Port Orange Plantation Phases III, IV, V	07/25/06	10/23/17	(9,702)
D.R. Horton	Villas of P.O. Plantation Phases I, II	09/26/06	12/06/06	76,064
D. R. Horton Refund	Villas of P.O. Plantation Phases I, II	09/26/06	10/23/17	(9,137)
Port Orange Properties, LLC	Port Orange Properties	11/13/07	11/16/07	5,813
Port Orange Properties, LLC (additional payment)	Port Orange Properties	11/13/07	09/30/16	8,792
Port Orange Properties, LLC (City Council Approved Write Off of Additional Payment)	Port Orange Properties	11/13/07	09/28/18	(8,792)
CBL	Pavillion at Port Orange	12/18/07	01/08/08	162,657
Continental 217 Fund, LLC	Westport Square - Kohls	01/15/08	01/15/08	24,957
Continental 217 Fund, LLC – (Refund Issued)	Westport Square - Kohls	01/15/08	12/20/12	(17,467)
Continental 217 Fund, LLC (additional payment)	Westport Square - Kohls	01/15/08	09/30/16	11,331
Continental 217 Fund, LLC (City Council Approved Write Off of Additional Payment)	Westport Square - Kohls	01/15/08	09/28/18	(11,331)

Developer	Development	Agreement Approval	Date of Contribution	Total
		Total - Approved Contribution Amounts for Project 3		**$445,701**
Project 4: Summertrees Road Extension				
Villages of Royal Palm (Winston-James)	Royal Palm PUD, Phase III	11/15/05	11/15/05	65,896
Holiday Builders	Port Orange Landings, Phase II	03/21/06	09/27/07	18,287
Viscomi and Associates (Paytas Homes)	Pinnacle PUD, Phase II	06/27/06	09/22/06	84,183
D.R. Horton	Port Orange Plantation Phases III, IV, V	07/25/06	12/06/06	47,609
D.R. Horton	Villas of P.O. Plantation Phases I, II	09/26/06	12/06/06	40,358
Intervest Construction, Inc	Waters Edge Phase 9B	06/05/07	07/05/07	22,071
All Aboard Storage	Nova Depot	09/18/07	09/18/07	7,252
Shoppes at Southwinds LLC	Shoppes at Southwinds	10/08/07	10/08/07	7,252
Port Orange Properties, LC	Port Orange Properties	11/13/07	11/16/07	47,609
Halifax Veterinary Clinic	Halifax Veterinary Clinic	12/18/07	01/04/08	3,784
CBL	Pavillion at Port Orange	12/18/07	01/08/08	889,220
Continental 217 Fund, LLC	Westport Square - Kohls	01/15/08	01/15/08	172,466
Atlantic Coast, LLC	Atlantic Coast Office Building	04/16/08	04/16/08	3,784
City of Port Orange	Port Orange Business Park	05/06/08	08/05/09	168,682
Port Orange Apartment Assoc.	Reserve at Crystal Lake	05/27/08	02/24/09	7,252
K E M Associates, LLC	Countryside Commercial	08/19/08	09/17/08	7,252
Sun Glow Construction Inc.	Summer Trees Plaza - Site "B"	01/27/09	05/02/09	11,035
Sun Glow Construction Inc.	National City Bank	01/27/09	01/27/09	36,574
Four Lanes, LLC	CVS Pharmacy #4112 (Altamira CVS)	04/15/10	04/15/10	11,035
US Foodservice, Inc.	US Foodservice Facility Expansion	06/22/10	06/22/10	29,322
Four Lanes, LLC	Altamira Shopping Center	01/24/12	04/15/12	102,786
Dunlawton Yorktowne, LLC	Dunlawton-Yorktowne Shopping Center	01/24/12	06/21/12	44,142
Ferber Construction Mgmt, LLC	Gateway Center Lot 6A – Multi-Tenant Retail	02/28/12	02/28/12	11,036
Intervest Construction, Inc	Water's Edge Phase XII	06/05/07	08/30/13	91,751
LIV Development	Whitepalm Apartments	02/26/13	03/18/13	47,610
Edge Cove LLC	Westport Reserve Subdivision PH 2	08/16/16	08/19/16	3,784
Edge Cove LLC	Sanctuary at Westport PH 2A	06/21/16	06/23/16	14,665
Westport Reserve LLC	Westport Reserve Subdivision-PH 3	12/12/17	12/18/17	14,819
Westport Reserve LLC	Westport Reserve Subdivision-PH 4	12/12/17	12/18/17	7,252
2017 Yorktown Port Orange LLC	Port Orange Gateway Center Lot 3A	03/20/18	03/26/18	11,036
Acorn Ministorage of Brevard	Acorn Mini-Storage	05/01/18	09/17/18	18,288
Z Development Services	Arby's Site Plan	08/21/18	08/28/18	3,784
Autozone Stores LLC	AutoZone	12/18/18	12/28/18	51,393
Continental 425 Fund LLC	Springs Apartments	12/04/18	03/13/19	106,254
Memorial Health Systems Inc	Advent Health Medical Center	5/5/2020	8/12/20	164,979
Central Parc at Oakwater	Central Parc at Oakwater	11/05/19	12/09/19	87,989
NX Port Orange Owner LLC	Palms at Ashton Lakes ALF & Commercial Development	02/14/20	02/14/20	43,994
Noon Development of Florida LLC	Halifax Health Port Orange (Springs Lot 3)	12/15/20	12/29/20	58,659
Memorial Health Systems Inc	Advent Health MOB	04/06/21	04/13/21	21,998

Developer	Development	Agreement Approval	Date of Contribution	Total
N&T Enterprises, LLC	Paytas Office Building	08/27/20	12/28/20	3,666
Crane Lakes Depot, LLC	Crane Lakes Depot	12/15/21	12/22/21	65,896
Woodhaven, LLC	Woodhaven Phase II	10/25/21	10/29/21	130,704
HPI Self Storage Port Orange, LLC	Port Orange Neighborhood Storage	02/17/22	04/19/22	18,331
Town West Senior Living Partners, LTD	Town West Senior Living	5/11/22	6/29/22	21,997
Health Care 4, LLC	New Port Lot 4 -Conviva	06/07/22	06/08/22	3,666
Stor-It Self Storage Port Orange, LLC	Stor-It	06/07/22	06/08/22	14,665
Southern Hospitality Management & Development, INC	Woodspring Suites	03/01/22	04/22/22	7,251
Thrive Community Church	Thrive Community Church Phase II	11/05/22	11/21/22	3,666
Concept Development, Inc.	O2B Kids – New Port, Lot 5	10/04/22	04/04/23	7,332
Build Senior Living, LLC	Hampton Manor	02/07/23	04/21/23	36,662
Villa Nova 8.0, LLC	Villa Nova Townhomes	03/21/23	03/23/23	3,666
4SG Development, LLC	Del Taco	03/21/23	03/29/23	10,999
			Total - Approved Contribution Amounts for Project 4	**$2,893,646**
Project 5: Devon / Taylor Road Signalization				
Coventry Partners LLC	Kings Landing – PH 1	12/05/17	12/20/17	3,653
N&T Enterprises, LLC	Paytas Office Building	08/27/20	12/28/20	176
Southern Hospitality Management & Development, INC	Woodspring Suites	03/01/22	04/22/22	232
			Total - Approved Contribution Amounts for Project 5	**$4,061**
Project 6: Yorktowne Boulevard Extension				
Westport Reserve LLC	Westport Reserve Subdivision-PH 3	12/12/17	12/18/17	117,795
Westport Reserve LLC	Westport Reserve Subdivision-PH 4	12/12/17	12/18/17	77,363
2017 Yorktown Port Orange LLC	Port Orange Gateway Center Lot 3A	03/20/18	03/26/18	17,741
Acorn Ministorage of Brevard	Acorn Mini-Storage	05/01/18	09/17/18	16,968
Z Development Services	Arby's Site Plan	08/21/18	08/28/18	1,580
Edengate Development	Eden (formerly Lazul) at Crystal Lake	12/04/18	09/05/19	27,825
Autozone Stores LLC	AutoZone	12/18/18	12/28/18	33,704
POA Development LLC	New Port Apartments	11/05/19	11/13/19	240,354
Central Parc at Oakwater	Central Parc at Oakwater	11/05/19	12/09//19	30,916
NX Port Orange Owner LLC	Palms at Ashton Lakes ALF & Commercial Development	02/14/20	02/14/20	72,984
N&T Enterprises, LLC	Paytas Office Building	08/27/20	12/28/20	5,773
Health Care 4, LLC	New Port Lot 4 - Conviva	06/07/22	06/08/22	82,922
Villa Nova 8.0, LLC	Villa Nova Townhomes	03/21/23	03/23/23	25,447
New Port LLP	New Port Lot 3 – Sherwin Williams	05/16/23	05/15/23	10,879
			Total - Approved Contribution Amounts for Project 6	**$762,251**
			Grand Total - All Projects	**$7,181,690**

Notes: Initial funding for above transportation concurrency projects was appropriated during previous or current fiscal years. Total contributions received through fair share agreements through 9/30/~~2323~~24. Total contributions include actual project costs for projects 1, 2, 3 and 4 which have been completed. Total contributions, on projects 5 and 6, include estimated project costs and contingency funding for potential cost overruns.

Source: City of Port Orange, Department of Finance, Department of Community Development, ~~20232~~2024

TABLE 3
SUMMARY OF CAPITAL IMPROVEMENTS

Facility Type	FY 24-25 FY 23-24	FY 25-26 FY 24-25	FY 26-27 FY 25-26	FY 27-28 FY 26-27	FY 28-29 FY 27-28	Total
Water	2,600,000	2,450,000	4,450,000	1,500,000	1,500,000	11,000,000
Sanitary Sewer	15,020,000	3,500,000	71,650,000	1,650,000	1,600,000	91,820,000
Water & Sewer	4,200,000	1,500,000	50,000	50,000	50,000	100,000 5,700,000
Stormwater	5,850,000 2,305,000	1,500,000 9,750,000	500,000 2,000,000	500,000 2,000,000	500,000 2,000,000	8,850,000 16,055,000
Transportation	1,163,163 1,575,228	3,905,800	4,573,711 7,186,324	4,440,146 6,274,806	2,410,935 4,720,935	12,587,955 18,942,158
Parks and Recreation	732,000 850,000	1,917,000	200,000	6,400,000	1,100,000	9,249,000 850,000
Total Capital Improvements	**12,063,163 22,232,228**	**3,000,000 21,522,800**	**5,073,711 85,536,324**	**4,940,146 17,874,806**	**2,910,935 10,970,935**	**27,987,955 147,166,158**

TABLE 4
SUMMARY SCHEDULE OF COMMITTED AND PLANNED FUNDS

Fund	FY 24-25 FY 23-24	FY 25-26 FY 24-25	FY 26-27 FY 25-26	FY 27-28 FY 26-27	FY 28-29 FY 27-28	Total
Capital Projects (301)	352,630 1,102,672	- 1,565,580	457,371 977,459	2,017,620 900,340	- 800,000	2,827,621 4,546,051
Transportation Impact Fee (312)	273,530 8,400	- 1,795,000	- 461,174	1,125,000 112,500	- 38,500	1,398,530 2,377,074
General Capital Fund (317)	- 732,000	- 427,000	- -	- -	- -	- 1,159,000
Water/Sewer Operating (401)	-	-	-	-	-	-
Water/Sewer R&R (403)	4,200,000 15,120,000	1,500,000 5,950,000	- 76,100,000	- 3,150,000	- 3,100,000	5,700,000 100,320,000
Water/Sewer Impact Fee (405)	-	-	50,000	50,000	50,000	100,000
Stormwater Utility (413)	5,850,000 2,305,000	1,500,000 9,750,000	500,000 2,000,000	500,000 2,000,000	500,000 2,000,000	8,850,000 16,055,000
Park Bond (321)	850,000	-	-	-	-	850,000
Proportionate Fair Share / Other / Grant	2,500,000	1,490,000	200,000	6,400,000	1,100,000	10,590,000
TPO Funds	537,003 464,156	- 545,220	4,116,340 5,747,691	820,526 2,653,552	- 1,471,500	5,473,869 9,410,619
Developer Fairshare Contr. (Planned)	- -	- -	- -	477,000 2,608,414	2,410,935 2,410,935	2,887,935 2,608,414
Total Committed and Planned Funds	**12,063,163 22,232,228**	**3,000,000 21,522,800**	**5,073,711 85,536,324**	**4,940,146 17,874,806**	**2,910,935 10,970,935**	**27,987,955 147,166,158**

Source (For Tables 3 and 4): City of Port Orange, Department of Finance, 2023November 2024

Table 5 identifies transportation improvements included in the first five years of the applicable Transportation Planning Organization's (TPO) adopted Transportation Improvement Program (TIP), to the extent that such improvements are relied upon to ensure concurrency and financial feasibility.

TABLE 5
TPO TRANSPORTATION IMPROVEMENT PLAN*

Project Name	Work Summary	Agency	2023/24 2024/25	2024/25 2025/26	2025/26 2026/27	2026/27 2027/28	2027/28 2028/29	Total
Dunlawton Ave. Turn Lanes Various Locations	Intersection improvements at various intersections along Dunlawton Ave.	City of Port Orange	- $322,299	$290,940	- $4,728,567	$4,728,567	-	$5,019,507 $5,050,866

Source: TPO TIP FY ~~2023/24~~2024/25 – ~~2027/28~~2028/29; City of Port Orange, Department of Community Development, ~~2023~~2024

Table 6 identifies public school facilities improvements included in the first five years of the ~~2023/24~~2024/25 – ~~2027/28~~2028/29 Volusia County School District Work Program.

Table 6
VOLUSIA COUNTY SCHOOL DISTRICT FIVE-YEAR WORK PROGRAM

	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028
Sources - revenues					
State sources:					
CO&DS distributed	$ 2,250,000	$ 2,250,000	$ 2,250,000	$ 2,250,000	$ 2,250,000
Interest on undistributed CO & DS	16,500	16,500	16,500	16,500	16,500
Total state sources	2,266,500	2,266,500	2,266,500	2,266,500	2,266,500
Local sources:					
Ad valorem property taxes	91,362,991	94,926,240	100,589,760	106,090,560	111,264,480
Local Sales tax	66,547,292	67,472,722	68,411,022	69,362,370	70,326,948
Investment income	2,100,000	1,580,000	1,370,000	1,160,000	950,000
Impact fees	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Total local sources	170,010,283	173,978,962	180,370,782	186,612,930	192,541,428
Total sources	**172,276,783**	**176,245,462**	**182,637,282**	**188,879,430**	**194,807,928**
Uses - expenditures					
New Construction					
Creekside Mid - Classroom Addition	-	-	-	-	750,000
Deltona HS - Classroom Addition	-	2,000,000	18,000,000	-	-
Enterprise Elm - Master Plan	4,000,000	-	-	2,000,000	36,000,000
McInnis Elm - Renovations and Administration Addition	-	650,000	6,500,000	500,000	-
New Smyrna Beach Mid - Classroom Addition	-	-	-	-	1,500,000
Orange City Elm - Renovations and Additions	21,200,000	-	-	-	-
Ormond Beach Elm - Renovations	-		-	-	500,000
Pine Ridge HS - Classroom Addition	-	-	-	-	1,000,000
Port Orange Elm - Renovations	-	750,000	8,500,000	-	-
Read-Patillo Elm - Remodeling	-	-	750,000	8,500,000	-
Silver Sands Mid - Classroom Addition and Remodeling	-	-	1,500,000	12,000,000	750,000
Spruce Creek HS - Classroom Addition and Auditorium Ren	-	-	5,000,000	1,200,000	-
Spruce Creek Elm - Campuswide HVAC and Lighting	-	-	1,200,000	15,500,000	-
Spruce Creek HS - Master Plan	-	-	-	-	3,000,000
Starke Elm - Renovations and Additions	19,000,000	1,750,000	-	-	-
Timbercrest Elm - Classroom Addition	-		-	700,000	7,000,000
Tomoka Elm - Master Plan	2,000,000	-	-	-	-
Transportation - Warehouse DeLand - Warehouse Additio	-	8,000,000	-	-	-
Turie T. Small Elm - Joint Venture	-	-	1,500,000	5,000,000	500,000
Woodward Elm - Renovation Finishes and Infrastructure	-	4,458,556	-	-	-
Total New Construction	46,200,000	17,608,556	50,950,000	45,400,000	51,000,000
Projects at Existing Schools and Facilities					
All High Schools - Athletic Facility Leases	180,000	180,000	180,000	180,000	180,000
Atlantic HS - Repair Exterior Doors	-	306,000	-	-	-
Brewster Center - Interior Renovations	-	-	3,000,000	-	-
Brewster Center - Repair Wood Floor Joists	-	117,600	-	-	-
Brewster Center - Replace Emergency Generator	-	601,200	-	-	-
Brewster Center - Upgrade Main Electrical Distribution	-	-	2,000,000	-	-
Campbell Mid - Replace Emergency Generator	-	597,600	-		-
Campbell Mid - Upgrade HVAC Bldgs. 1 and 2	-	-	-	1,129,080	-
Campbell Mid - Upgrade HVAC Bldgs. 5 and 9	-	-	1,817,016	-	-
Campbell Mid - Upgrade HVAC Bldgs. 8 and 10	-	518,906	-	-	-
Coronado Beach Elem - Install New Lighting at Parking Lot	283,200	-	-	-	-
Debary Elem - New Marquee	216,000	-	-	-	-
Debary Elm - Upgrade HVAC, Ceiling and Lighting Bldgs. 1	-	3,777,362	-	-	-
DeLand Warehouse - Lease	231,186	231,186	231,186	231,186	231,186
Deltona HS - Foundation Repairs Bldgs. 12	2,500,000	-	-	-	-
DeLand HS - Upgrade HVAC Bldgs. 14 and 15	3,022,390	-	-	-	-

	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028
Deltona Lakes Elm - Upgrade HVAC, Ceiling and Lighting Bl	2,795,436	-	-	-	
Deltona Mid - Upgrade Door Hardware and Signage Bldgs.	135,600	-	-	-	-
Deltona HS - Rebuild Chillers, Cooling Tower and Piping	-	2,700,000	-	-	-
DeLand Mid - School Envelope Improvement	-	3,900,000	-	-	-
DeLand Mid - Upgrade Door Hardware	-	752,400	-	-	-
Deltona Transportation - Site Improvements	-	2,000,000	-	-	-
Deltona HS - Foundation Repairs Bldgs. 2	-	3,000,000	-	-	-
Discovery Elm - Upgrade Fire Alarm and Intrusion Monitor	105,000	-	-	-	-
Edgewater Elm - Upgrade Fire Alarm and Intrusion Monito	105,000	-	-	-	-
Edgewater Elm - Upgrade Parking Lot and bus Loop Lightin	-	402,000	-	-	-
Forest Lake Elm - Replace OAU Bldgs. 6 and 7	1,942,864	-	-	-	-
Freedom Elm - Replace Small Chiller Bldg. 7	308,000	-	-	-	-
Friendship Elm - Upgrade HVAC Bldgs. 1 and 2	-	3,368,400	-	-	-
Heritage Mid - Replace Roof Campus Wide	-	3,750,000	-	-	-
Heritage Mid - Replace Fire Alarm	1,287,000	-	-	-	-
Heritage Mid - Upgrade HVAC, Ceiling and Lighting Bldg. 2	-	3,500,000	-	-	-
Heritage Mid – Reclaimed Water Connection	250,000	-	-	-	-
Herbert Street Center - Upgrade HVAC	-	1,969,859	-	-	-
Heritage Mid - New Marquee	-	216,000	-	-	-
Hinson Mid - Upgrade HVAC and Lighting Bldg. 7	-	1,800,000	-	-	-
Hinson Mid - Upgrade HVAC, Ceiling and Lighting Bldgs. 3	-	2,689,618	-	-	-
Horizon Elm - Replace Small Chiller Bldg. 11	-	345,000	-	-	-
Indian River Elm - Renovate Media Center	350,000	-	-	-	-
Indian River Elm - New Marquee	180,000	-	-	-	-
Indian River Elm - Upgrade HVAC , Ceiling and Lighting Bld	-	3,115,348	-	-	-
Mainland HS - Upgrade Chiller Plant	1,700,000	-	-	-	-
Mainland HS - Upgrade Site Lighting	-	900,000	-	-	-
~~McInnis Elementary - Potable Water and Sanitary Sewer~~	~~300,000~~	~~100,000~~	~~350,000~~	~~100,000~~	~~100,000~~
New Smyrna Beach HS - Upgrade BAS Bldgs. 1-4 and Pump	-	1,570,127	-	-	-
New Smyrna Beach Mid - Replace Millwork Campus Wide	-	1,479,604	-	-	-
Parking Lot Lease - City of DeLand	27,326	27,326	27,326	27,326	27,326
Pathways Elm - Upgrade Parking Lot Poles and Lighting	-	258,000	-	-	-
Pine Ridge HS - Upgrade HVAC, Ceiling and Lighting Bldg. 6	2,648,064	-	-	-	-
Pine Ridge HS – Reclaimed Water Connection	250,000	-	-	-	-
Pine Ridge HS - Replace Intercom	-	834,000	-	-	-
Portables - Moves and Compliance	400,000	400,000	400,000	400,000	400,000
Port Orange Elm - Parking Area	250,000	-	-	-	-
River Springs Mid - New Chiller Plant	-	-	3,500,000	-	-
River Springs Mid - Replace Gutters and Downspouts	-	600,000	-	-	-
RJ Longstreet Elm - Upgrade Fire Alarm and Intrusion Mon	105,000	-	-	-	-
Seabreeze HS - Replace Tile Roof and Coat Flat Roof Bldg.	956,393	-	-	-	-
Seabreeze HS Upgrade HVAC Bldg. 1 and Tower	3,643,686	-	-	-	-
Seabreeze HS - New Marquee	-	216,000	-	-	-
Silver Sands Mid - Replace Gymnasium Bleachers	-	-	400,000	-	-
Spirit Elm - Upgrade HVAC Bldgs. 4	2,500,000	-	-	-	-
Spruce Creek HS - Replace 7 AC Roof Top Units	2,100,000	-	-	-	-
Spruce Creek HS – Renovate Culinary Lab	400,000	-	-	-	-
Sunrise Elm - Upgrade HVAC, Ceiling and Lighting Bldgs. 2	-	2,805,600	-	-	-
T. Dewitt Taylor Mid HS - Upgrade Fire Alarm and Intrusio	105,000	-	-	-	-
Transportation Warehouse - DeLand - Replace Emergency	849,600	-	-	-	-
University HS - Seal Abandoned Wells	447,600	-	-	-	-
University HS - New Marquee	-	102,000	-	-	-
Various - Security	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
Various - Infrastructure for Technology	250,000	250,000	250,000	250,000	250,000
Various - Minor Projects	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
Various Schools - High School Athletics	2,015,800	1,000,000	1,000,000	1,000,000	1,000,000

	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028
Various Schools - BDA	945,938	945,938	945,938	-	-
Various Schools - Playgrounds	1,000,000	1,000,000	300,000	300,000	300,000
Various Schools - Leased Portables	100,000	100,000	100,000	100,000	100,000
Various - Parking Lot Improvements	-	3,300,000	-	-	-
Total Projects at Existing Schools and Facilities	41,886,083	62,727,074	21,501,466	10,717,598	9,588,512
Facilities Management					
Contingency	7,000,000	6,500,000	7,000,000	12,000,000	12,000,000
Contingency - Operations	2,000,000	-	-	-	-
Facilities Management	2,800,000	2,800,000	2,800,000	2,800,000	2,800,000
Total Facilities Management	11,800,000	9,300,000	9,800,000	14,800,000	14,800,000
					-
Technology					
ERP Software - Enterprise Resource Planning	1,000,000	-	-	-	-
Various Schools & Depts - District Wide Technology Equipr	2,537,008	8,286,936	9,000,000	9,000,000	9,000,000
Total Technology	3,537,008	8,286,936	9,000,000	9,000,000	9,000,000
System Wide Equipment and Vehicles					
Furn, Fix, Equip, Veh	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
White Fleet	500,000	500,000	500,000	500,000	500,000
Total System Wide Equipment and Vehicles	1,700,000	1,700,000	1,700,000	1,700,000	1,700,000
Buses					
Bus and Safety	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
Total Buses	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
Charter School Disbursements					
Charter School Capital Outlay LCIF Disbursements	690,689	1,441,254	2,329,836	3,323,530	4,409,688
Total Charter School Disbursements	690,689	1,441,254	2,329,836	3,323,530	4,409,688
Total categories	**108,813,780**	**104,063,819**	**87,281,302**	**87,941,128**	**93,498,200**
Roll Forward					
Prior Year Carryover Encumbrances	124,810,791	-	-	-	-
Prior Year Carryover Appropriations	101,220,862	-	-	-	-
Total roll forward	**226,031,653**	-	-	-	-
Total uses	**334,845,434**	**104,063,819**	**87,281,302**	**87,941,128**	**93,498,200**
Excess (deficiency) of revenues over expenditures	(162,568,651)	72,181,643	95,355,980	100,938,302	101,309,727
Other financing uses					
Transfers - General Fund	(28,184,069)	(22,717,701)	(22,293,868)	(22,588,884)	(22,889,800)
Transfers - Debt Service Funds	(48,953,625)	(36,057,388)	(36,053,663)	(36,059,450)	(36,063,863)
Total other financing uses	**(77,137,694)**	**(58,775,089)**	**(58,347,531)**	**(58,648,334)**	**(58,953,663)**
Net change in fund balances	(239,706,345)	13,406,554	37,008,449	42,289,968	42,356,065
Fund balances					
Beginning Balance	277,075,248	37,368,903	50,775,457	87,783,906	130,073,874
Ending Balance	**$ 37,368,903**	**$ 50,775,457**	**$ 87,783,906**	**$ 130,073,874**	**$ 172,429,939**

	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029
Sources - revenues					
Local sources:					
Ad valorem property taxes	$ 99,170,467	$ 94,018,320	$ 97,250,400	$ 102,439,152	$ 106,686,288
Investment income	80,000	70,000	60,000	50,000	40,000
Total local sources	99,250,467	94,088,320	97,310,400	102,489,152	106,726,288
Total sources	**99,250,467**	**94,088,320**	**97,310,400**	**102,489,152**	**106,726,288**
Uses - expenditures					
New Construction					
Central Warehouse	-	-	2,500,000	15,000,000	-
Enterprise Elm - K-8 Replacement School	3,000,000	-	-	-	-
Hinson Mid - Classroom Addition	-	-	-	750,000	10,000,000
Indian River Elm - Classroom Addition	-	-	-	-	400,000
Manatee Cove Elm - 11 Classroom Addition	550,000	-	500,000	-	-
Pathways Elm - 11 Classroom Addition	550,000	-	500,000	-	-
Pine Ridge HS - 14 Classroom Addition	700,000	-	500,000	-	-
Port Orange Elm - Renovations	-	-	750,000	8,500,000	10,000,000
Read Pattillo Elm - K-8 Replacement School	750,000	-	2,000,000	-	-
Southwestern Mid - Renovate Kitchen and Multipurpose	6,000,000	-	-	-	-
Spruce Creek Elm - Campuswide HVAC and Lighting	-	-	1,200,000	-	-
Volusia Pines Elm - Classroom Addition	-	-	-	-	600,000
Total New Construction	11,550,000	-	7,950,000	24,250,000	21,000,000
Projects at Existing Schools and Facilities					
Atlantic HS - Press Box and Restroom Buildings	1,383,000	-	-	-	-
Atlantic HS - Renovate Group Restrooms Campus Wide	2,160,000	-	-	-	-
Blue Lake Elm - Renovate Basketball Courts	318,324	-	-	-	-
Brewster Center - Replace Emergency Generator	601,200	-	-	-	-
Brewster Center - Repair Floor Joists	-	117,600	-	-	-
Campbell Mid - Replace Emergency Generator	-	597,600	-	-	-
Creekside Mid - Replace Stage Lighting and Sound System	-	-	900,000	-	-
DeLand Administrative Complex - Upgrade Data Center Ba	250,000	-	-	-	-
Deltona HS - Upgrade Stage Lighting	900,000	-	-	-	-
Deltona HS - Foundation Repairs Bldg. 2	3,000,000	-	-	-	-
DeLand Mid - School Envelope Improvement	-	3,900,000	-	-	-
Edgewater Public Elm - Renovate Media Center	360,000	-	-	-	-
Edgewater Public Elm - Upgrade Parking Lot and Bus Loop	-	-	400,000	-	-
Edgewater Public Elm - Replace Stage Lighting and Sound S	-	600,000	-	-	-
Forest Lake Elm - Parent Loop Extension	1,000,000	-	-	-	-
Freedom Elm - Replace DOAS Bldgs. 3 and 4	1,300,000	-	-	-	-
Freedom Elm - Replace Stage Lighting and Sound System	-	600,000	-	-	-
Freedom Elm - Replace DOAS Bldgs. 1 and 2	-	1,400,000	-	-	-
Heritage Mid - New Marquee	-	216,000	-	-	-
Hinson Mid - Upgrade HVAC and Lighting Bldg. 7	-	1,800,000	-	-	-
Mainland HS - Stormwater Upgrades	1,500,000	-	-	-	-
Mainland HS - Upgrade Site Lighting	-	-	900,000	-	-
Mainland HS - Renovate Cafeteria	-	2,640,000	-	-	-
New Smyrna Transportation - Vehicle Lift Foundation	111,840	-	-	-	-
New Smyrna Beach HS - Upgrade BAS Bldgs. 1-4	-	1,488,044	-	-	-
New Smyrna Beach Mid - Replace Millwork Campus Wide	-	-	1,500,000	-	-
Osceola Elm - Reroof Bldgs. 4 and 9	94,000	-	-	-	-
Osceola Elm - Renovation for Riverview Move	-	3,426,000	-	-	-
Osteen Elm - Replace Gutters and Downspouts	556,390	-	-	-	-
Parking Lot Lease - City of DeLand	28,665	28,665	28,665	28,665	28,665

	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029
Pathways Elm - Upgrade Parking Lot Lighting	-	-	258,000	-	-
Pine Ridge HS - Repair Wall Flashings Bldg. 8	319,200	-	-	-	-
Portables - Moves and Compliance	900,000	400,000	400,000	400,000	400,000
R.J. Longstreet Elm - Upgrade Parking Lot and Canopy Ligh	-	200,000	-	-	-
River Springs Mid - Replace Gutters and Downspouts	648,000	-	-	-	-
Seabreeze HS - New Marquee	-	216,000	-	-	-
Seabreeze HS - Upgrade Parking Lot Lighting	-	546,000	-	-	-
Silver Sands Mid - Renovate Media Center	-	456,000	-	-	-
Silver Sands Mid - Replace Stage Lighting and Sound Syste	900,000	-	-	-	-
Silver Sands Mid - Replace Gymnasium Bleachers	-	400,000	-	-	-
South Daytona Elm - Upgrade Kitchen Flooring, Lighting an	-	354,000	-	-	-
Spruce Creek HS - Auditorium Seating and Flooring	-	1,290,000	-	-	-
University HS - New Marquee	102,000	-	-	-	-
University HS - Press Box	507,360	-	-	-	-
University HS - Upgrade Fire Booster Pump and Controls	534,000	-	-	-	-
Various - Minor Projects	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
Various Schools - BDA	945,938	945,938	-	-	-
Various Schools - Playgrounds	300,000	300,000	300,000	300,000	300,000
Various Schools - Leased Portables	100,000	100,000	100,000	100,000	100,000
Total Projects at Existing Schools and Facilities	22,819,917	26,021,847	8,786,665	4,828,665	4,828,665
Facilities Management					
Contingency	6,000,000	6,000,000	6,000,000	6,000,000	6,000,000
Facilities Management	1,300,000	1,300,000	1,300,000	1,300,000	1,300,000
Total Facilities Management	7,300,000	7,300,000	7,300,000	7,300,000	7,300,000
System Wide Equipment and Vehicles					
Furn, Fix, Equip, Veh	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
White Fleet	910,000	910,000	910,000	910,000	910,000
Total System Wide Equipment and Vehicles	2,110,000	2,110,000	2,110,000	2,110,000	2,110,000
Buses					
Bus and Safety	2,590,000	2,590,000	2,590,000	2,590,000	2,590,000
Total Buses	2,590,000	2,590,000	2,590,000	2,590,000	2,590,000
Charter School Disbursements					
Charter School Capital Outlay LCIF Disbursements	1,034,127	1,313,192	1,938,308	2,753,078	3,010,532
Total Charter School Disbursements	1,034,127	1,313,192	1,938,308	2,753,078	3,010,532
Roll Forward					
Prior Year Carryover Encumbrances	50,658,975	-	-	-	-
Prior Year Carryover Appropriations	31,769,478	-	-	-	-
Total roll forward	**82,428,453**	-	-	-	-
Total uses	**129,832,497**	**39,335,039**	**30,674,973**	**43,831,743**	**40,839,197**
Excess (deficiency) of revenues over expenditures	(30,582,030)	54,753,281	66,635,427	58,657,409	65,887,091
Other financing uses					
Transfers - General Fund	(31,681,710)	(33,015,595)	(34,416,175)	(35,886,784)	(37,430,924)
Transfers - Debt Service Funds	(21,317,043)	(23,546,350)	(23,549,950)	(23,553,850)	(23,551,300)
Total other financing uses	**(52,998,753)**	**(56,561,945)**	**(57,966,125)**	**(59,440,634)**	**(60,982,224)**
Net change in fund balances	(83,580,783)	(1,808,664)	8,669,302	(783,225)	4,904,867
Fund balances					
Beginning Balance	91,404,931	7,824,148	6,015,483	14,684,785	13,901,559

	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029
Ending Balance	$ 7,824,148	$ 6,015,483	$ 14,684,785	$ 13,901,559	$ 18,806,427

Source: Volusia County School District, Work Program adopted September ~~7, 2023~~10, 2024

IMPLEMENTATION

5-Year Schedule of Improvements

The 5-Year Schedule of Improvements (Table 1) is the mechanism by which the City can effectively stage the timing, location, projected cost, and revenue sources for the capital improvements derived from the other Comprehensive Plan Elements. This table lists only those capital projects that will be funded by the City of Port Orange as part of its annual Capital Improvement Program. Based upon the Inventory, Analysis, and Goals, Objectives, and Policies of this Element, the 5-Year Schedule of Improvements has been developed to document the financial feasibility of the City of Port Orange's *Comprehensive Plan*.

Monitoring and Evaluation

The role of monitoring and evaluation is vital to the effectiveness of any Comprehensive Plan and particularly for the Capital Improvements Element. As part of the annual budgeting process, the City evaluates the status of all scheduled capital improvements and the overall status of public facilities in relation to current and projected demand. This evaluation ensures that revisions to the budget, work programs, the Capital Improvements Program and this Comprehensive Plan may be made as necessary to provide facilities in a timely and financially feasible manner, consistent with adopted level-of-service standards. This review is coordinated by the Capital Improvements Project Manager. In addition, the issuance of development orders and development permits is monitored continuously to ensure consistency with this Plan. The City's annual review includes the following considerations, which are also evaluated each year to determine their continued applicability:

1) Any corrections, updates, and modifications concerning costs; revenue sources; acceptance of facilities pursuant to dedications which are consistent with the element; or the date of construction of any facility listed in this Element,
2) The Capital Improvement Element's consistency with the other Elements and its support of the Future Land Use Element.
3) The City's ability to provide public facilities and services within the Urban Service Area in order to determine any need for boundary modification or adjustment.
4) The priority assignment of existing public facility deficiencies.
5) The City's progress in meeting those needs that are determined to be existing deficiencies.
6) The criteria used to evaluate capital improvement projects in order to ensure that projects are being ranked in their appropriate order of priority.
7) The City's effectiveness in maintaining the adopted LOS standards.
8) The City's effectiveness in reviewing the impacts of plans and programs of state agencies and water management districts that provide public facilities within the City's jurisdiction.
9) The effectiveness of impact fees, and mandatory dedications or fees in lieu of, for assessing new development a pro rata share of the improvement costs which they generate.
10) The impacts of special districts and any regional facility and service provision upon the City's ability to maintain its adopted LOS standards.
11) The ratio of outstanding indebtedness to the property tax base.
12) Efforts made to secure grant or private funds, whenever available to finance the provision of capital improvements.
13) The transfer of any unexpended account balances.
14) The criteria used to evaluate proposed plan amendments and requests for new development or redevelopment.
15) Capital improvements needed for the latter part of the planning period, for inclusion in the 5-Year Schedule of Improvements.

CONCURRENCY MANAGEMENT SYSTEM

Overview

The purpose of a Concurrency Management System is to provide the necessary regulatory mechanism for evaluating development orders to ensure that the level-of-service standards adopted as part of the *Comprehensive Plan* are maintained. The system consists of three primary components: 1) an inventory of existing public facilities for which concurrency is to be determined; 2) a concurrency assessment of each application for a final development order or permit; and 3) a schedule of improvements needed to correct any existing public facility deficiencies. Under this system, and according to the Florida State Legislature, no development orders may be issued which will cause a public facility to operate below its adopted level-of-service standard. However, development orders may be conditioned such that needed public facility improvements will be in place concurrent with the impacts of the proposed development.

In order to ensure that all public facilities included within this system are available concurrent with the impacts of development, concurrency will be determined during the final site plan or final subdivision plan approval process. All development orders and permits will specify any needed improvements and a schedule for their implementation. Thus, while some required improvements may not have to be completed until a certificate of occupancy is applied for, the requirements for the certificate of occupancy will have already been specified as a condition of approval of the original development order. If a development proposal cannot meet the test for concurrency, then it may not proceed under any circumstances and no development orders or permits may be issued. Likewise, if a development fails to meet a condition of approval once it has commenced, then no additional development orders, permits, or certificates of occupancy may be issued.

Applicability

Prior to the granting of a development order, all applications for a final site plan or final subdivision plan shall be reviewed for concurrency consistent with the provisions and requirements of this system. Development orders may be issued only upon a finding by the City that the public facilities addressed under the Concurrency Management System will be available concurrent with the impacts of the development.

All applicants for development permits shall be required to provide all information deemed necessary by the City so that the impacts of the proposed development may be accurately assessed.

The City's land development regulations specifically list the application requirements for development permits that reflect the informational needs for the determination of concurrency, and application forms have been developed accordingly.

Department of Community Development

The City's Department of Community Development is responsible for the four primary tasks which are described below. The Director of Community Development may delegate all or a part of these functions to the employees within this Department. The four tasks are: 1) maintaining an inventory of existing public facilities and capacities or deficiencies; 2) determining concurrency of proposed development which does not require City Council approval; 3) providing advisory concurrency assessments and recommending conditions of approval to the City Council for those applications for development orders which require City Council approval; and 4) reporting the status of all public

facilities covered under this system to the City's Capital Improvement Facilities Project Manager and recommending a schedule of improvements for those public facilities found to have existing deficiencies.

Capacity and Level-of-Service Inventory

The Department of Community Development collects, and makes available to the public, information on certain facilities as described below in Table 7. The information has been available since November 1, 1990, and is updated annually thereafter. The provisions and requirements of the Concurrency Management System apply only to those facilities listed in Table 7.

TABLE 7
PUBLIC FACILITIES CAPACITIES AND LEVEL-OF-SERVICE INVENTORY
FOR CONCURRENCY MANAGEMENT

The following inventories shall be maintained by the Department of Community Development to be used for the concurrency assessment of new development.

TRANSPORTATION

Design capacity of different roadway types and bikeways.

The existing level of service measurement.

Analysis of specific facilities.

The service degradation on those facilities classified as backlogged, based on the methodology described in the Transportation Element of this Plan.

The adopted level of service standards for all roadway types.

The existing capacities or deficiencies of the transportation system.

The capacities reserved for approved but unbuilt development.

The projected capacities or deficiencies due to approved but unbuilt development.

The improvements to be made to the transportation system in the current fiscal year by the City, Volusia County, the Florida Department of Transportation, or other public agency and the impact of such improvements on the existing capacities or deficiencies.

SANITARY SEWER

The design capacity of the wastewater treatment facilities.

The existing level-of-service standards measured by the average number of gallons per day unit based on the average flows experienced at the treatment plant and the total number of equivalent residential units within the service area.

The adopted level-of-service standard for average daily flows per equivalent residential unit.

The existing deficiencies of the system.

The capacities reserved for approved but unbuilt development.

The projected capacities or deficiencies due to approved but unbuilt development.

The improvements to be made to the facility in the current fiscal year by any approved developments pursuant to previous development orders and the impact of such improvements on the existing capacities or deficiencies.

POTABLE WATER

Permitted groundwater withdrawal capacity as per the City's Consumptive Use Permit.

The design capacity of potable water treatment facilities.

The existing level of service measured by the average number of gallons per day per unit based on the average flows experienced and the total number of equivalent residential units within the service area.

The existing potable water storage capabilities of the water system.

TABLE 7
(Continued)

POTABLE WATER (Continued)

The existing minimum water pressure.

The adopted level-of-service standards for the potable water facility components.

The existing capacities or deficiencies of the system.

The capacities reserved for approved but unbuilt development.

The improvements to be made to the facility in the current fiscal year by any approved developments pursuant to previous development orders and the impact of such improvements on the existing capacities or deficiencies.

The improvements to be made to the facility in the current fiscal year by the City and the impact of such improvements on the existing capacities or deficiencies.

SOLID WASTE DISPOSAL

The design capacity of solid waste disposal facilities.

The existing level of service measured by the number of units served per route.

The adopted level-of-service standard for solid waste.

The capacities reserved for approved but unbuilt development.

The projected capacities or deficiencies due to approved but unbuilt development.

The improvements to be made to the system in the current fiscal year by any approved developments pursuant to previous development orders and the impact of such improvements on the existing capacities or deficiencies.

The improvements to be made to the system in the current fiscal year by the City and the impact of such improvements on the existing capacities or deficiencies.

STORMWATER DRAINAGE

The existing level of service measured by storm event.

The adopted level-of-service standard for stormwater drainage quantity and quality.

RECREATION AND OPEN SPACE

The existing acreage of parkland and the existing number of recreation facilities in the Recreation and Open Space Element of this Plan.

The existing level of service measured by the number of acres of parkland available per 1,000 residents of the City based on an inventory of parklands in the City and the population of the City.

The existing level of service for recreation facilities measured by the adopted standard based on an inventory of the facilities in the City and the population of the City.

The adopted level-of-service standards for parkland acreage and individual recreation facilities in the Recreation and Open Space Element of this Plan.

TABLE 7
(Continued)

RECREATION AND OPEN SPACE (Continued)
The existing capacities reserved for approved but unbuilt development.
The projected capacities or deficiencies due to approved but unbuilt development.
The improvements to be made to the recreation facilities in the current fiscal year by any approved developments pursuant to previous development orders and the impact of such improvements on the existing capacities or deficiencies.
The improvements to be made to the recreation facilities in the current fiscal year by the City and the impact of such improvements on the existing capacities or deficiencies.
PUBLIC SCHOOL FACILITIES*
The existing level-of-service for each School Concurrency Service Area.
The adopted level-of-service standard for each School Concurrency Service Area.
The existing and projected deficiencies of the system.
The number of approved residential units and their projected students that have received school concurrency certificates, but whose units are not constructed.
The projected capacities and level-of-service due to approved but unbuilt residential development.
The improvements to be made by any approved developments pursuant to Capacity Enhancement Agreements and/or Mitigation Agreements and the projected impact of such improvements on school capacities and the adopted level-of-service.
*The Public School Facilities inventories are maintained by the School District of Volusia County.

Source: City of Port Orange, 2023

Concurrency Assessment

The Department of Community Development is responsible for determining concurrency for all applications of development orders for final site plans and/or applications of development orders for final site plans and/or final subdivision plans. When reviewing applications for such development orders, the Department performs a Concurrency Assessment to ensure that public facilities are available concurrent with the impacts of the proposed development. To conduct the assessment, the inventory presented in Table 7 is used as a base for the establishment of existing conditions. The capacity of existing public facilities to service new development shall then be determined by using the general rules presented in Table 8 and the facility-specific rules presented in Table 9. Finally, a determination of concurrency is made. Such determination may include conditions of approval which are deemed necessary for concurrency to be ensured.

The Department of Community Development provides recommendations to the Planning Commission and City Council concerning those development order applications which require Planning Commission and City Council approval.

Prior to the issuance of a development order for a proposed new development, the Department of Community Development determines:

1. The impacts created by the proposed development;
2. Whether the public facilities covered under the Concurrency Management System will be available concurrent with the impacts of new development at the adopted level;

3. Those facility(s) improvements or additions that are required to ensure the finding of concurrency; and
4. The entity responsible for the design and installation of all required facility(s) improvements or additions.
5. Whether the development will have to participate in a Concurrency and Fair Share Agreement, as outlined in the City's Proportionate Fair Share Ordinance.

The adopted level-of-service standards are the minimum acceptable standards with which all proposed new development shall comply. The Concurrency Management System does not preclude the Planning Commission or the City Council from imposing other conditions of approval.

Facilities Reporting

Annually, the Department of Community Development reports to the City Council the information required in Table 7. The report includes the degree of any deficiencies and a summary of the impacts the deficiencies will have on the approval of development orders. The Department of Community Development then recommends a schedule of improvements necessary to prevent a moratorium or a reduction in the approval of development orders.

TABLE 8
GENERAL RULES FOR CONCURRENCY ASSESSMENT

EXISTING DEFICIENCIES

No development may be approved which will impact any facility which is currently deficient unless the facility is required to be improved in the current fiscal year pursuant to a previous development order or permit, except within the Transportation Concurrency Exception Area. Any needed improvements shall be completed prior to the projected impacts of the proposed development as required by Table 7. Developments within the Town Center TCEA shall be required to provide funding contributions or mobility improvements commensurate with anticipated level of impact to the overall transportation system and shall be credited for any mobility improvements or programs deemed acceptable by the City as a means of offsetting such mobility impacts.

APPROVED IMPACTS

The impacts of new development shall be assessed against the existing conditions as described in Table 7 and the projected impacts from approved but unbuilt development. These two items together shall be considered the existing conditions for all public facilities for the impact assessment of all proposed development.

PHASING

Development that is proposed to be phased may also phase the improvement of facilities provided the concurrency requirements for each facility as described in Table 7 are met.

TIME SPECIFIC APPROVAL

All development approvals shall have a time period specified in the development order or permit in which development must commence. The time period may involve two or more phases, but the timing of each phase shall be specified in the development order or permit.

Any required improvements shall also require a time period for construction and completion. Should development or facilities improvements fail to begin or be completed in accordance with the development order or site construction permit, all outstanding approvals of the development shall expire. Amendments to time schedules shall be permitted but must be approved consistent with the procedures established in the Land Development Code.

ADDITIONAL INFORMATION

The Department of Community Development may require additional information from applicants or other City Departments in order for an accurate assessment to be conducted. Such additional informational requests shall be reasonable and be provided in writing to the applicant or appropriate Department.

Should the Department of Community Development require a special study (such as traffic counts on a road that is not regularly monitored), the applicant shall provide such information. Review and approval of proposed development may be postponed for a reasonable time period in order that more information may be gathered on a facility. Proposed development may be denied approval, for failure of the applicant to provide adequate information on the projected impacts created by the development.

Source: City of Port Orange, 2023

TABLE 9
FACILITY SPECIFIC RULES FOR CONCURRENCY ASSESSMENT

TRANSPORTATION

Traffic impact analysis studies are required for development projects to determine the project impacts, maintain information on roadway conditions, and develop appropriate mobility mitigation strategies. Such studies must be consistent with the adopted TPO Guidelines. The studies shall calculate the number of trips generated by the proposed development, show the distribution and assignment of the projected trips, and project the level of service of impacted road links. Traffic studies shall still be required for projects within the Town Center Transportation Concurrency Exception Area (TCEA) to provide a measure of the projects impacts and to maintain information on the roadway conditions within the Town Center TCEA to develop, monitor, and adjust mobility strategies.

Prior to the issuance of a Certificate of Occupancy, all facility improvements necessary to accommodate the impacts of the development shall be in place or planned for construction within the first three years of the adopted FDOT Work Program, County Road Program, and/or City CIP. If the necessary facility improvements will not be in place or under construction within three years of the time of the development approval, the development's approval will be subject to the signing of an enforceable development agreement, such as a Concurrency and Fair-Share Agreement, as outlined in the City's Proportionate Fair Share Ordinance. Completed improvements may be required prior to the issuance of a building permit if deemed necessary for public safety purposes. Outside the boundaries of the Transportation Concurrency Exception Area, the City may grant *de minimus* exceptions up to a cumulative 10% degradation of the adopted peak-hour LOS standard volume, as long as the facility is not an evacuation route or part of the State's SIS.

SANITARY SEWER

The City's Land Development Code provides sanitary sewer use standards for residential development based on equivalent residential units and for non-residential development based on gross leasable area. The City may also require commercial and industrial developments to provide a description and estimate of wastewater generations for any commercial or industrial processes which create wastewater that will be discharged into the City's system.

Prior to the issuance of a Certificate of Occupancy, all facility improvements necessary to accommodate the impacts of that portion of the development receiving a Certificate of Occupancy shall be in place, as required by the Development Order.

POTABLE WATER

The City's Land Development Code provides potable water use standards for residential development based on equivalent residential units and for non-residential development based on gross leasable area. The City may also require commercial and industrial developments to provide a description and estimate of water use needs for any commercial or industrial processes involving potable water.

Prior to the issuance of a Certificate of Occupancy, groundwater or alternative water supplies and all facility improvements necessary to accommodate the impacts of that portion of the development receiving a Certificate of Occupancy shall be in place, as required by the Development Order and the City Consumptive Use Permit.

TABLE 9
(Continued)

SOLID WASTE

The City's Land Development Code provides solid waste generation standards based on land use types. Commercial and industrial developments which are potential hazardous waste generators shall provide a description and estimate of tonnage of solid waste to be generated. The applicant will be responsible for coordinating with Volusia County for disposal of such waste. The City will then obtain written approval from Volusia County that the proposed development's hazardous waste generation can be accommodated at the County's landfill.

Prior to the issuance of a Certificate of Occupancy, all facility improvements necessary to accommodate the impacts of that portion of the development receiving a Certificate of Occupancy shall be in place.

STORMWATER DRAINAGE

All development shall prepare a drainage plan based on the Stormwater Management regulations which incorporate the level-of-service design storm. Such plans shall be approved by the City's Storm Drainage Engineer prior to the approval of the development.

Prior to the issuance of a building permit, all facility improvements necessary to accommodate the impacts of that portion of the development receiving the building permit shall be approved and a schedule established for their implementation such that all improvements shall be completed prior to the issuance of a Certificate of Occupancy.

RECREATION

The City's Land Development Code provides recreation standards for residential uses. Commercial and industrial developments shall not be assessed as having an impact on recreational facilities. However, the City reserves the right to require the provision of recreational facilities a part of Planned Commercial Developments.

Prior to the issuance of a building permit, all facility improvements necessary to accommodate the impacts of the entire development shall be approved and a schedule established for their implementation such that all improvements shall be completed prior to the issuance of the last Certificate of Occupancy.

PUBLIC SCHOOLS

The Interlocal Agreement for Public School Facilities Planning, the Public School Facilities Element, and the City's Land Development Code provides district-wide level-of-service standards for all school types and establishes Concurrency Service Areas for each school type.

The School District shall conduct a concurrency review that includes findings and recommendations of whether there is adequate capacity to accommodate proposed development for each type of school, consistent with the adopted level-of-service. Prior to the issuance of the Final Development Order for a residential development or a development with a residential component, facility capacity necessary to accommodate the impacts of that portion of the development receiving a Development Order shall be in place or planned for construction within the first three years of the adopted five-year School District Capital Improvement Program. If the necessary facility capacity will not be in place or under construction within three years of the time of the development approval, the developer has the option to enter into negotiations for a Mitigation Agreement and development approval will be subject to the execution of the Mitigation Agreement.

Source: City of Port Orange, 2023

Goals, Objectives, and Policies

Goal 1: Capital Improvements

The City shall undertake necessary actions to economically and efficiently provide needed public facilities and services to all residents within its service area in a manner which protects investments in existing facilities, maximizes the use of existing facilities, and promotes orderly compact urban growth.

Objective 1.1: Improvements. Capital improvements will be to accommodate growth, correct existing deficiencies, and to meet adopted LOS, as indicated in the Schedule of Improvements of this Element.

Policy 1.1.1: The City shall include all projects required to meet or maintain adopted LOS standards or implement the Goals, Objectives, and Policies of the Comprehensive Plan and determined to be of relatively large scale in cost ($25,000 or greater) as Capital Improvement Projects to be included in the Schedule of Improvements of this Element.

Policy 1.1.2: In the City's Capital Improvement Program, the City shall prioritize scheduling and funding of all capital improvement projects designed to correct existing deficiencies as identified in other Elements of this Plan.

Policy 1.1.3: The Capital Improvements Coordinating Committee, composed of senior staff from operating departments and Finance, shall evaluate and rank on an annual basis in order of priority the projects proposed to be included in the Schedule of Improvements.

Policy 1.1.4: Proposed City capital improvement projects shall be evaluated and ranked in order of priority according to the following criteria:

A. Whether the project is needed to protect public health and safety, to fulfill the City's legal commitment to provide facilities and services, or to preserve or achieve full use of those facilities already in place.
B. Whether the project increases efficiency of use of existing facilities, prevents or reduces future improvement costs, provides services to developed areas lacking full service, or promotes in-fill development.
C. Whether the project represents a logical extension of facilities and services and is coordinated with the plans of other agencies that provide facilities within the City.
D. Whether the project implements the policies of this Comprehensive Plan as they pertain to the concurrency requirements or mobility strategies in support of the City's Town Center TCEA.
E. Whether the project is financially feasible.

Policy 1.1.5: The potential for reducing Vehicle Miles Traveled (VMTs) should be considered in all location and investment decisions for public facilities.

Objective 1.2: Town Center Mobility. Future development will bear a proportionate cost of facility improvements or mobility strategies necessitated by the development in order to maintain the adopted level-of-service standards or to maintain mobility within the City's Town Center Transportation Concurrency Exception Area (TCEA).

Policy 1.2.1: The City will continue to collect impact fees from development projects to pay for the provision of public facilities and services required by developments.

Policy 1.2.2: The City shall consider the use of other impact fees to fund TCEA mobility strategies.

Policy 1.2.3: All new development shall be required to donate or reserve their fair share of right-of-way adjacent to major roadways prior to the issuance of a final development order.

Policy 1.2.4: All new development shall be required to pay its proportionate fair share toward transportation LOS and mobility improvements necessary to provide capacity for its impacts.

Objective 1.3: Provision of Improvements. The City will manage its fiscal resources to ensure the provision of needed capital improvements for previously issued development orders and for future development and redevelopment.

Policy 1.3.1: In providing capital improvements, the City shall limit the maximum ratio of outstanding indebtedness to no greater than 15% of the property tax base.

Policy 1.3.2: The City shall continue to adopt a Capital Improvement Program and an Operating Budget on a yearly basis as part of this budgeting process for implementation of the Goals, Objectives, and Policies set forth in this Comprehensive Plan.

Policy 1.3.3: The City shall continue to apply for and secure grants or private funds whenever available to finance the provision of capital improvements and other City improvement projects.

Policy 1.3.4: Prior to the issuance of Certificates of Occupancy, the City will provide for all public facilities needed to service development for which Development Orders were previously issued.

Policy 1.3.5: The City shall allocate the costs of new public facilities on the basis of the benefits received by existing and future residents.

Policy 1.3.6: The City shall identify and use stable revenue sources which are also responsive to growth for financing public facilities.

Policy 1.3.7: The City shall continue to strive for financial self-sufficiency in the provision of public facilities.

Policy 1.3.8: A capital improvement scheduled to be funded through grants and/or funding that requires a referendum will not be undertaken if the grants are not secured or the referendum is not passed; however, if the improvement is needed to maintain a LOS standard, then all new development will be required to contribute its fair share towards the improvement.

Policy 1.3.9: The City shall identify funding sources for the mobility strategies in the Town Center Transportation Concurrency Exception Area (TCEA) annually during the update to the Capital Improvements Plan. Mitigation shall be satisfied through a combination of physical infrastructure improvements, as listed in the Transportation Element, or payment of impact fees, and proportionate fair-share contributions, or other future identified sources.

Policy 1.3.10: The City may create a special assessment district to secure funding for TCEA strategies and identified improvements within the Port Orange Town Center Redevelopment District. The City shall amend the Capital Improvements Schedule annually to incorporate funding from the special assessment district for capital improvements to enhance mobility within the TCEA.

Policy 1.3.11: The City will pursue funding from other revenue sources including, but not limited to:

- Florida Inland Navigation Department (FIND) grants
- Volusia County ECHO grants
- Community Development Block Grant (CDBG) funds
- Ponce de Leon Port District
- Special Assessment District
- FloridaCommerce
- Florida Department of Transportation (FDOT)
- Transportation Planning Organization (TPO)
- Transportation impact fees
- Utility projects (drainage, water, wastewater)
- Development Agreements
- Parking credits
- Gas tax

Objective 1.4: Concurrency Management System. The City will utilize a Concurrency Management System so that decisions regarding the issuance of development orders and permits will be based upon coordination of the development requirements included in this Plan, the land development regulations, and the availability of necessary public facilities to support such development at the time needed. The Transportation Concurrency Exception Area provides concurrency exceptions for the issuance of development orders and permits for infill development and redevelopment based upon the multimodal transportation policies and strategies for mobility included in this Plan.

Policy 1.4.1: The City shall use the following Level-of-Service (LOS) standards in reviewing the impacts of new development and redevelopment upon public facility provision, except for the Roadways within the Transportation Concurrency Exception Area as described in the Transportation Element:

Sanitary Sewer --

Capacity: 160 gallons per equivalent residential unit per day. 1/10 gallon per square foot per day of commercial, industrial, or institutional development

Solid Waste --

Capacity: 3.21 pounds per capita per day; up to 1,350 residential units per curbside collection vehicle; 10 lbs/1,000 square feet of non-residential development

Potable Water --

Per Capita Consumption: 180 gallons per day per equivalent residential unit. 1/10 gallon per square foot per day of commercial, industrial, or institutional development; not to exceed CUP capacity for groundwater withdrawals

System Minimum Pressure during fire flow: 20 psi

Storage Provided: 50% of daily flow

Well Capacity: Meet or exceed CUP capacity for groundwater withdrawals

Normal Operating Pressure: 60-70 psi

Water Plant Capacity: Adequate for peak day. Three year lead time for planned expansion.

High Service Pumping: Peak hour with largest pump out of service. Expansion concurrent with treatment capacity.

Water Quality: Meet State and Federal Drinking Water Standards.

Drainage --

Quantity: 25-year, 24-hour storm event; per Drainage Sub-Element.

Quality: Reduction of pollutants to a level compatible with State Standards.

Transportation --

Meet State Target for SIS roads
LOS E for City and County-maintained roads
LOS D for S Williamson Boulevard (*Spruce Creek* to *Pioneer Trail*)
LOS D for State-maintained non-SIS roadways

Recreation Standards for Facilities --

Parkland	7 acres / 1,000 persons

Policy 1.4.2: Prior to the approval of an application for a final subdivision or development plan, the City will review the proposed application to ensure that public facilities and services needed to support the development are available concurrent with the impacts of such development based on the Concurrency Management System as set forth in the Capital Improvements Element (Tables 7, 8, and 9) and as provided in Goals 1 and 2 of the Transportation Element.

Policy 1.4.3: Provisions in the Comprehensive Plan that ensure public facilities and services standards will be met to satisfy the Concurrency requirement are listed below.

A. The necessary facilities and services are in place or under construction at the time a development permit is issued; or
B. A development permit is issued subject to the condition that the necessary facilities and services will be in place when the impacts of the development occur. For required roadway facilities, the construction commencement and completion date and source of funds for the necessary facility shall be adopted in the Capital Improvements Schedule; or
C. The necessary facilities and services are guaranteed in an enforceable development agreement. The agreement must guarantee that the necessary facilities and services will be in place when the impacts of the development occur; or
D. At the time the development permit is issued, the necessary facilities and services are the subject of a binding executed contract which provides for the commencement of the actual construction of the required facilities or the provision of services within three years of the development approval; or

E. The necessary facilities and services are guaranteed in an enforceable development agreement which required the commencement of the actual construction of the facilities or the provision of services within one year of the issuance of the applicable development permit; or
F. The necessary facilities and services are guaranteed in an adopted CIP but are not funded for construction within the first three years, and the development has entered into a Fair-Share Agreement to pay its proportionate fair share toward the required facilities.

For potable water, sewer, solid waste, and drainage facilities, at a minimum, one of provisions A-C must be met to satisfy the concurrency requirement. For parks and recreation and transportation facilities, any one of the provisions A-E must be met to satisfy the concurrency requirement. It should be noted, however, that concurrency for transportation facilities, as per provisions C and E, is predicated only upon development agreements which are subject to Section 163.3220 (Florida Local Government Development Agreement Act) or Chapter 380 (Land and Water Management), Florida Statutes. Pursuant to Section 163.3180, F.S., the portion of the City designated as a Transportation Concurrency Exception Area (TCEA) is not subject to State-mandated transportation concurrency requirements. In accordance with this statute, the City has developed mobility strategies which must be met for development to occur, in the TCEA. As development occurs, mitigation shall be satisfied through a combination of physical infrastructure improvements, as listed in the Transportation Element, or payment of impact fees, and proportionate fair-share contributions, or other future identified sources. These must be guaranteed using any one of options above.

Policy 1.4.4: Proposed plan amendments and requests for new development or redevelopment shall be evaluated according to the following guidelines as to whether the proposed action would:

A. Be consistent with the Public Facilities Element and the Coastal Management Element and not contribute to a condition of public hazard.
B. Be consistent with the Transportation Element; Public Facilities Element; and Recreation and Open Space Element and not intensify any existing public facility capacity deficits not envisioned within this plan.
C. Generate public facility demands that may be accommodated by planned capacity increases.
D. Conform with future land uses as shown on the future land use map, and Urban Service Areas as described in the Public Facilities Element of this Plan.
E. Accommodate public facility demands based upon level-of-service standards by provision of facilities by the developer or by the City consistent with this element.
F. Be consistent with state and regional agencies' and water management district's facilities plans.

Policy 1.4.5: The City shall include projects within the City's Five-Year Capital Improvements Program and the Capital Improvements Element to fund mobility and implement strategies to support the Town Center Transportation Concurrency Exception Area (TCEA). The identified projects will be prioritized consistent with the Transportation Element.

Policy 1.4.6: The City will work annually through the TPO's Transportation Improvement Program (TIP) with FDOT, the TPO and Volusia County to promote the inclusion of projects in their plans, programs, and development regulations that maintain mobility within or that would benefit the TCEA in terms of mobility; and to identify joint funding strategies, including special assessment and developer contributions, that would allow for the acceleration of long

range improvements for inclusion with the TIP or the City's 5-year Capital Improvements Schedule, as appropriate.

Policy 1.4.7: Capital Improvements necessary for water supply concurrency will be identified and included in the annual update to the Capital Improvements Schedule.

Goal 2: Public School Facilities

The City, in cooperation with the School District, shall provide for a financially feasible public school facilities program.

Objective 2.1: School Capacity. The City of Port Orange shall ensure that the capacity of schools is sufficient to support residential subdivisions and site plans at the adopted level-of-service standard. This level of service standard shall be consistent with the level of service standard adopted in the interlocal agreement entered into by the School District and the local governments within Volusia County.

Policy 2.1.1: The level-of-service standard adopted by the City of Port Orange is the same as adopted by all local governments within Volusia County and by the School District and shall be applied district-wide to all schools of the same type.

Policy 2.1.2: Consistent with the interlocal agreement, the uniform, district-wide level-of-service standards are set as follows using FISH capacity based on the traditional school calendar:

Elementary Schools: 115% of permanent FISH capacity for the concurrency service area

K- 8 Schools: 115% of permanent FISH capacity for the concurrency service area.

Middle Schools: 115% of permanent FISH capacity for the concurrency service area

High Schools: 120% of permanent FISH capacity for the concurrency service area

Special Purpose Schools: 100% of permanent FISH capacity

Objective 2.2: Maintaining Level of Service. The City of Port Orange shall cooperate with the School District to ensure existing deficiencies and future needs are addressed consistent with adopted level of service standards for public schools.

Policy 2.2.1: Annually, the City of Port Orange shall adopt as part of its Capital Improvement Element the Volusia County School District five-year work program approved in September of each year as part of the School District budget, including planned facilities and funding sources to ensure a financially feasible capital improvements program and to ensure the level of service standards will be achieved by the end of the five-year period.

Policy 2.2.3: The City of Port Orange shall coordinate with the School District and adopt development requirements to ensure that future development pays a proportionate share of the costs of capital facility capacity needed to accommodate new development and to assist in maintaining the adopted level-of-service standards via impact fees and other legally available and appropriate methods.

STAFF REPORT
CASE NO. CPAM-24-0004
Comprehensive Plan Capital Improvements Element - 2024 Annual Update

REQUEST:	Update and amend the Comprehensive Plan Capital Improvements Element (CIE) in accordance with Florida Statutes
APPLICANT:	City of Port Orange
STAFF RECOMMENDATION:	Approval
STAFF CONTACT:	Penelope Cruz, Planning Manager, (386) 506-5671
PLANNING COMMISSION:	November 21, 2024
CITY COUNCIL:	December 10, 2024

INTRODUCTION

Each year, the city is required to amend their Comprehensive Plan Capital Improvements Element (CIE) to include projects from the City's current FY25-30 Capital Improvements Program (CIP). The projects copied from the CIP are primarily improvements needed to maintain the City's adopted level of service (LOS) standards for public facilities. These facilities include water, sewer, stormwater, solid waste, roads, parks, and schools. The CIP was adopted in concept by City Council on September 4, 2024, and it was formally adopted as part of the FY25 Operating and Capital Budgets on September 18, 2024, by Resolution No. 24-39. The CIP includes various projects to support the LOS for City public facilities. The proposed amendments take these projects previously approved by Council with the CIP and add them into the CIE.

State law requires that local governments update their Comprehensive Plan Capital Improvements Element (CIE) every year to show that they have funded or planned to fund the public facility improvements needed to support their population[1]. The proposed amendments in Exhibit A are required to be in the underline/strikethrough format. For each table or text that is to be updated from the prior year CIP (FY24 – FY29) to the current year CIP (FY25 – FY30) the deleted prior year text is shown in strikethrough (~~strikethrough~~) format and the added current year text is underlined (<u>underlined</u>). Text that is not struck through or underlined remains as existing text in the current year CIE.

PURPOSE

Under the 1985 Growth Management Act, local governments are mandated to plan for the availability of public facilities and services to support development and the impacts of such development. The purpose of the CIE and the 5-year Capital Improvements Schedule is to identify the capital improvements needed to implement the Comprehensive Plan and ensure the adopted Level of Service (LOS) Standards for concurrency-related facilities are achieved and maintained.

[1] *Ch. 163.3177(3) F.S.*

DISCUSSION

The amendments to the CIE include the updated Schedule (copied from the City's adopted FY25 – 30 Capital Improvements Program) and other amendments to update data related to the Schedule and other statutorily required information, such as excerpts from the Transportation Planning Organization's (TPO) Transportation Improvements Program (TIP) and the Volusia County School District Five-Year Work Program (Exhibit 1, Tables 5 and 6).

The CIE Schedule includes projects required to meet or maintain adopted LOS standards for concurrency-related facilities or implement the Goals, Objectives, and Policies of the Comprehensive Plan (Exhibit 1). The concurrency management system for the City of Port Orange is established by policy in the City's Comprehensive Plan and administered through regulations contained within the City's Land Development Code.

The City is required to monitor the cumulative effect of all approved Development Orders and Development Permits on the capacity of public facilities. This obligation is met through individual concurrency reviews of development proposals and the annual concurrency report for 2024. The City's concurrency review evaluates the following public facilities and services:

- Transportation
- Sanitary Sewer
- Potable Water
- Stormwater Drainage
- Solid Waste
- Recreation
- Public Schools

The annual concurrency report for 2024 identified that all public facilities and services subject to concurrency are at sufficient levels based on adopted Level-of-Service (LOS) and identified improvements that are planned or programmed to ensure that the city continues to maintain the adopted LOS.

RECOMMENDATION

Staff recommends **approval** of the adoption of the 2024 CIE Annual Update.

ATTACHMENT

Exhibit 1 – Annual Update to the CIE (See Ordinance exhibit)

Business Impact Estimate

This form should be included in agenda packet for the item under which the proposed ordinance is to be considered, and must be posted on the City's website by the time notice of the proposed ordinance is published.

Proposed ordinance's title/reference:
Ordinance No. 2024-25 – Annual Capital Improvements Element Update (Case No. CPAM-24-0004)

This Business Impact Estimate is provided in accordance with Section 166.041(4), Florida Statutes. If one or more boxes are checked below, this means the City is of the view that a business impact estimate is **not** required by state law[1] for the proposed ordinance, but the City is implementing the procedure required by statutory law to ensure that no inadvertent procedural issue could impact the enactment of the proposed ordinance. This Business Impact Estimate may be revised following its initial posting.

- ☐ The proposed ordinance is required for compliance with Federal or State law or regulation;
- ☐ The proposed ordinance relates to the issuance or refinancing of debt;
- ☐ The proposed ordinance relates to the adoption of budgets or budget amendments, including revenue sources necessary to fund the budget;
- ☐ The proposed ordinance is required to implement a contract or an agreement, including, but not limited to, any Federal, State, local, or private grant, or other financial assistance accepted by the municipal government;
- ☐ The proposed ordinance is an emergency ordinance;
- ☐ The ordinance relates to procurement; or
- ☒ The proposed ordinance is enacted to implement the following:
  a. Development orders, and development permits, as those terms are defined in s. 163.3164; and development agreements as authorized by the Florida Local Government Development Agreement Act under ss. 163.3220-163.3243;
  b. Comprehensive plan amendments and land development regulation amendments initiated by an application by a private party other than the municipality;
  c. Sections 190.005 and 190.046, *Florida Statutes*, regarding community development districts;
  d. Section 553.73, *Florida Statutes*, relating to the *Florida Building Code*; or
  e. Section 633.202, *Florida Statutes*, relating to the *Florida Fire Prevention Code*.

[1] See Section 166.041(4)(c), Florida Statutes.

In accordance with the provisions of controlling law, even notwithstanding the fact that, an exemption noted above may apply, the City hereby publishes the following information:

1. Summary of the proposed ordinance (must include statement of the public purpose, such as serving the public health, safety, morals, and welfare): Each year, the city is required by State law to amend its Comprehensive Plan Capital Improvements Element (CIE) to include projects from the City's current Capital Improvements Program (CIP). The projects copied from the adopted CIP are primarily improvements needed to maintain the City's adopted level of service (LOS) standards for public facilities. These facilities include water, sewer, stormwater, solid waste, roads, parks, and schools.

2. An estimate of the direct economic impact of the proposed ordinance on private, for-profit businesses in the City, if any:

(a) An estimate of direct compliance costs that businesses may reasonably incur:
N/A

(b) Any new charge or fee imposed by the proposed ordinance or for which businesses will be financially responsible:
N/A

(c) An estimate of the City's regulatory costs, including estimated revenues from any new charges or fees to cover such costs:
N/A

3. Good faith estimate of the number of businesses likely to be impacted by the proposed ordinance:
N/A

4. Additional information the governing body deems useful[2] (if any): N/A

[2] *You may wish to include in this section the methodology or data used to prepare the Business Impact Estimate. For example: City staff solicited comments from businesses in the City as to the potential impact of the proposed ordinance by contacting the local Chamber of Commerce, social media posting, direct mail or direct email, posting on City website, public workshop, etc. You may also wish to include efforts made to reduce the potential fiscal impact on businesses. You may also wish to state here that the proposed ordinance is a generally applicable ordinance that applies to all persons similarly situated (individuals as well as businesses) and, therefore, the proposed ordinance does not affect only businesses*.

CITY COUNCIL AGENDA ITEM

COUNCIL MEETING DATE 1/21/2025

SUBJECT: (F13) First Reading - Ordinance No. 2025-01 - LDC Amendment/Chapter 15 - Signs (Case No. DCAM-24-0002)

DEPARTMENT: Community Development

GOAL: 3 - Quality of Life

RECOMMENDED MOTION: Move to approve Ordinance No. 2025-1.

SUMMARY: PLANNING COMMISSION ACTION (12/12/24): Recommended approval 4-0

Lamar Outdoor Advertising is requesting an amendment to the Land Development Code (LDC), allowing the static sign face on existing billboards to be replaced with a digital sign face. If approved, the amendment would allow the City Council the ability to choose to enter into an agreement with a billboard owner to allow the reconstruction of existing billboards along I-95 with a digital sign face in exchange for removing other existing billboards within Port Orange to reduce the number of billboards within Port Orange and improve aesthetics within the City. The proposed amendment would allow a billboard owner to replace a sign face for an existing billboard along I-95 with a digital sign face by removing at least two billboard sign faces.

Under the City's current sign regulations, a billboard is a prohibited sign. Furthermore, structural repairs or reconstruction of existing non-conforming signs is not permitted, requiring them to be removed as they become structurally unsound. The applicant requests this amendment to allow some existing billboards to be reconstructed with a digital sign face in exchange for removing billboards within the City. According to the applicant, Daytona Beach has a similar code to incentivize the removal of billboards within their City in exchange for allowing billboards with a digital sign face on I-95. In addition, cities such as Orlando and St. Petersburg have recently approved ordinances to allow existing billboards along interstates through their City to be reconstructed with a digital sign face in exchange for removing billboards within their City.

There are 13 billboards within Port Orange with the majority of the signs located along I-95. Lamar Outdoor Advertising owns six billboards. If approved on the first reading, a reconstruction agreement between Lamar Outdoor Advertising and the City of Port Orange will be scheduled for Council review with the second reading of this ordinance on February 4, 2025. The proposed reconstruction agreement allows two (2) billboard sign faces along I-95 to be reconstructed with digital sign faces in exchange for

removing four (4) billboard sign faces located north of the intersection of Ridgewood Avenue and Nova Road.



Figure 1. General Location of Billboards within Port Orange

The proposed amendment also includes clean-up items to Chapter 15, Section 14, to remove duplicate code requirements that were inadvertently added multiple times when the sign code was updated in 2021 and make the existing digital sign-face requirements in Section 14 consistent with the digital sign-face requirements proposed with this amendment.

The Staff Report is attached for more information.

PRESENTER: Tim Burman

ATTACHMENTS:

1.	Ordinance No. 2025-01	Ordinance No. 2025-01.pdf
2.	STAFF REPORT	STAFF REPORT .pdf
3.	Business Impact Estimate Form - Ord. 2024-xx	Business Impact Estimate Form - Ord. 2024-xx.pdf

Penelope Cruz	Created/Initiated - 12/13/2024
Tim Burman	Approved - 12/16/2024
Shannon Balmer	Approved - 1/9/2025
Wayne Clark	Approved - 1/13/2025
Amanda Bonin	Final Approval - 1/14/2025

ORDINANCE NO. 2025-01

AN ORDINANCE OF THE CITY OF PORT ORANGE, VOLUSIA COUNTY, FLORIDA AMENDING THE LAND DEVELOPMENT CODE CHAPTER 15 RELATING TO NONCONFORMING SIGNS TO INCENTIVIZE THE REMOVAL OF CERTAIN EXISTING NONCONFORMING SIGNS IN EXCHANGE FOR THE ALLOWANCE OF RECONSTRUCTING BY AGREEMENT EXISTING NONCONFORMING SIGNS ALONG THE I-95 CORRIDOR WITH DIGITAL FACE; REMOVING UNINTENDED DUPLICATE LANGUAGE; PROVIDING FOR REPEAL OF CONFLICTING ORDINANCES; PROVIDING FOR SEVERABILITY; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the proposed amendments are necessary to improve the content of the existing Land Development Code ("Code") as part of an ongoing maintenance effort to make the Code more efficient in its application as well as updated to respond to the current conditions in the community; and

WHEREAS, the Planning Commission has recommended amendments to the Land Development Code; and

WHEREAS, for purposes of this ordinance words with underlined (underlined) type shall constitute additions to the original text and words with strikethrough (~~strikethrough~~) type shall constitute deletions from the original text.

NOW, THEREFORE, BE IT ENACTED BY THE CITY COUNCIL OF THE CITY OF PORT ORANGE, VOLUSIA COUNTY, FLORIDA:

SECTION 1: The City Council of the City of Port Orange hereby amends Chapter 15, Section 14 of the Land Development Code, to read as follows:

Chapter 15 – SIGNS

Section 14 – Nonconforming signs.

Section [14]: Nonconforming signs.

[No changes to subsections (a) and (b)]

(c) Use of a nonconforming sign may be continued, subject to the following regulations:

(1) No nonconforming sign shall be enlarged or increased in any way from its lawful size at the time it was installed or constructed, nor shall a nonconforming sign be relocated from its lawful location at the time it was installed or constructed.

(2) Nonconforming signs or sign structures that are considered abandoned signs under this chapter shall not be permitted for reuse.

(3) Except as authorized in subsections (e)(1) and (f)(1), hereinbelow, ~~U~~use of a nonconforming sign shall immediately terminate upon a change of business type, business ownership or business name, regardless of whether property ownership of the lot on which the nonconforming sign is located has been transferred.

[No changes to subsections (4) through (6)]

(d) Normal repairs, maintenance and improvements may be made to nonconforming signs or sign structures; however, the cost of such repairs, maintenance or improvements made during any two-year period shall not exceed 25 percent of the overall replacement cost of the sign or sign structure at the end of the two-year period.

(e) If any nonconforming sign is damaged by fire, flood, explosion, collapse, wind, war or other catastrophe to such an extent that the cost of repair and reconstruction will exceed 50 percent of the overall replacement cost of the sign at the time of damage, it shall not be repaired or reconstructed except in full conformity with the provisions of this code, except as follows:

(1) A nonconforming offsite sign damaged by catastrophe exceeding 50 percent of the overall replacement cost of the sign may be reconstructed pursuant to the authority set forth in F.S. § 70.20, if the reconstruction agreement complies with all of the requirements set forth as follows:

(a) The reconstructed sign shall be located on the same property as the damaged sign

(b) The reconstructed sign shall be located within a commercially zoned district, not including a planned commercial development or a planned unit development zoned district and shall comply with the requirements of this chapter regarding prohibited signs.

(c) The sign owner shall submit a proposed agreement for the reconstructed sign to the city for review.

(d) City council shall determine whether to approve or deny the proposed agreement submitted in accordance with this section; The reconstructed sign shall be a nonconforming sign.

(e) The sign owner agrees to remove or to abstain from rebuilding other damaged nonconforming signs within the city at a ratio of at least four sign faces for each reconstructed sign face

(f) The sign owner agrees to remove or to abstain from rebuilding other damaged nonconforming signs within the city at a ratio of at least four sign faces for each reconstructed sign face.

(g) The vertical dimension for the reconstructed sign face shall not exceed 25 percent of the permitted building height in the commercial district or 12 feet, whichever is greater in height.

~~(h) The vertical dimension for the reconstructed sign face shall not exceed 25 percent of the permitted building height in the commercial district or 12 feet, whichever is greater in height.~~

~~(i) The vertical dimension for the reconstructed sign face shall not exceed 25 percent of the permitted building height in the commercial district or 12 feet, whichever is greater in height.~~

(h~~j~~) The reconstructed sign face shall not exceed the square footage of the largest damaged sign face for any one sign display being removed or not rebuilt, notwithstanding the location within the city of the sign face removed or not rebuilt.

~~(k) The reconstructed sign face shall not exceed the square footage of the largest sign face for any one sign display being removed or not rebuilt, notwithstanding the location within the city of the sign face removed or not rebuilt.~~

(i~~l~~) Structural components surrounding the sign face shall not exceed a size of ten percent of the sign face.

(j~~m~~) The reconstructed sign face may change copy and if electronic or digital, the frequency of copy change shall not be less than ~~ten~~ eight second intervals.

(k~~n~~) The reconstructed sign, if electronic or digital, shall provide a high-resolution picture quality with pixel spacing of 20 millimeters or less. Messages shall not display any illumination that moves, appears to move, flashes, scrolls, or changes in intensity during the static display period, but static graphic pictures may be displayed with no limitations on color. Messages shall not operate at a brightness level of more than 5,000 foot-candles during the day and 500 foot-candles from dusk to dawn. Each digital sign shall have a light-sensing device to adjust the brightness of the sign face as ambient light conditions change. A malfunctioning sign face must be turned off or display a blank screen. Sign shall display emergency announcements or alerts, including, but not limited to Amber Alerts,

Silver Alerts, and Evacuation Alerts on the sign at no charge on an as-needed basis as determined by the City.~~The reconstructed sign, if electronic or digital, shall provide a high-quality resolution for the display of not more than eight-millimeter pixel spacing, and shall include dimmers installed and operated to eliminate glare, and at night the sign face display light shall not exceed a brightness levels of more than 0.3 foot-candles above ambient light as measured using a foot candle (Lux) meter at a preset distance depending on sign area. Illuminance measurement requires two steps: First—ambient light shall be measured with the sign turned off. Second—sign light output shall be measured with the sign turned on as a solid white display. The difference between the two measurements shall be 0.3 foot-candles or less. The distance at which to take measurements is calculated with the following formula and rounded to the next whole number: Measurement distance = √ (Area of sign square feet × 100).~~

(l~~o~~) The tallest portion of the reconstructed sign, including appurtenances, shall not exceed the permitted building height in the commercial district.

(m~~p~~) The sign agreement shall not contain any provision that would require the city shall not be required to pay compensation for any sign removed or not rebuilt pursuant to the agreement.

(n~~q~~) The reconstructed sign shall comply with setback, landscaping, and architectural standards consistent with the requirements for the construction of a building within the zoning district and applicable design manuals.

(f) In an effort to reduce the number of nonconforming signs located within the city that have a sign face greater than 200 square feet, an existing nonconforming sign with a sign face greater than 200 square feet can be reconstructed pursuant to the authority set forth in F.S. § 70.20, if the reconstruction agreement complies with all of the requirements set forth as follows:

(1) A sign face may be reconstructed in exchange for the removal of at least two (2) sign faces located within the city where each sign face to be removed is greater than 200 square-feet. This exchange shall comply with all of the requirements set forth as follows:

(a) Only an existing sign located along the I-95 corridor can be reconstructed to have a new sign face and the sign being reconstructed shall be located on the same property and same location as the existing sign.

(b) A reconstructed sign can only be located on property that abuts the I-95 right-of-way, or within the I-95 right-of-way. A reconstructed sign cannot be located on property with a residential zoning district.

(c) The sign owner shall submit a proposed reconstruction agreement to reconstruct a sign for the city for review.

(d) City Council shall determine whether to approve or deny the proposed reconstruction agreement submitted in accordance with this section; The reconstructed sign shall be a nonconforming sign.

(e) The sign face for a reconstructed sign shall not exceed the square footage of the largest sign face removed as part of the exchange.

(f) Structural components surrounding the reconstructed sign face shall not exceed a size of ten percent of the sign face.

(g) The reconstructed sign may have a sign face with a change copy, and if electronic or digital, the frequency of copy change shall not be less than eight-second intervals, and the maximum transition time between messages shall not exceed one second.

(h) The reconstructed sign, if electronic or digital, shall provide a high-resolution picture quality with pixel spacing of 20 millimeters or less. Messages shall not display any illumination that moves, appears to move, flashes, scrolls, or changes in intensity during the static display period, but static graphic pictures may be displayed with no limitations on color. Messages shall not operate at a brightness level of more than 5,000 foot-candles during the day and 500 foot-candles from dusk to dawn. Each digital sign shall have a light-sensing device to adjust the brightness of the sign face as ambient light conditions change. A malfunctioning sign face must be turned off or display a blank screen. Sign shall display emergency announcements or alerts, including, but not limited to Amber Alerts, Silver Alerts, and Evacuation Alerts on the sign at no charge on an as-needed basis as determined by the City.

(i) The tallest portion of the reconstructed sign, including appurtenances, shall not exceed the current height of the existing sign being reconstructed.

(j) All new utilities to the reconstructed sign shall be undergrounded

(k) The non-conforming sign being removed as part of the exchange shall be removed prior to the issuance of the building permit to reconstruct a non-conforming sign subject to an approved reconstruction agreement.

(~~f~~ g) The casual, temporary, or illegal use of any sign shall not be sufficient to establish the existence of a nonconforming use or to create any rights in the continuance of such use.

SECTION 2: All ordinances or parts of ordinances in conflict with the provisions of this ordinance are hereby repealed to the extent of such conflict.

SECTION 3. Scrivener's Errors. Typographical errors and other matters of a similar nature that do not affect the intent of this Ordinance, as determined by the City Clerk and City Attorney, may be corrected.

SECTION 4. The provisions of this Ordinance shall become and be made a part of the Land Development Code of the City of Port Orange, and the Sections of this Ordinance may be renumbered or re-lettered to accomplish such intention. The Code codifier is granted liberal authority to codify the provisions of this Ordinance.

SECTION 5. If any provision of this ordinance or the application thereof to any person or circumstance is held invalid, the invalidity shall not affect other provisions or applications of the ordinance which can be given effect without the invalid provision or application, and to this end the provisions of this ordinance are declared severable.

SECTION 6. This Ordinance shall take effect immediately upon adoption.

_____
MAYOR SCOTT STILTNER

ATTEST:

_____
Robin L. Fenwick, MMC, City Clerk

Passed on first reading on the day of

Passed and adopted on second and final reading on the day of

Reviewed and Approved: _____
Shannon K. Balmer, Senior Assistant City Attorney

STAFF REPORT
CASE NO. DCAM-24-0002
LDC TEXT AMENDMENT / CHAPTER 15

REQUEST:	Amend Chapter 15 of the Land Development Code (LDC) to allow a billboard owner to request approval of a reconstruction agreement to allow an existing billboard sign face along I-95 to be reconstructed with a digital sign face in exchange for removing billboards within Port Orange and establishes criteria for the reconstructed digital sign face.
APPLICANT:	Lamar Outdoor Advertising
STAFF RECOMMENDATION:	Approval
STAFF CONTACT:	Tim Burman, Community Development Director (386) 506-5675
PLANNING COMMISSION:	Recommended Approval 4-0 (December 12, 2024)
CITY COUNCIL DATE:	January 21, 2025

PROPOSED TEXT AMENDMENT:
The applicant requests an amendment to the Land Development Code (LDC), allowing the static sign face on existing billboards to be replaced with a digital sign face. If approved, the amendment would allow the City Council the ability to choose to enter into an agreement with a billboard owner to allow the reconstruction of existing billboards along I-95 with a digital sign face in exchange for removing other existing billboards within Port Orange to reduce the number of billboards within Port Orange and improve aesthetics within the city. The proposed amendment would allow a billboard owner to replace the sign face for an existing billboard along I-95 with a digital sign face at a ratio of removing at least two sign faces for each reconstructed sign face.

Under the City's current sign regulations, a billboard is a prohibited sign. Furthermore, structural repairs or reconstruction of existing non-conforming signs is not permitted, requiring them to be removed as they become structurally unsound. The applicant requests this amendment to allow billboard companies to reconstruct some existing billboards with a digital sign face in exchange for eliminating billboards within the city. According to the applicant, Daytona Beach has a similar code to incentivize the removal of billboards within their city in exchange for allowing billboards with a digital sign face on I-95. In addition, cities such as Orlando and St. Petersburg have recently approved ordinances that reduce the number of billboards by allowing existing billboards along interstates in their city to be reconstructed with a digital sign face.

There are 13 billboards within Port Orange or along I-95, and the applicant owns 6. According to the applicant, if the LDC text amendment is approved, the applicant will submit an agreement for City Council review that, if approved, would allow the removal of four (4) billboard sign faces located north of the intersection of Ridgewood Avenue and Nova Road and the reconstruction of two (2) billboard sign faces located along I-95 with a digital sign face.



Figure 1. General Location of Billboards within Port Orange

The requirements in the proposed LDC text amendment would be the minimum that a billboard owner would need to meet to replace an existing billboard sign face with a digital sign face, along with criteria for the size, height, brightness, display time, and overall operation.

The proposed text to be added to Chapter 15 is similar to the LDC text amendment approved in 2009. The 2009 text amendment allowed a billboard owner to request city council approval of a reconstruction agreement to rebuild a billboard in exchange for

removing billboards destroyed by fire, flood, explosion, collapse, wind, war, or other catastrophe. The digital billboard located on the east side of the Dunlawton Bridge was built per a reconstruction agreement between the billboard owner and the City of Port Orange.

If the LDC text amendment is approved, it will allow for a billboard owner to request an agreement with the City to replace a billboard sign face along I-95 with a digital sign face at a ratio of removing at least two sign faces for each reconstructed sign face, and the reconstructed sign face will be subject to the following criteria:

1. Only an existing sign along the I-95 corridor can be reconstructed and located on the same property and in the exact location of the current sign.

2. A reconstructed sign can only be located on a property that abuts the I-95 right-of-way, within the I-95 right-of-way, and in no case can a reconstructed sign be located on the property with a residential zoning district.

3. The square footage of the sign face for a reconstructed sign shall not exceed that of the largest sign face removed as part of the exchange.

4. Structural components surrounding the reconstructed sign face shall not exceed a size of ten percent of the sign face.

5. The reconstructed sign may have a sign face with a change copy. If electronic or digital, the frequency of copy change shall be at intervals of eight seconds, and the maximum transition time between messages shall not exceed one second.

6. If a reconstructed sign is electronic or digital, it shall comply with the following: high-resolution picture quality with a pixel spacing of 20 millimeters or less.

    - The digital sign face shall be high-resolution picture quality with a pixel spacing of 20 millimeters or less.
    - Messages shall not display any illumination that moves, appears to move, flashes, scrolls, or changes in intensity during the static display period, but static graphic pictures may be displayed with no limitations on color.
    - Messages shall not operate at a brightness level of more than 5,000 foot-candles during the day and 500 foot-candles from dusk to dawn.
    - Each digital sign shall have a light-sensing device to adjust the brightness of the sign face as ambient light conditions change. A malfunctioning sign face must be turned off or display a blank screen.
    - The sign area shall display emergency announcements or alerts, including, but not limited to, Amber Alerts, Silver Alerts, and Evacuation Alerts on the sign at no charge on an as-needed basis as determined by the City.

7. The tallest portion of the reconstructed sign, including appurtenances, shall not exceed the height of the existing sign being replaced with the reconstructed sign.

8. All new utilities to the reconstructed sign shall be undergrounded.

9. A billboard to be removed as part of the exchange, per an approved reconstruction agreement, shall be removed before the building permit to reconstruct a sign is issued.



Figure 2. A billboard along I-95 in Daytona Beach with a Digital Sign Face

In addition to the text proposed to be added, the amendment includes clean-up items to Chapter 15, Section 14 to remove duplicate code requirements that inadvertently got added more than one time when the sign code was updated in 2021 and to make the existing digital sign face requirements in Section 14 consistent with the digital sign face requirements being proposed.

RECOMMENDATION:
Staff recommends approval of the text amendment to Chapter 15 of the Land Development Code.

Print Form

Business Impact Estimate

This form should be included in the agenda packet for the item under which the proposed ordinance is to be considered and must be posted on the City's website by the time notice of the proposed ordinance is published.

Proposed ordinance's title/reference:
Ordinance No. 2024-xx – LDC Amendment/Chapter 15 - Signs (Case No. DCAM-24-0002)

This Business Impact Estimate is provided in accordance with Section 166.041(4), Florida Statutes. If one or more boxes are checked below, this means the City is of the view that a business impact estimate is **not** required by state law[1] for the proposed ordinance, but the City is implementing the procedure required by statutory law to ensure that no inadvertent procedural issue could impact the enactment of the proposed ordinance. This Business Impact Estimate may be revised following its initial posting.

- ☐ The proposed ordinance is required for compliance with Federal or State law or regulation;
- ☐ The proposed ordinance relates to the issuance or refinancing of debt;
- ☐ The proposed ordinance relates to the adoption of budgets or budget amendments, including revenue sources necessary to fund the budget;
- ☐ The proposed ordinance is required to implement a contract or an agreement, including, but not limited to, any Federal, State, local, or private grant, or other financial assistance accepted by the municipal government;
- ☐ The proposed ordinance is an emergency ordinance;
- ☐ The proposed ordinance relates to procurement; or
- ☑ The proposed ordinance is enacted to implement the following:
  a. Part II of Chapter 163, *Florida Statutes*, relating to growth policy, county and municipal planning, and land development regulation, including zoning, development orders, development agreements and development permits;
  b. Sections 190.005 and 190.046, *Florida Statutes*, regarding community development districts;
  c. Section 553.73, *Florida Statutes*, relating to the *Florida Building Code*; or
  d. Section 633.202, *Florida Statutes*, relating to the *Florida Fire Prevention Code*.

[1] See Section 166.041(4)(c), Florida Statutes.

In accordance with the provisions of controlling law, even notwithstanding the fact that, an exemption noted above may apply, the City hereby publishes the following information:

1. Summary of the proposed ordinance (must include statement of the public purpose, such as serving the public health, safety, morals, and welfare):
A request by Lamar Outdoor Advertising to amend to the Land Development Code to provide the framework for a billboard owner to replace a sign face for an existing billboard along I-95 with a digital sign face by removing at least two billboard sign faces

2. An estimate of the direct economic impact of the proposed ordinance on private, for-profit businesses in the City, if any:

(a) An estimate of direct compliance costs that businesses may reasonably incur:

N/A

(b) Any new charge or fee imposed by the proposed ordinance or for which businesses will be financially responsible:

N/A

(c) An estimate of the City's regulatory costs, including estimated revenues from any new charges or fees to cover such costs:

N/A

3. Good faith estimate of the number of businesses likely to be impacted by the proposed ordinance:
There are two companies that own Billboards within Port Orange and along I-95 within Port Orange (Lamar Outdoor Advertising & Clear Channel)

4. Additional information the governing body deems useful[2] (if any):

This ordinance would allow the City Council the ability to choose to enter into an agreement with a billboard owner to allow the reconstruction of existing billboards along I-95 with a digital sign face in exchange for removing other existing billboards within Port Orange to reduce the number of billboards within Port Orange and improve aesthetics within the city.

[2] *You may wish to include in this section the methodology or data used to prepare the Business Impact Estimate. For example: City staff solicited comments from businesses in the City as to the potential impact of the proposed ordinance by contacting the local Chamber of Commerce, social media posting, direct mail or direct email, posting on City website, public workshop, etc. You may also wish to include efforts made to reduce the potential fiscal impact on businesses. You may also wish to state here that the proposed ordinance is a generally applicable ordinance that applies to all persons similarly situated (individuals as well as businesses) and, therefore, the proposed ordinance does not affect only businesses.*

CITY COUNCIL AGENDA ITEM

COUNCIL MEETING DATE 1/21/2025

SUBJECT: (G14) First Reading - Ordinance No. 2025-02 - Revising Defined Contribution Retirement Plan

DEPARTMENT: City Attorney

GOAL: 6 - Organizational Excellence

RECOMMENDED MOTION: Move to approve Ordinance No. 2025-02.

SUMMARY: The City has multiple defined contribution plans that have been adopted by resolution of City Council. The plans are governed by the corresponding plan adoption agreements. In order to avoid conflict between the plan adoption agreements and the Code of Ordinances, the proposed ordinance amendment will remove any defined contribution plan language in favor of simply citing to the various plan adoption agreements approved by City Council. This will also eliminate the need for multiple amendments to plan documents and the Code each time a plan is amended.

PRESENTER: Matthew Jones

ATTACHMENTS:

1.	Ord. No. 2025-2 - Defined Contribution Plan Ordinance Amendment	Ord. No. 2025-2 - Defined Contribution Plan Ordinance Amendment.docx

Robin Fenwick	Created/Initiated - 8/21/2024
Matthew Jones	Approved - 12/31/2024
Linda Truitt	Approved - 12/31/2024
Wayne Clark	Final Approval - 1/13/2025

ORDINANCE NO. 2025-2

AN ORDINANCE OF THE CITY OF PORT ORANGE, VOLUSIA COUNTY, FLORIDA, AMENDING CHAPTER 54, ARTICLE VI, 2003 GENERAL EMPLOYEES' RETIREMENT SYSTEM, AMENDING SECTION 54-175, DEFINED CONTRIBUTION RETIREMENT PLAN, TO RELY ON THE PLAN ADOPTION AGREEMENTS APPROVED BY CITY COUNCIL DESCRIBING THE TERMS APPLICABLE TO EACH OF THE PLANS; PROVIDING FOR CODIFICATION; PROVIDING FOR REPEAL OF CONFLICTING ORDINANCES; PROVIDING FOR SEVERABILITY; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the City of Port Orange, Florida by and through its City Council has adopted several money purchase plans (defined contribution plans) for various employees and employee groups; and

WHEREAS, the City of Port Orange, Florida wishes to rely upon the approved plan adoption agreements to control the terms of each of the plans;

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF PORT ORANGE, VOLUSIA COUNTY, FLORIDA AS FOLLOWS:

SECTION 1: Section 54-175, City of Port Orange Defined Contribution Retirement Plan, of the Port Orange is hereby amended as follows:

Sec. 54-175. City of Port Orange Defined Contribution Retirement Plan.

The City of Port Orange Defined Contribution Plan includes several governmental money purchase plans for various employees and employee groups that have been or may be approved by City Council. The terms of the plans are contained in the most recent adoption agreement for each plan as approved by City Council. Copies of the plan adoption agreements may be obtained from the Finance Department.

~~(a) The effective date of the City of Port Orange Defined Contribution Retirement Plan is January 1, 2012.~~

~~(b) General employees hired on or after January 1, 2012 who become members of the City of Port Orange General Employees Defined Contribution Retirement Plan shall be subject to the provisions of this section 54-175.~~

~~(c) Unless otherwise specified in this section 54-175, the City of Port Orange General Employees Defined Contribution Retirement Plan shall be administered pursuant to the applicable definitions set forth in section 54-146.~~

~~(d) *Contributions.*~~

(1) Employee contributions are voluntary, but shall not exceed the applicable Internal Revenue Code limit.

(2) The city's contributions shall be ten percent of basic compensation. Additionally, for each one percent of employee contributions, the city shall contribute an additional 0.5 percent not to exceed a maximum additional city contribution of three percent. The city's total contribution shall not exceed 13 percent. The city's contributions shall be deposited on at least a monthly basis.

(e) *Vesting.*

(1) Employees shall be one hundred percent vested in all contributions made by the employee with the net cumulative investment gain or loss thereon less investment fees and administrative charges.

(2) As to contributions made by the city, employees shall be vested in the city's contributions with the net cumulative investment gain or loss thereon less investment fees and administrative charges, pursuant to the vested percentage schedule as set forth below:

Vesting service	**Vested percentage**
Less than 2 years	0%
2 years but less than 3	20%
3 years but less than 4	40%
4 years but less than 5	60%
5 years but less than 6	80%
6 years or more	100%

(f) *Benefits.*

(1) Benefits shall be provided in accordance with section 401(a) of the Internal Revenue Code.

(2) Benefits shall accrue in individual accounts that are participant-directed, and funded by city and employee contributions and earnings thereon, less administrative expenses.

(3) Benefits shall not be paid under this section unless the participant has separated from employment and a proper application has been filed in the manner prescribed by the plan administrator. The plan administrator may cancel an application when the participant or beneficiary fails to timely provide the information and documents required by the plan administrator.

(g) *Forfeitures.*

(1) *Forfeiture for cause.* Notwithstanding anything herein to the contrary, if a participant is convicted of a specified offense as set forth in F.S. § 112.3173, or the participant's retirement benefit is otherwise forfeited pursuant to F.S. § 112.3173(3), the provisions of F.S. § 112.3173, as same may be amended from time to time, shall apply and the participant shall forfeit all rights to receive a benefit herein in accordance with the provisions of such F.S. § 112.3173.

(2) *Non-vesting forfeiture.* If a participant separates from employment the non-vested portion shall be forfeited.

(3) A forfeiture account shall be created within the City of Port Orange General Employees' Defined Contribution Retirement Plan to hold assets derived from the forfeitures. The forfeiture account shall be used only for paying expenses of the City of Port Orange General Employees' Defined Contribution Retirement Plan and reducing future city contributions. Unallocated reserves within the forfeiture account must be used as quickly and as prudently

as possible considering the plan administrator's fiduciary duty. Expected withdrawals from the forfeiture account must endeavor to reduce the forfeiture account to zero each year.

(h) *Administration.*

(1) The City of Port Orange Defined Contribution Retirement Plan shall be administered by the plan administrator who shall be the City Manager of the City of Port Orange or his/her appointee.

(2) The plan administrator with the approval of city council shall select a company or companies to offer one or more investment products or services to the participants. Such company or companies may be a bundled provider that offers participants a range of individually allocated or unallocated investment products and a range of administrative and customer services, including accounting and administration of individual participant accounts; individual participant record keeping; asset purchase, control and safekeeping; direct execution of the participant's instructions as to asset allocation; calculation of daily net asset value; direct access to participant account information; periodic reporting to participants, at least quarterly, on account balances and transactions; guidance, advice, and allocation services directly to its own investment options or products, but only if the provider complies with the standard of care of § 404(a)(1)(A-B) of the Employee Retirement Security Act of 1974 (ERISA), and if providing such guidance, advice, or allocation of services does not constitute a prohibited transaction under § 4975(c)(1) of the Internal Revenue Code or § 406 of ERISA, notwithstanding that such prohibited transaction provisions do not apply to the City of Port Orange Defined Contribution Retirement Plan; a broad array of distribution options; asset allocation; and retirement counseling and education. The companies may include investment management companies, insurance companies, depositories and mutual fund companies.

(3) The plan administrator shall have the full power and authority to adopt rules and regulations for the administration of this plan and to interpret, alter, amend or revoke any rules so adopted, which rules shall have the force of law. However, the plan administrator shall not have the authority to adopt any rules which makes a substantive change to this plan.

(4) The plan administrator shall have the full power and authority to retain independent legal counsel, independent actuary, and such independent professional, technical, or other advisors as it deems necessary at the expense of this plan.

(5) The City of Port Orange Defined Contribution Retirement Plan shall be administered by the plan administrator, any approved provider and third party administrator, if any, in accordance with all applicable mandatory provisions of federal and state law now existing or as they may exist in the future. The plan administrator is hereby authorized to adopt written rules setting forth the specifics of applicable mandatory provisions of federal and state law as they now exist or may exist in the future, which rules shall have the force of law.

(6) Unless otherwise specified in this section 54-175, the City of Port Orange General Employees Defined Contribution Retirement Plan shall also be subject to and administered pursuant to the following; provided that, as of October 1, 2014 "retirement committee" shall mean "plan administrator," as defined in subsection 54-175(h)(1):

a. *Section 54-158.* Benefits nonforfeitable if plan is terminated or contributions completely discontinued.

b. *Section 54-159.* Direct transfers of eligible rollover distributions.

c. *Section 54-160.* Miscellaneous provisions regarding participants.

d. *Section 54-161.* Claims procedure.

e. *Section 54-163.* City's contributions irrevocable.

f. *Section 54-164.* Expenses of administration.

g. *Section 54-165.* Amendment of plan.

h. *Section 54-166.* Termination of plan.

i. *Section 54-167.* Administration: General fiduciary responsibilities.

j. *Subsection 54-170(b).* Applicable law.

k. *Section 54-174.* False, misleading or fraudulent statements made to obtain retirement benefits prohibited; penalty.

(7) If after use of monies remaining in the forfeiture account, there remains unpaid investment fees or administrative charges, the plan administrator shall assess each participant's account in an amount and manner deemed appropriate by the plan administrator.

(i) *Investment.*

(1) The investment of the assets of the City of Port Orange Defined Contribution Retirement Plan shall be subject to the limitations and conditions set forth in F.S. §§ 251.47(1)—(6), (8), (9), (11) and (17), and shall be pursuant to a written investment policy adopted by the plan administrator pursuant to F.S. § 112.661, as such statutes now exist or as they may exist in the future.

(2) The plan administrator with the approval of city council may select one or more providers, each of whom may offer multiple investment options and related services.

(3) As a condition of offering any investment option or product, the approved provider must agree to make the investment product or service available under the most beneficial terms offered to any other customer, subject to approval by the plan administrator.

(j) *Performance review.* At least once every three years, the plan administrator shall retain a professionally qualified, independent consultant to review and evaluate the performance of each approved provider and product.

(k) *Participant information requirements.*

(1) The plan administrator shall insure that each participant is provided a quarterly statement that accounts for the participant's interest and investment earnings thereon; any fees, penalties or the deductions that apply thereto.

(2) The approved provider and the third-party administrator, if any, shall provide quarterly and annual summary reports to the plan administrator and any other reports requested by the plan administrator.

(l) *Federal requirements.*

(1) Provisions of this section shall be construed and the City of Port Orange Defined Contribution Retirement Plan shall be administered, so as to comply with the applicable provisions of the Internal Revenue Code, 26 U.S.C., now existing or as they may exist in the future; and specifically with plan qualification requirements imposed on governmental plans under § 401(a) of the Internal Revenue Code. The plan administrator shall have the power and authority to adopt rules reasonably necessary to establish and maintain the qualified status of the City of Port Orange Defined Contribution Retirement Plan under the Internal Revenue Code and to implement and administer the City of Port Orange Defined Contribution Retirement Plan in compliance with the Internal Revenue Code; provided, however, the plan administrator shall not have the authority to adopt any rule which makes a substantive change to the City of Port Orange Defined Contribution Retirement Plan.

(2) Any provision of this section which is susceptible to more than one construction must be interpreted in favor of the construction most likely to satisfy requirements imposed by § 401(a) of the Internal Revenue Code.

(m) *Investment policy statement.* Investment products and approved providers selected for the City of Port Orange Defined Contribution Retirement Plan shall conform with the written policy statement adopted by the plan administrator pursuant to F.S. § 112.661, as such statute now exists or as it may exist in the future. The statement must also include, among other items, the investment objectives of the City of Port Orange Defined Contribution Retirement Plan, manager selection and monitoring guidelines, and performance measurement criteria. The plan administrator's professionally qualified, independent consultant may present recommended changes in the investment policy statement to the plan administrator for approval.

(n) *Statement of fiduciary standards and responsibilities.*

(1) Investment by approved providers of the City of Port Orange Defined Contribution Retirement Plan assets shall be subject to the fiduciary standards set forth in F.S. §§ 112.656 and 518.11, as such statutes now exists or as it may exist in the future.

(2) If a participant or beneficiary of the City of Port Orange Defined Contribution Retirement Plan exercises control over the assets in his or her account, as determined by reference to regulations of the United States Department of Labor under § 404(c) of the Employee Retirement Income Security Act of 1974, and all applicable laws governing the operation of the plan, no plan fiduciary shall be liable for any loss to a participant's or beneficiary's account which results from such participant's or beneficiary's exercise of control.

(o) *Participant records.* Personal identifying information of a participant in the City of Port Orange Defined Contribution Retirement Plan contained in records held by the plan administrator or the City of Port Orange is exempt from F.S. § 119.07(1), and Section 24(a), Article I of the state Constitution.

(p) *Miscellaneous provisions.*

(1) *Exclusive benefit rule.* No part of the assets of this plan shall be used for, or diverted to any purpose whatsoever other than for the exclusive benefit of the participants and beneficiaries thereof, and defraying reasonable expenses of administering this plan. No person shall have any interest in, or right to, any part of the assets of this plan, except as and to the extent expressly provided in this section 54-175.

(2) *Non-alienation of benefits.* The benefits provided by this plan shall not be subject to garnishment, execution, attachment, the operation of bankruptcy or insolvency law, or to any legal process whatsoever, and shall be unassignable.

(3) *Marriage dissolution.* No distribution of a participant's account shall be made because of dissolution of marriage. Payouts shall only be made after the participant's separation from employment. A participant's account shall not be subject to a Qualified Domestic Relations Order (QDRO). The costs incurred by the plan administrator for any actuarial, accounting, administrative, or legal services required to respond to any court orders or any other matters involving the calculation or division of a participant's account due to a dissolution of marriage shall be deducted from the participant's account.

(4) *Termination and discontinuance of the plan.* It is the intent of the City of Port Orange that this plan be permanent and remain in effect for an indefinite period. However, in the event this plan is discontinued or terminated, all participants shall immediately become fully vested in their benefits. The discontinuance or termination shall be carried out in all respects in conformance with applicable statutes, rules and regulations of the federal government and the State of Florida, or any duly constituted agency thereof having jurisdiction.

~~(5) *Applicable laws.* This plan shall be construed and enforced under the applicable laws of the State of Florida and any applicable federal laws, rules and regulations, and all of the provisions hereof shall be administered in accordance therewith.~~

~~(6) *Disclaimer with respect to investments.* The city and the plan administrator make no endorsement, guarantee or any other representation and shall not be liable to this plan or any participant, beneficiary, or any other person with respect to the financial soundness, investment performance, fitness or suitability (for meeting a participant's objectives, future obligations under the plan, or any other purpose) of any investment option offered by this plan or any investment vehicle in which a participant's account are actually invested.~~

~~(7) *Spend-thrift provision.* The interests of the participant in his account, or the income or gains therefrom, shall not be subject to the rights of creditors of the participant, and shall be exempt from execution, attachment, distress for rent, and all other legal or equitable process issued by or on behalf of such creditors, and the interests of the participant in his individual account or the income or gains therefrom shall not be assignable.~~

~~(8) *Venue.* Any litigation concerning this plan shall be conducted in the state courts in the State of Florida situated in Volusia County, Florida.~~

~~(9) *Reservation of right to amend plan.* Subject to the provisions of F.S. ch. 447, pt. II, the City of Port Orange reserves the right at any time to amend or modify this plan, provided that no amendment shall cause any part of the plan assets to be used or diverted to purposes other than the exclusive benefit of the participants and their beneficiaries.~~

~~(q) The City Council of the City of Port Orange is hereby designated as the "governmental entity" and the "plan sponsor," as provided by F.S. ch. 112, pt. VII.~~

SECTION 2. Specific authority is hereby granted to codify and incorporate this ordinance in the existing Code of Ordinances of the City of Port Orange.

SECTION 3. All ordinances or parts of ordinances in conflict with this ordinance are hereby repealed to the extent of such conflict.

SECTION 4. If any provision of this ordinance or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provision or applications of this ordinance which can be given effect without the invalid provision or application, and to this and the provisions of this ordinance are declared severable.

SECTION 5. This ordinance amendment shall take effect upon adoption.

_____
MAYOR SCOTT STILTNER

ATTEST:

_____
Robin L. Fenwick, MMC, City Clerk

Passed on first reading on the _____ day of _____, 2025.

Passed and adopted on second and final reading on the _____ day of _____, 2025.

Reviewed and Approved: _____
Matthew J. Jones, City Attorney

CITY COUNCIL AGENDA ITEM

COUNCIL MEETING DATE 1/21/2025

SUBJECT: (G15) Adoption of Port Orange City Council Local Rules of Procedure (Local Rules) for 2025

DEPARTMENT: City Clerk

GOAL: 6 - Organizational Excellence

RECOMMENDED MOTION: Move to approve the Local Rules of Procedure for 2025 as presented.

SUMMARY: As indicated in the Local Rules of Procedure ("Rules"), Council shall review the Rules and make any necessary changes in January of each year, or as soon as possible thereafter.

The Rules were provided to Council members for comment and the proposed changes listed below include those previously mentioned by Council, as well as Staff recommendations:

1. Removing "Agenda Approval" from the agenda format and moving the City Attorney and City Manager comments to immediately following Council Comments,
2. For clarity, Public Participation on Consent Agenda Items has been moved outside of the Consent Agenda.
3. Updates to the Decorum/Conduct Rules as provided for in Florida Statutes, and
4. Clarification that items added to the Public Participation - Agenda section are limited to matters of local concern that are within the purview of City Council action to address.

A sample agenda showing the suggested changes is included in the packet, as well as a copy of the Port Orange City Council Local Rules of Procedure approved by Council on March 5, 2024.

PRESENTER: Robin Fenwick

ATTACHMENTS:

1.	Sample Agenda w/changes	Sample Agenda w/changes.doc

2.	2024 Local Rules of Procedure	2024 Local Rules of Procedure.pdf
3.	2025 POCC Local Rules of Procedure Rev. 12-30-2024 Clean	2025 POCC Local Rules of Procedure Rev. 12-30-2024 Clean.docx
4.	2025 POCC Local Rules of Procedure Rev. 12-30-2024 Mark up	2025 POCC Local Rules of Procedure Rev. 12-30-2024 Mark up.docx

Robin Fenwick	Created/Initiated - 12/30/2024
Robin Fenwick	Approved - 12/30/2024
Matthew Jones	Approved - 12/31/2024
Wayne Clark	Final Approval - 1/13/2025

REGULAR CITY COUNCIL MEETING

6:30 PM – COUNCIL CHAMBERS – CITY HALL

JANUARY 21, 2025

AGENDA

ALL CITIZENS DESIRING TO ADDRESS THE PORT ORANGE CITY COUNCIL DURING PUBLIC PARTICIPATION SHOULD COMPLETE THE SPEAKER CARD WHICH IS LOCATED ON THE STANDS OUTSIDE COUNCIL CHAMBERS. AFTER COMPLETING THE SPEAKER CARD, PRESENT IT TO THE CLERK.

A. OPENING

1. Invocation
2. Pledge of Allegiance
3. Roll Call
4. Public Comments on Consent Agenda Items Only

B. CONSENT AGENDA

5. Approval of Minutes
    a. December 10, 2024 - Regular City Council Meeting
6. Public Utilities Field Operations Facility
    a. Approval of Amendment No. 1 to Exhibit A - Guaranteed Maximum Price Amendment to the Contractual Agreement with Wharton Smith Guaranteed Maximum Price (GMP) Phase for the Public Utilities Field Operations Facility Construction
    b. Approval of Task Authorization No. 6 with Schenkel & Shultz, Inc. under the Master Contract for Architectural Services as it relates to the Construction Administration Phase for the Public Utilities Field Operations Facility
    c. Resolution No. 25-2 - Reimbursement Resolution for Public Utilities Field Operations Facility
7. Resolution No. 25-3 - Approval of First Quarter Budget Amendments for Fiscal Year 2024-2025

C. PUBLIC PARTICIPATION (Non-Agenda – 20 minutes)

SAMPLE

D. COUNCIL COMMENTS

8. Comments/Concerns from Council Members

E. ADDITIONAL ITEMS

9. City Attorney
10. City Manager

F. BOARD APPOINTMENTS, INTERVIEWS, AND REPORTS

11. Citizen Advisory Committee for TPO
12. Parks and Recreation Advisory Board Report

G. PUBLIC HEARING

13. Second Reading - Ordinance No. 2024-25 - Comprehensive Plan Amendment/Annual Capital Improvements Element Update (Case No. CPAM-24-0004)
14. First Reading - Ordinance No. 2025-1 - LDC Amendment/Chapter 15 - Signs (Case No. DCAM-24-0002)

H. REGULAR AGENDA

15. First Reading - Ordinance No. 2025-2 - Revising Defined Contribution Retirement Plan
16. First Reading - Ordinance No. 2025-3 - Revising Administrative Code Related to Amendments to Civil Service Rules
17. Adoption of Port Orange City Council Local Rules of Procedure (Local Rules) for 2025

I. COUNCIL COMMITTEE REPORTS

18. City Council Committee Reports
    a. First Step Shelter - Councilman Shawn Goepfert
    b. Port Orange/South Daytona Chamber of Commerce - Councilman Shawn Goepfert

J. ADJOURNMENT

SAMPLE

CITY OF PORT ORANGE

CITY CLERK'S OFFICE
1000 CITY CENTER CIRCLE
PORT ORANGE, FLORIDA 32129
TELEPHONE (386) 506-5563

PORT ORANGE CITY COUNCIL
LOCAL RULES OF PROCEDURE

I. GENERAL PARLIAMENTARY RULES.

The general parliamentary procedure to be followed by the City Council of the City of Port Orange, Florida, except as otherwise modified by the City Council or as modified or amended herein, shall be in accordance with the most current edition of Robert's Rules of Order, Newly Revised.

II. PRESIDING OFFICER AND DUTIES.

A. The Mayor, if present, shall preside at all meetings of the Council. In the absence of the Mayor, the Vice Mayor shall preside.
B. The meetings of the Council shall be called to order, recessed and adjourned by the presiding officer.
C. The presiding officer shall preserve order and enforce the rules of decorum and conduct set forth herein.
D. The presiding officer shall determine all points of order, subject to the right of any Councilmember to appeal to the Council. If any appeal is taken, the question shall be, "Shall the decision of the presiding officer be sustained?" A majority of the Council sitting and eligible to vote is required to reverse the ruling of the presiding officer.
E. The presiding officer may call another Councilmember to temporarily chair the meeting to make a motion, or to cover a temporary absence, such substitution is not to continue beyond adjournment.

III. LOCAL RULES.

A. The following Local Rules of Procedure ("Local Rules") shall be applicable to the organization and conduct of business, as well as preparation and publication of agendas, of the City Council of the City of Port Orange, Florida. To the extent these Local Rules shall modify or conflict with the standard "Robert's Rules of Order" as adopted above, these Local Rules shall prevail to the extent of their conflict or inconsistency with "Robert's Rules of Order". The approval of these Local Rules shall take place at the first meeting held in January of each year, or as soon as possible thereafter.

1. Regular meetings of the City Council shall typically be held on the first and third Tuesdays of each month, with exceptions due to holidays and Port Orange municipal election dates, at 6:30 p.m. These meeting dates and times are subject to change as determined necessary by the City Council or to comply with the City's Charter. There shall be no regular City Council meeting on the date of a Port Orange municipal election.

A meeting that would otherwise have been scheduled for such date shall be held on the Wednesday immediately following the election at 6:30 p.m.

2. Workshops of the City Council shall be held as needed on the fourth Tuesday of each month at such time and place as set by Council or the City Manager. Every effort will be made to avoid the scheduling of workshops in the months of November and December. Workshops may also be scheduled at other times as determined necessary by the City Council or the City Manager.

3. All regular City Council meetings shall be held in the City Council Chambers at City Hall unless otherwise designated by the City Council. All City Council workshops will typically be held in the Second Floor Conference Room, Lakeside Community Center, the Adult Activity Center, or the Council Chambers at City Hall, as determined by the City Manager.

4. There may also be special meetings or workshops at such other times designated in advance by the City Council for the purposes of holding joint meetings with City boards, commissions, etc., to include receiving annual reports and presentations from the City's boards, committees, agencies and authorities, or for such other purposes as may be deemed necessary or desirable by the City Council.

5. Special meetings shall be called at the request of the Mayor or any two Councilmembers in accordance with the provisions of the City Charter and the Code of Ordinances.

6. Ex Parte Communication and Quasi-Judicial Proceedings shall be governed by City Council Resolution No. 00-65. At a minimum, all parties to a Quasi-Judicial Proceeding shall be entitled to the following:

    a. An opportunity to call and examine witnesses, who shall be sworn;
    b. An opportunity to introduce evidence;
    c. An opportunity to cross examine witnesses; and
    d. An opportunity to rebut evidence.

7. To the extent compatible with the conduct of business, all workshops shall be held on an informal basis. The applicability of the City's general rules shall not be strictly applied. Presentations made at workshop meetings shall be limited to twenty (20) minutes, unless the Council, by consensus, agrees to extend the time.

8. The City Manager shall be responsible for the organization and placement of items on the City Council Agenda; however, the Agenda and Agenda packets shall be prepared by the City Clerk. If the Council or any of its members wish to place an item on an agenda, any such request or inquiry shall be directed to the City Manager's office for disposition as opposed to any Councilmember contacting any City officer or employee who is subject to the direction and supervision of the City Manager.

9. With regard to the agenda for regular City Council meetings, the following shall apply:

   a. To the extent possible, the City Administration shall group all matters by subject area and shall place as many items as possible on the consent portion of the agenda. Those items of a controversial nature or those that need an explanation will not be placed on the Consent Agenda.

   b. The Consent Agenda shall be considered by Council only after the public has had an opportunity to comment on the items included. Should Council need further discussion to occur on a Consent Agenda Item, he/she may motion for the item to be pulled and discussed separately. Those items pulled will be discussed immediately following the Consent Agenda approval.

   c. The agenda format shall generally be as follows: Call to Order; Invocation; Pledge of Allegiance; Roll Call; Recognition and Proclamations; Consent Agenda (to include Public Comments on Consent Agenda Items and Agenda Approval); Public Participation (Agenda); Public Participation (Non-Agenda); Council Comments; Special Reports; Board Appointments, Interviews, and Reports; Tabled Items; Public Hearings (to include second readings of ordinances); Regular Agenda, (to include first readings of ordinances); Additional Items from the City Attorney and the City Manager; and Council Committee reports. The agenda format is subject to change at the discretion of the City Manager or upon consensus of Council.

   d. Any items received during the public participation (non-agenda) portion of the agenda may, at the discretion of the Council, be discussed by the City Council at the time of such presentation, may be directed to the City Manager for action or resolution by the Council or may be added to a subsequent meeting or workshop agenda if a member of the City Council so specifically requests.

   e. Votes taken on ordinances and resolutions shall be by roll call and shall be recorded by the City Clerk. All roll call votes shall be in the order of District with District 1 voting first, District 2 voting second, and so on, with the Vice Mayor always voting fourth and the Mayor voting last.

   f. Once a motion has been made, seconded, and voted upon, it is final, except that the Council may reconsider that matter at the same meeting at which the motion was voted upon or the immediate subsequent meeting. If reconsideration is requested for an immediate subsequent meeting, the Councilmember requesting reconsideration shall notify the City Clerk in advance of the meeting at which the reconsideration will take place and provide the reasons for requesting reconsideration to allow the City Clerk to include the request as part of the meeting agenda and properly notice the item to be reconsidered. The City Clerk shall consult with the City Attorney's Office to determine the sufficiency of notice to

interested parties. To reconsider a final vote of the City Council, a motion to reconsider shall be made by a member of the Council that voted on the prevailing side. The City Council shall establish for the public record the reasons that a reconsideration of the final vote was warranted.

g. A motion made by a Councilmember to approve an item on the agenda or the consent agenda by reference to the agenda item number and/or the title of the agenda item shall automatically incorporate staff's recommended motion (as set forth in the agenda packet) unless a clear indication to the contrary is made on the record.

10. The City Council of the City of Port Orange is committed to maintaining civility in public and political discourse and encourages the public to do the same. All comments by members of the Council, advisory board members, and/or the public shall avoid the use of language that is obscene or is likely to produce imminent lawless action.

11. Cell phone ringers shall be disabled while a meeting or workshop is in progress.

IV. PUBLIC PARTICIPATION.

A. The City of Port Orange recognizes the statutorily created right of the public to be heard on propositions in front of City Council as set forth in Section 286.0114, Florida Statutes, and is committed to democratic, participatory local government. The following rules, guidelines, and procedures are intended to promote orderly conduct and defined methods for participation. The presiding officer shall have the authority to enforce these rules and may request the removal of any individual who has been warned of and persists with prohibited conduct.

1. General Rule

a. Members of the public shall be given a reasonable opportunity to be heard on a proposition before City Council, subject to the rules, guidelines, and procedures set forth herein. The opportunity to be heard need not occur at the same meeting at which City Council takes official action on the proposition if the opportunity occurs at a meeting that is during the decision-making process and is within reasonable proximity in time before the meeting at which City Council takes the official action.

b. Public participation is not required under the following circumstances:

i. An official act must be taken to deal with an emergency situation affecting the public health, welfare, or safety, and public participation would cause an unreasonable delay in the ability of the City Council to act;

ii. An official act involving no more than a ministerial act, including, but not limited to, approval of minutes and ceremonial proclamations;

iii. A meeting that is exempt from s. 286.011, Florida Statutes; or

iv. A meeting during which the board or commission is acting in a quasi-judicial capacity, unless otherwise provided by law.

2. Meeting Decorum and Conduct

a. Individuals may only make comments from the podium, or such other reasonable accommodation, after being recognized by the presiding officer.

b. Prior to commenting, individuals are asked to clearly state their name and city of residence for the record in order to preserve an accurate public record reflected in the meeting minutes for future reference.

c. All comments shall be directed to the presiding officer.

d. Repetitive, redundant, or immaterial presentations or requests may be limited, and shall not resume unless authorized by a majority vote of the City Council.

e. Comments shall be limited to the allotted times set forth herein, but additional comments may be submitted in writing to supplement and fully address any issue. The presiding officer shall have the discretion to provide additional time for a representative who can produce supporting documentation or evidence that he or she is authorized to speak on behalf of a group or faction comprised of five or more members of the public.

f. Individuals attending a City Council meeting may choose to either hold a sign or place a sign along the rear wall of Council Chambers. Signs shall not be placed or held in any manner which obstructs the view of other audience members or obstructs access to or from Council Chambers. Signs shall not be waived or lighted in any manner that causes distraction to the Councilmembers or members of the audience during a City Council meeting or workshop. Signs shall not be affixed to the walls or other surfaces within the meeting room.

g. It is unlawful for any individual to willfully and maliciously interrupt or disturb a meeting of City Council. Anyone who causes such a disturbance or interruption, after a warning has been given by the presiding officer, shall be removed from the meeting and may not return during the same meeting.

3. Procedures and Guidelines for Public Participation

a. Public Participation – Non-Agenda

i. The City Council allocates 20 minutes at each regularly scheduled City Council Meeting for members of the public who wish to appear before the City Council to make a request, voice a

complaint or concern, express an opinion, or give recognition. Council may extend the allocated time by the majority vote of the Council.

ii. Members of the public who wish to be heard shall complete a public participation form and provide the completed form to the City Clerk prior to the beginning of the meeting. Public participation forms shall be made available outside Council Chambers one hour prior to the meeting and in the City Clerk's Office during regular business hours. The City Clerk shall present all completed forms to the presiding officer prior to the beginning of the meeting.

iii. The presiding officer shall divide the time allocated equally between all who have signed up to speak. Each individual shall be afforded no more than three minutes to speak unless such time is extended by a majority vote of City Council.

iv. If an item brought forward under Public Participation – Non-Agenda requires a longer presentation by the presenter or will require staff research of materials, the item may be scheduled for a future City Council Meeting under Public Participation – Agenda if a member of City Council so specifically requests.

b. Public Participation – Agenda

i. The City Council shall reserve a section of the agenda dedicated to hearing Public Participation items requiring more than three minutes to fully address.

ii. Members of the public who wish to have their discussion item placed on the agenda shall file the request with the City Clerk at least three weeks in advance of the Council Meeting at which the item is to be heard. The request shall include the nature of the discussion and any supporting information to be considered.

iii. The City Clerk shall forward a copy of the request and supporting information to the appropriate City Department(s) so that research may be conducted, and information may be provided by staff as part of the agenda item to assist City Council in making a decision.

iv. Requests shall be forwarded to the appropriate City Advisory Board or Commission for recommendations to the City Council prior to placement on an agenda, when applicable.

v. Public Participation Agenda Items shall be considered in the following format:

1. Presentation by requestor
2. Questions of the requestor by City Council
3. Presentation by City staff, if necessary

4. Questions of City staff by City Council
5. Public comments, if any action is to be taken by City Council
6. Take action or provide direction, if necessary

vi. The requestor and City staff shall each be given 10 minutes to address the agenda item, unless extended by the majority vote of Council. Presentations shall be clear, concise, and to the point. Presentation materials shall be provided to the City Clerk at least 48 hours prior to the meeting date. The City Clerk will upload the presentation materials to the computer in Council Chambers. If action is to be taken by City Council, the public shall be afforded no more than three minutes each to speak.

c. Public Hearings, Regular Agenda, and Consent Agenda Items

i. Members of the public shall be given an opportunity to be heard on public hearing items and regular agenda items once the applicant has completed his or her presentation, the City Staff has completed its presentation on the issue, and interested parties, if any, have completed their presentation; and before a decision has been made by City Council.

ii. Members of the public who wish to be heard on a particular item listed on the agenda may choose to complete a public participation form and turn-in the completed form to the City Clerk in advance of the meeting or raise a hand and wait to be called-on when the presiding officer opens the floor to comments from the public.

iii. Applicant(s) and City Staff shall have as much time as necessary to make their presentation before the City Council. Each member of the public shall have no more than three minutes to be heard once recognized by the presiding officer.

d. Submission of Petitions

i. Petitions may be presented to Council during public participation at a meeting or by mailing or hand-delivering to the City Clerk.

ii. If the petition is presented at a meeting, the presenter shall present the petition to the presiding officer through the City Clerk along with a brief overview of the reason for the petition. Such presentation shall be limited to three minutes.

iii. If the petition is sent by mail or hand-delivered to the City Clerk, the petition shall provide the reason for the petition. Upon receipt of the petition, the City Clerk shall place the item on the agenda with a copy of the petition for the next available meeting for discussion.

V. OPENING INVOCATION

A. It shall be the policy of the City Council that the procedures stated in this rule concerning opening invocation shall govern all official meetings of the City Council and that the members of the City Council and City staff shall adhere to these rules. These policies and procedures are not intended, shall not be implemented, and shall not be construed in any way to affiliate the City Council or the City with, nor express a preference for or against any faith, belief, opinion, religion, or denomination. Rather, these policies and procedures are intended to acknowledge and express the City Council respect for the diversity of religious denominations and faiths represented and practiced among the citizens of the City.

1. After the Call to Order of all official meetings of the City Council an Opening Invocation as described herein shall occur. The opening invocation will occur and be completed during the opening, ceremonial portion of the City Council meeting and shall in no event occur, or be construed to occur, during the policymaking or legislative portions of the City Council meeting. If the selected speaker is absent or a selection cannot be made for any reason, the invocation will consist of a brief moment of silence.

2. The opening invocation will be performed by a local volunteer selected in accordance with these rules. The local volunteer selected for leading the opening invocation shall be selected from a wide pool of local clergy as specified below, and he/she shall in no event receive compensation from the City for his/her participation or services. To ensure that such person is selected from among a wide pool of local clergy, on a rotating basis, the invocation speaker shall be selected according to the following procedure:

   a. The City Clerk or his/her designee shall compile and maintain a database of the religious congregations with an established presence within the jurisdictional limits of the City of Port Orange and Volusia County.

   b. The Congregation List shall be compiled by referencing the listings for "churches," "congregations," or other similar religious assemblies located within the jurisdictional limits of the City and Volusia County in the annual Yellow Pages telephone book(s) published for the City and Volusia County, research from the Internet, and/or consultation with local chambers of commerce. All religious congregations with an established presence within the jurisdictional limits of the City and Volusia County are eligible to be, and shall be, included in the Congregation List. Any such congregation, entity, organization, or individual within the jurisdictional limits of the City and Volusia County not otherwise identified for participating may request inclusion on the Congregation List by written communication directed to the City Clerk that references the opening invocation. This policy is intended to be and shall be applied in a way that is all-inclusive of every diverse religious congregation within the jurisdictional limits of

the City and Volusia County. The Congregation List is compiled and used for purposes of logistics, efficiency, and equal opportunity for all religious leaders within the jurisdictional limits of the City and Volusia County to choose whether to respond to the City Council's Invitation and participate. The City Clerk or his/her designee may not inquire into the faith, denomination, or other religious belief of the congregation before adding it to the Congregation List.

c. The Congregation List shall also include the name and contact information of any religious congregation located outside the City and Volusia County, if such religious congregation is attended by a resident or residents of the City or Volusia County, and such resident requests the inclusion of said religious congregation by specific written communication to the City Clerk.

d. The Congregation List shall also include the name and contact information of any chaplain who may serve one or more of the fire departments or law enforcement agencies of the City and Volusia County.

e. The Congregations List shall be updated, by reasonable efforts of the City Clerk or his/her designee, on or about the month of July of each calendar year.

3. Within thirty (30) days of the effective date of this policy, and on or about May 1 of each calendar year thereafter, the City Clerk or his/her designee shall mail or email an invitation addressed to the religious leader, chaplain, minister, rabbi or similar, or other contact person of each congregation listed on the Congregations List. The invitation will comport with substantially the following form:

Dear Sir or Madam:

The City of Port Orange City Council makes it a policy to invite members of the clergy and other religious leaders having an established presence within the jurisdictional limits of the City of Port Orange and Volusia County to voluntarily offer an invocation before the beginning of its meetings for the benefit and blessing of the City Council. As the leader of one of the religious congregations with an established presence within the jurisdictional limits of the City and Volusia County, you are invited to offer this important service at an upcoming meeting of the City Council.

If you are willing to assist the City Council in this regard, please send a written reply at your earliest convenience to the City Clerk at the address included on this letterhead or via email at cityclerk@port-orange.org. Invocation speakers are scheduled on a first-come, first-serve basis. The dates of the City Council's scheduled meetings for the upcoming year are included below. If you have a preference among the date, please state that request in your written reply.

This opportunity is voluntary, and you are free to offer the invocation according to the dictates of your own conscience. The invocation should be brief and succinct. To maintain a spirit of respect and ecumenism, the City Council respectfully requests that the invocation opportunity not be exploited as an effort to convert others to the particular faith of the invocation speaker, nor to disparage any faith or belief different than that of the invocation speaker or otherwise threaten damnation or denigrate nonbelievers.

On behalf of the City Council of the City of Port Orange, I thank you in advance for considering this invitation.

Regards,
City Clerk or his/her designee

4. As the invitation letter shall state, the respondents to the invitation shall be scheduled on a first-come, first-serve basis to deliver a brief and succinct invocation. All reasonable efforts shall be made to ensure that a variety of invocation speakers are scheduled for City Council meetings. Notwithstanding the preceding, no invocation speaker shall be scheduled to offer an invocation at consecutive meetings of the City Council, or at more than three (3) City Council meetings in any calendar year.

5. No member of the City Council, City employee or staff shall engage in any prior inquiry, review, or involvement in, the content of any invocation to be offered by an invocation speaker.

6. No member of the City Council, City employee or staff, or any other person in attendance at the meeting shall be required to participate in any opening invocation that is offered. An opportunity to exit the City Council Chambers and return upon completion of the opening invocation is afforded to those who do not wish to participate or witness the opening invocation. Persons in attendance at the City Council meeting are invited to stand during the opening invocation and Pledge of Allegiance. However, such invitation shall not be construed as a demand, order, or any other type of command. Such invitation constitutes a general invitation that a person in attendance may stand if he/she wishes to do so for such observances.

7. The following statement shall be placed at the bottom of City Council meeting agendas:

Any invocation that is offered before the official start of the City Council meeting shall be the voluntary offering of a private person, to and for the benefit of the City Council. The views or beliefs expressed by the invocation speaker have not been previously reviewed or approved by the City Council or the city staff, and the City is not allowed by law to endorse the religious beliefs or views of this, or any other speaker. Persons in attendance at the City Council meeting are invited to stand during

the opening invocation and Pledge of Allegiance. However, such invitation shall not be construed as a demand, order, or any other type of command. No person in attendance at the meeting shall be required to participate in any opening invocation that is offered. A person may exit the City Council Chambers and return upon completion of the opening invocation if a person does not wish to participate in or witness the opening invocation.

VI. CITY BOARD, COMMITTEE, COUNCIL AND AGENDA APPOINTMENTS.

A. All appointments to city boards, commissions, and committees whose members are not subject to appointment by other entities, and in accordance with any applicable restrictions by State Statute, shall be made in accordance with the following procedures:

1. All vacancies subject to appointment to such city boards, commissions, and committees shall be made on a nomination basis by each of the members of the City Council. This nomination shall be construed to be a Motion to Appoint. When more than one nominee has been identified for a single vacancy, voting may be conducted by written ballot which shall include the name of the Councilmember and the name of the nominee. Written ballots shall be read aloud into the record.

2. Roster lists and volunteer applications for City boards, commissions, and committees shall be established and maintained by the City Clerk's office.

3. Appointments for vacancies occurring on a board wherein the particular member has, for whatever reason, not fulfilled their entire term of membership on that particular board, commission, or committee, shall be to complete the unexpired term only, unless the unexpired term is for a period of time less than six (6) months. In that event, the appointed member shall then be allowed to serve the following full regular term without reappointment.

VII. DOCUMENTS

All documents, photographs or other materials submitted to the City Council for their consideration shall be maintained by the City Clerk in accordance with the public records law. Each presenter submitting such materials shall provide copies to each Councilmember, as well as the City Manager, City Attorney, and City Clerk.

VIII. CEREMONIAL GUIDELINES

Certificates of Achievement are ceremonial documents that recognize an individual's service or extraordinary achievement. They do not have any legislative value.

Prepared on appropriate paper that includes a watermark of the City Seal in the background, along with the *who* and *what* (the achievement) as supplied by the requestor and will be signed by the Mayor.

Proclamations are official City related announcements and/or public declarations issued by the Mayor. They are ceremonial in nature and do not have any legislative value. Below are examples of proclamations that have previously been issued upon request annually; however, some may not be requested every year others may be requested through this process, as well.

- Teacher of the Year – Multiple proclamations – January
- Human Trafficking – January
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- Vietnam War Veterans Day – March
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- Parks & Recreation Month - July
- Constitution Week – September
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- Domestic Abuse Month – October
- Breast Cancer Awareness Month – October
- Veterans Day – November
- Small Business Saturday – November
- Purple Heart – November

Proclamations are prepared on 8 ½ x 11 paper, be enclosed in a certificate holder, and include the following:

- *Whereas* clauses providing information that basically describe the five W's (who, what, when, where, and why)
- A *Now, Therefore Be It Resolved* clause proclaiming a specific event
- An execution date representing the date the Mayor signed the document or the date of the event
- Signature of the Mayor
- City Seal

Keys to the City are an honor bestowed by the City upon distinguished persons and honored guests of the City of Port Orange. It symbolizes outstanding civic contributions of the recipient and should be given out only in extraordinary circumstances.

The Key to the City is the City's most prestigious award and will only be used to recognize exceptional achievement or to bestow honor upon distinguished persons and honored guests of the City of Port Orange.

These ceremonial declarations are issued for the following reasons:

1. Recognition of action or service above and beyond the call of duty,
2. Recognition of extraordinary achievement,
3. Supporting actions that improve the quality of life of the Port Orange community, or
4. To raise public awareness of issues that directly affect the Port Orange community.

Request Process

An application form, maintained by the City Clerk's Office, for a Proclamation or Certificate of Achievement should be submitted to the City Clerk's Office at least ten (10) business days prior to the event, along with a sample proclamation. Individuals/organizations are encouraged to submit their request as early as possible. Applications received after the deadline will be prepared based upon staff availability. Requestors will be advised when issuance cannot occur by the event date.

The City Clerk, or his/her designee, will initially review all applications and forward to the City Manager for final approval. The City Manager can seek concurrence from the Mayor if there are concerns.

Receipt of Final Document

Individuals/organizations have several options for receiving the finalized document:

1. Proclamation/Certificate can be picked up from the City Clerk's Office/City Hall.
2. Presentation can occur prior to the start of any City Council Meeting/Workshop.
3. Presentation can occur at a regularly scheduled Council Meeting which may require additional information for agenda purposes.
4. Presentation can occur at an event sponsored by the individual/organization subject to the availability of the Mayor or a City Councilmember.

Coordination will be handled by the City Clerk's Office.

Media Coverage

The individual/organization requesting a proclamation or Certificate of Achievement will arrange for any and all media coverage. If media coverage is expected, the individual/organization shall notify the City's Public Information Officer in advance of the meeting.

Contact Information

Mailing Address: City Clerk's Office
City of Port Orange
1000 City Center Circle
Port Orange, FL 32129

Telephone: 386-506-5563
Email: cityclerk@port-orange.org

IX. CITY MANAGER/CITY ATTORNEY ANNUAL REVIEW.

The City Council shall annually conduct a performance evaluation and salary review of the City Manager and City Attorney in accordance with their respective employment agreements.

Approved and adopted by the City Council of the City of Port Orange, Florida, at the Regular City Council Meeting held on the 5 day of March, 2024.

Donald O. Burnette, Mayor

ATTEST:

Robin L. Fenwick, MMC, City Clerk

CITY OF PORT ORANGE 1867 FLORIDA

CITY OF PORT ORANGE

CITY CLERK'S OFFICE
1000 CITY CENTER CIRCLE
PORT ORANGE, FLORIDA 32129
TELEPHONE (386) 506-5563

PORT ORANGE CITY COUNCIL
LOCAL RULES OF PROCEDURE

I. GENERAL PARLIAMENTARY RULES.

The general parliamentary procedure to be followed by the City Council of the City of Port Orange, Florida, except as otherwise modified by the City Council or as modified or amended herein, shall be in accordance with the most current edition of Robert's Rules of Order, Newly Revised.

II. PRESIDING OFFICER AND DUTIES.

A. The Mayor, if present, shall preside at all meetings of the Council. In the absence of the Mayor, the Vice Mayor shall preside.
B. The meetings of the Council shall be called to order, recessed and adjourned by the presiding officer.
C. The presiding officer shall preserve order and enforce the rules of decorum and conduct set forth herein.
D. The presiding officer shall determine all points of order, subject to the right of any Councilmember to appeal to the Council. If any appeal is taken, the question shall be, "Shall the decision of the presiding officer be sustained?" A majority of the Council sitting and eligible to vote is required to reverse the ruling of the presiding officer.
E. The presiding officer may call another Councilmember to temporarily chair the meeting to make a motion, or to cover a temporary absence, such substitution is not to continue beyond adjournment.

III. LOCAL RULES.

A. The following Local Rules of Procedure ("Local Rules") shall be applicable to the organization and conduct of business, as well as preparation and publication of agendas, of the City Council of the City of Port Orange, Florida. To the extent these Local Rules shall modify or conflict with the standard "Robert's Rules of Order" as adopted above, these Local Rules shall prevail to the extent of their conflict or inconsistency with "Robert's Rules of Order". The approval of these Local Rules shall take place at the first meeting held in January of each year, or as soon as possible thereafter.

    1. Regular meetings of the City Council shall typically be held on the first and third Tuesdays of each month, with exceptions due to holidays and Port Orange municipal election dates, at 6:30 p.m. These meeting dates and times are subject to change as determined necessary by the City Council or to comply with the City's Charter. There shall be no regular City Council meeting on the date of a Port Orange municipal election.

A meeting that would otherwise have been scheduled for such date shall be held on the Wednesday immediately following the election at 6:30 p.m.

2. Workshops of the City Council shall be held as needed on the fourth Tuesday of each month at such time and place as set by Council or the City Manager. Every effort will be made to avoid the scheduling of workshops in the months of November and December. Workshops may also be scheduled at other times as determined necessary by the City Council or the City Manager.

3. All regular City Council meetings shall be held in the City Council Chambers at City Hall unless otherwise designated by the City Council. All City Council workshops will typically be held in the Second Floor Conference Room, Lakeside Community Center, the Adult Activity Center, or the Council Chambers at City Hall, as determined by the City Manager.

4. There may also be special meetings or workshops at such other times designated in advance by the City Council for the purposes of holding joint meetings with City boards, commissions, etc., to include receiving annual reports and presentations from the City's boards, committees, agencies and authorities, or for such other purposes as may be deemed necessary or desirable by the City Council.

5. Special meetings shall be called at the request of the Mayor or any two Councilmembers in accordance with the provisions of the City Charter and the Code of Ordinances.

6. Ex Parte Communication and Quasi-Judicial Proceedings shall be governed by City Council Resolution No. 00-65. At a minimum, all parties to a Quasi-Judicial Proceeding shall be entitled to the following:

    a. An opportunity to call and examine witnesses, who shall be sworn;
    b. An opportunity to introduce evidence;
    c. An opportunity to cross examine witnesses; and
    d. An opportunity to rebut evidence.

7. To the extent compatible with the conduct of business, all workshops shall be held on an informal basis. The applicability of the City's general rules shall not be strictly applied. Presentations made at workshop meetings shall be limited to twenty (20) minutes, unless the Council, by consensus, agrees to extend the time.

8. The City Manager shall be responsible for the organization and placement of items on the City Council Agenda; however, the Agenda and Agenda packets shall be prepared by the City Clerk. If the Council or any of its members wish to place an item on an agenda, any such request or inquiry shall be directed to the City Manager's office for disposition as opposed to any Councilmember contacting any City officer or employee who is subject to the direction and supervision of the City Manager.

9. With regard to the agenda for regular City Council meetings, the following shall apply:

   a. To the extent possible, the City Administration shall group all matters by subject area and shall place as many items as possible on the consent portion of the agenda. Those items of a controversial nature or those that need an explanation will not be placed on the Consent Agenda.

   b. The Consent Agenda shall be considered by Council only after the public has had an opportunity to comment on the items included. Should Council need further discussion to occur on a Consent Agenda Item, he/she may motion for the item to be pulled and discussed separately. Those items pulled will be discussed immediately following the Consent Agenda approval.

   c. The agenda format shall generally be as follows: Call to Order; Invocation; Pledge of Allegiance; Roll Call; Recognition and Proclamations; Public Participation on Consent Agenda Items; Consent Agenda; Public Participation (Agenda); Public Participation (Non-Agenda); Council Comments; Additional Items from the City Attorney and the City Manager; Special Reports; Board Appointments, Interviews, and Reports; Tabled Items; Public Hearings (to include second readings of ordinances); Regular Agenda, (to include first readings of ordinances); and Council Committee reports. The agenda format is subject to change at the discretion of the City Manager or upon consensus of Council.

   d. Any items received during the public participation (non-agenda) portion of the agenda may, at the discretion of the Council, be discussed by the City Council at the time of such presentation, may be directed to the City Manager for action or resolution by the Council or may be added to a subsequent meeting or workshop agenda if a member of the City Council so specifically requests.

   e. Votes taken on ordinances and resolutions shall be by roll call and shall be recorded by the City Clerk. All roll call votes shall be in the order of District with District 1 voting first, District 2 voting second, and so on, with the Vice Mayor always voting fourth and the Mayor voting last.

   f. Once a motion has been made, seconded, and voted upon, it is final, except that the Council may reconsider that matter at the same meeting at which the motion was voted upon or the immediate subsequent meeting. If reconsideration is requested for an immediate subsequent meeting, the Councilmember requesting reconsideration shall notify the City Clerk in advance of the meeting at which the reconsideration will take place and provide the reasons for requesting reconsideration to allow the City Clerk to include the request as part of the meeting agenda and properly notice the item to be reconsidered. The City Clerk shall consult with the City Attorney's Office to determine the sufficiency of notice to

interested parties. To reconsider a final vote of the City Council, a motion to reconsider shall be made by a member of the Council that voted on the prevailing side. The City Council shall establish for the public record the reasons that a reconsideration of the final vote was warranted.

g. A motion made by a Councilmember to approve an item on the agenda or the consent agenda by reference to the agenda item number and/or the title of the agenda item shall automatically incorporate staff's recommended motion (as set forth in the agenda packet) unless a clear indication to the contrary is made on the record.

IV. PUBLIC PARTICIPATION.

A. The City of Port Orange recognizes the statutorily created right of the public to be heard on propositions in front of City Council as set forth in Section 286.0114, Florida Statutes, and is committed to democratic, participatory local government. The following rules, guidelines, and procedures are intended to promote orderly conduct and defined methods for participation. The presiding officer shall have the authority to enforce these rules and may request the removal of any individual who has been warned of and persists with prohibited conduct. The regulations set forth herein are content-neutral and apply regardless of the underlying message of the speaker.

1. General Rule

a. Members of the public shall be given a reasonable opportunity to be heard on a proposition before City Council, subject to the rules, guidelines, and procedures set forth herein. The opportunity to be heard need not occur at the same meeting at which City Council takes official action on the proposition if the opportunity occurs at a meeting that is during the decision-making process and is within reasonable proximity in time before the meeting at which City Council takes the official action.

b. Public participation is not required under the following circumstances:

i. An official act must be taken to deal with an emergency situation affecting the public health, welfare, or safety, and public participation would cause an unreasonable delay in the ability of the City Council to act;

ii. An official act involving no more than a ministerial act, including, but not limited to, approval of minutes and ceremonial proclamations;

iii. A meeting that is exempt from s. 286.011, Florida Statutes; or

iv. A meeting during which the board or commission is acting in a quasi-judicial capacity, unless otherwise provided by law.

2. Meeting Decorum and Conduct

   a. Cell phone ringers shall be disabled while a workshop or meeting is in progress.
   b. Individuals may only make comments from the podium, or such other reasonable accommodation, after being recognized by the presiding officer.

   c. Prior to commenting, individuals are required to clearly state their name and city of residence for the record in order to preserve an accurate public record reflected in the meeting minutes for future reference.

   d. All comments shall be directed to the presiding officer and shall not contain profane, obscene, aggressive or threatening language.

   e. Repetitive, redundant, or immaterial presentations or requests may be limited, and shall not resume unless authorized by a majority vote of the City Council.

   f. Comments shall be limited to the allotted times set forth herein, but additional comments may be submitted in writing to supplement and fully address any issue. The presiding officer shall have the discretion to provide additional time for a representative who can produce supporting documentation or evidence that he or she is authorized to speak on behalf of a group or faction comprised of five or more members of the public.

   g. Individuals attending a City Council meeting may choose to either hold a sign or place a sign along the rear wall of Council Chambers. Signs shall not be placed or held in any manner which obstructs the view of other audience members or obstructs access to or from Council Chambers. Signs shall not be waived or lighted in any manner that causes distraction to the Councilmembers or members of the audience during a City Council meeting or workshop. Signs shall not be affixed to the walls or other surfaces within the meeting room.

   h. Individuals attending a City Council meeting shall not engage in disruptive conduct, such as, but not limited to, stomping of feet, whistling, making noise, using obscene gestures, yelling or similar demonstrations, when that conduct substantially interrupts, delays, or disturbs the peace and good order of the proceedings of City Council.

   i. It is unlawful for any individual to willfully and maliciously interrupt or disturb a meeting of City Council. Anyone who causes such a disturbance or interruption, after a warning has been given by the presiding officer, shall be removed from the meeting and may not return during the same meeting.

3. Procedures and Guidelines for Public Participation

   a. Public Participation – Non-Agenda

i. The City Council allocates 20 minutes at each regularly scheduled City Council Meeting for members of the public who wish to appear before the City Council to make a request, voice a complaint or concern, express an opinion, or give recognition. Council may extend the allocated time by the majority vote of the Council.

ii. Members of the public who wish to be heard shall complete a public participation form and provide the completed form to the City Clerk prior to the beginning of the meeting. Public participation forms shall be made available outside Council Chambers one hour prior to the meeting and in the City Clerk's Office during regular business hours. The City Clerk shall present all completed forms to the presiding officer prior to the beginning of the meeting.

iii. The presiding officer shall divide the time allocated equally between all who have signed up to speak. Each individual shall be afforded no more than three minutes to speak unless such time is extended by a majority vote of City Council.

iv. If an item brought forward under Public Participation – Non-Agenda requires a longer presentation by the presenter or will require staff research of materials, the item may be scheduled for a future City Council Meeting under Public Participation – Agenda if a member of City Council so specifically requests.

b. Public Participation – Agenda

i. The City Council shall reserve a section of the agenda dedicated to hearing Public Participation items requiring more than three minutes to fully address. Such items are limited to matters of local concern that are within the purview of City Council action to address.

ii. Members of the public who wish to have their discussion item placed on the agenda shall file the request with the City Clerk at least three weeks in advance of the Council Meeting at which the item is to be heard. The request shall include the nature of the discussion and any supporting information to be considered.

iii. The City Clerk shall forward a copy of the request and supporting information to the appropriate City Department(s) so that research may be conducted, and information may be provided by staff as part of the agenda item , if needed.

iv. Requests shall be forwarded to the appropriate City Advisory Board or Commission for recommendations to the City Council prior to placement on an agenda, when applicable.

v. Public Participation Agenda Items shall be considered in the

following format:

1. Presentation by requestor
2. Questions of the requestor by City Council
3. Presentation by City staff, if necessary
4. Questions of City staff by City Council
5. Public comments, if any action is to be taken by City Council
6. Take action or provide direction, if necessary

vi. The requestor and City staff shall each be given 10 minutes to address the agenda item, unless extended by the majority vote of Council. Presentations shall be clear, concise, and to the point. Presentation materials shall be provided to the City Clerk at least 48 hours prior to the meeting date. The City Clerk will upload the presentation materials to the computer in Council Chambers. If action is to be taken by City Council, the public shall be afforded no more than three minutes each to speak.

c. Public Hearings, Regular Agenda, and Consent Agenda Items

i. Members of the public shall be given an opportunity to be heard on public hearing items and regular agenda items once the applicant has completed his or her presentation, the City Staff has completed its presentation on the issue, and interested parties, if any, have completed their presentation; and before a decision has been made by City Council.

ii. Members of the public who wish to be heard on a particular item listed on the agenda may choose to complete a public participation form and turn-in the completed form to the City Clerk in advance of the meeting or raise a hand and wait to be called-on when the presiding officer opens the floor to comments from the public.

iii. Applicant(s) and City Staff shall have as much time as necessary to make their presentation before the City Council. Each member of the public shall have no more than three minutes to be heard once recognized by the presiding officer.

d. Submission of Petitions

i. Petitions may be presented to Council during public participation at a meeting or by mailing or hand-delivering to the City Clerk.

ii. If the petition is presented at a meeting, the presenter shall present the petition to the presiding officer through the City Clerk along with a brief overview of the reason for the petition. Such presentation shall be limited to three minutes.

iii. If the petition is sent by mail or hand-delivered to the City Clerk, the petition shall provide the reason for the petition. Upon receipt of

the petition, the City Clerk shall place the item on the agenda with a copy of the petition for the next available meeting for discussion.

V. OPENING INVOCATION

A. It shall be the policy of the City Council that the procedures stated in this rule concerning opening invocation shall govern all official meetings of the City Council and that the members of the City Council and City staff shall adhere to these rules. These policies and procedures are not intended, shall not be implemented, and shall not be construed in any way to affiliate the City Council or the City with, nor express a preference for or against any faith, belief, opinion, religion, or denomination. Rather, these policies and procedures are intended to acknowledge and express the City Council respect for the diversity of religious denominations and faiths represented and practiced among the citizens of the City.

1. After the Call to Order of all official meetings of the City Council an Opening Invocation as described herein shall occur. The opening invocation will occur and be completed during the opening, ceremonial portion of the City Council meeting and shall in no event occur, or be construed to occur, during the policymaking or legislative portions of the City Council meeting. If the selected speaker is absent or a selection cannot be made for any reason, the invocation will consist of a brief moment of silence.

2. The opening invocation will be performed by a local volunteer selected in accordance with these rules. The local volunteer selected for leading the opening invocation shall be selected from a wide pool of local clergy as specified below, and he/she shall in no event receive compensation from the City for his/her participation or services. To ensure that such person is selected from among a wide pool of local clergy, on a rotating basis, the invocation speaker shall be selected according to the following procedure:

   a. The City Clerk or his/her designee shall compile and maintain a database of the religious congregations with an established presence within the jurisdictional limits of the City of Port Orange and Volusia County.

   b. The Congregation List shall be compiled by referencing the listings for “churches,” “congregations,” or other similar religious assemblies located within the jurisdictional limits of the City and Volusia County in the annual Yellow Pages telephone book(s) published for the City and Volusia County, research from the Internet, and/or consultation with local chambers of commerce. All religious congregations with an established presence within the jurisdictional limits of the City and Volusia County are eligible to be, and shall be, included in the Congregation List. Any such congregation, entity, organization, or individual within the jurisdictional limits of the City and Volusia County not otherwise identified for participating may request inclusion on the Congregation List by written communication directed

to the City Clerk that references the opening invocation. This policy is intended to be and shall be applied in a way that is all-inclusive of every diverse religious congregation within the jurisdictional limits of the City and Volusia County. The Congregation List is compiled and used for purposes of logistics, efficiency, and equal opportunity for all religious leaders within the jurisdictional limits of the City and Volusia County to choose whether to respond to the City Council's Invitation and participate. The City Clerk or his/her designee may not inquire into the faith, denomination, or other religious belief of the congregation before adding it to the Congregation List.

c. The Congregation List shall also include the name and contact information of any religious congregation located outside the City and Volusia County, if such religious congregation is attended by a resident or residents of the City or Volusia County, and such resident requests the inclusion of said religious congregation by specific written communication to the City Clerk.

d. The Congregation List shall also include the name and contact information of any chaplain who may serve one or more of the fire departments or law enforcement agencies of the City and Volusia County.

e. The Congregations List shall be updated, by reasonable efforts of the City Clerk or his/her designee, on or about the month of July of each calendar year.

3. Within thirty (30) days of the effective date of this policy, and on or about May 1 of each calendar year thereafter, the City Clerk or his/her designee shall mail or email an invitation addressed to the religious leader, chaplain, minister, rabbi or similar, or other contact person of each congregation listed on the Congregations List. The invitation will comport with substantially the following form:

Dear Sir or Madam:

The City of Port Orange City Council makes it a policy to invite members of the clergy and other religious leaders having an established presence within the jurisdictional limits of the City of Port Orange and Volusia County to voluntarily offer an invocation before the beginning of its meetings for the benefit and blessing of the City Council. As the leader of one of the religious congregations with an established presence within the jurisdictional limits of the City and Volusia County, you are invited to offer this important service at an upcoming meeting of the City Council.

If you are willing to assist the City Council in this regard, please send a written reply at your earliest convenience to the City Clerk at the address included on this letterhead or via email at cityclerk@port-orange.org. Invocation speakers are scheduled on a first-come, first-serve basis. The dates of the City Council's

scheduled meetings for the upcoming year are included below. If you have a preference among the date, please state that request in your written reply.

This opportunity is voluntary, and you are free to offer the invocation according to the dictates of your own conscience. The invocation should be brief and succinct. To maintain a spirit of respect and ecumenism, the City Council respectfully requests that the invocation opportunity not be exploited as an effort to convert others to the particular faith of the invocation speaker, nor to disparage any faith or belief different than that of the invocation speaker or otherwise threaten damnation or denigrate nonbelievers.

On behalf of the City Council of the City of Port Orange, I thank you in advance for considering this invitation.

Regards,
City Clerk or his/her designee

4. As the invitation letter shall state, the respondents to the invitation shall be scheduled on a first-come, first-serve basis to deliver a brief and succinct invocation. All reasonable efforts shall be made to ensure that a variety of invocation speakers are scheduled for City Council meetings. Notwithstanding the preceding, no invocation speaker shall be scheduled to offer an invocation at consecutive meetings of the City Council, or at more than three (3) City Council meetings in any calendar year.

5. No member of the City Council, City employee or staff shall engage in any prior inquiry, review, or involvement in, the content of any invocation to be offered by an invocation speaker.

6. No member of the City Council, City employee or staff, or any other person in attendance at the meeting shall be required to participate in any opening invocation that is offered. An opportunity to exit the City Council Chambers and return upon completion of the opening invocation is afforded to those who do not wish to participate or witness the opening invocation. Persons in attendance at the City Council meeting are invited to stand during the opening invocation and Pledge of Allegiance. However, such invitation shall not be construed as a demand, order, or any other type of command. Such invitation constitutes a general invitation that a person in attendance may stand if he/she wishes to do so for such observances.

7. The following statement shall be placed at the bottom of City Council meeting agendas:

   Any invocation that is offered before the official start of the City Council meeting shall be the voluntary offering of a private person, to and for the benefit of the City Council. The views or beliefs expressed by the invocation speaker have not been previously reviewed or approved by the City Council or the city

staff, and the City is not allowed by law to endorse the religious beliefs or views of this, or any other speaker. Persons in attendance at the City Council meeting are invited to stand during the opening invocation and Pledge of Allegiance. However, such invitation shall not be construed as a demand, order, or any other type of command. No person in attendance at the meeting shall be required to participate in any opening invocation that is offered. A person may exit the City Council Chambers and return upon completion of the opening invocation if a person does not wish to participate in or witness the opening invocation.

VI. CITY BOARD, COMMITTEE, COUNCIL AND AGENDA APPOINTMENTS.

A. All appointments to city boards, commissions, and committees whose members are not subject to appointment by other entities, and in accordance with any applicable restrictions by State Statute, shall be made in accordance with the following procedures:

1. All vacancies subject to appointment to such city boards, commissions, and committees shall be made on a nomination basis by each of the members of the City Council. This nomination shall be construed to be a Motion to Appoint. When more than one nominee has been identified for a single vacancy, voting may be conducted by written ballot which shall include the name of the Councilmember and the name of the nominee. Written ballots shall be read aloud into the record.

2. Roster lists and volunteer applications for City boards, commissions, and committees shall be established and maintained by the City Clerk's office.

3. Appointments for vacancies occurring on a board wherein the particular member has, for whatever reason, not fulfilled their entire term of membership on that particular board, commission, or committee, shall be to complete the unexpired term only, unless the unexpired term is for a period of time less than six (6) months. In that event, the appointed member shall then be allowed to serve the following full regular term without reappointment.

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3. Presentation can occur at a regularly scheduled Council Meeting which may require additional information for agenda purposes.
4. Presentation can occur at an event sponsored by the individual/organization subject to the availability of the Mayor or a City Councilmember.

Coordination will be handled by the City Clerk's Office.

Media Coverage

The individual/organization requesting a proclamation or Certificate of Achievement will arrange for any and all media coverage. If media coverage is expected, the individual/organization shall notify the City's Public Information Officer in advance of the meeting.

Contact Information

Mailing Address: City Clerk's Office
City of Port Orange
1000 City Center Circle
Port Orange, FL 32129

Telephone: 386-506-5563
Email: cityclerk@port-orange.org

IX. CITY MANAGER/CITY ATTORNEY ANNUAL REVIEW.

The City Council shall annually conduct a performance evaluation and salary review of the City Manager and City Attorney in accordance with their respective employment agreements.

Approved and adopted by the City Council of the City of Port Orange, Florida, at the Regular City Council Meeting held on the ____ day of January, 2025.

_____
Scott Stiltner, Mayor

ATTEST:

_____
Robin L. Fenwick, MMC, City Clerk

CITY OF PORT ORANGE

CITY CLERK'S OFFICE
1000 CITY CENTER CIRCLE
PORT ORANGE, FLORIDA 32129
TELEPHONE (386) 506-5563

PORT ORANGE CITY COUNCIL
LOCAL RULES OF PROCEDURE

I. GENERAL PARLIAMENTARY RULES.

The general parliamentary procedure to be followed by the City Council of the City of Port Orange, Florida, except as otherwise modified by the City Council or as modified or amended herein, shall be in accordance with the most current edition of Robert's Rules of Order, Newly Revised.

II. PRESIDING OFFICER AND DUTIES.

A. The Mayor, if present, shall preside at all meetings of the Council. In the absence of the Mayor, the Vice Mayor shall preside.
B. The meetings of the Council shall be called to order, recessed and adjourned by the presiding officer.
C. The presiding officer shall preserve order and enforce the rules of decorum and conduct set forth herein.
D. The presiding officer shall determine all points of order, subject to the right of any Councilmember to appeal to the Council. If any appeal is taken, the question shall be, "Shall the decision of the presiding officer be sustained?" A majority of the Council sitting and eligible to vote is required to reverse the ruling of the presiding officer.
E. The presiding officer may call another Councilmember to temporarily chair the meeting to make a motion, or to cover a temporary absence, such substitution is not to continue beyond adjournment.

III. LOCAL RULES.

A. The following Local Rules of Procedure ("Local Rules") shall be applicable to the organization and conduct of business, as well as preparation and publication of agendas, of the City Council of the City of Port Orange, Florida. To the extent these Local Rules shall modify or conflict with the standard "Robert's Rules of Order" as adopted above, these Local Rules shall prevail to the extent of their conflict or inconsistency with "Robert's Rules of Order". The approval of these Local Rules shall take place at the first meeting held in January of each year, or as soon as possible thereafter.

    1. Regular meetings of the City Council shall typically be held on the first and third Tuesdays of each month, with exceptions due to holidays and Port Orange municipal election dates, at 6:30 p.m. These meeting dates and times are subject to change as determined necessary by the City Council or to comply with the City's Charter. There shall be no regular City Council meeting on the date of a Port Orange municipal election.

A meeting that would otherwise have been scheduled for such date shall be held on the Wednesday immediately following the election at 6:30 p.m.

2. Workshops of the City Council shall be held as needed on the fourth Tuesday of each month at such time and place as set by Council or the City Manager. Every effort will be made to avoid the scheduling of workshops in the months of November and December. Workshops may also be scheduled at other times as determined necessary by the City Council or the City Manager.

3. All regular City Council meetings shall be held in the City Council Chambers at City Hall unless otherwise designated by the City Council. All City Council workshops will typically be held in the Second Floor Conference Room, Lakeside Community Center, the Adult Activity Center, or the Council Chambers at City Hall, as determined by the City Manager.

4. There may also be special meetings or workshops at such other times designated in advance by the City Council for the purposes of holding joint meetings with City boards, commissions, etc., to include receiving annual reports and presentations from the City's boards, committees, agencies and authorities, or for such other purposes as may be deemed necessary or desirable by the City Council.

5. Special meetings shall be called at the request of the Mayor or any two Councilmembers in accordance with the provisions of the City Charter and the Code of Ordinances.

6. Ex Parte Communication and Quasi-Judicial Proceedings shall be governed by City Council Resolution No. 00-65. At a minimum, all parties to a Quasi-Judicial Proceeding shall be entitled to the following:

    a. An opportunity to call and examine witnesses, who shall be sworn;
    b. An opportunity to introduce evidence;
    c. An opportunity to cross examine witnesses; and
    d. An opportunity to rebut evidence.

7. To the extent compatible with the conduct of business, all workshops shall be held on an informal basis. The applicability of the City's general rules shall not be strictly applied. Presentations made at workshop meetings shall be limited to twenty (20) minutes, unless the Council, by consensus, agrees to extend the time.

8. The City Manager shall be responsible for the organization and placement of items on the City Council Agenda; however, the Agenda and Agenda packets shall be prepared by the City Clerk. If the Council or any of its members wish to place an item on an agenda, any such request or inquiry shall be directed to the City Manager's office for disposition as opposed to any Councilmember contacting any City officer or employee who is subject to the direction and supervision of the City Manager.

9. With regard to the agenda for regular City Council meetings, the following shall apply:

   a. To the extent possible, the City Administration shall group all matters by subject area and shall place as many items as possible on the consent portion of the agenda. Those items of a controversial nature or those that need an explanation will not be placed on the Consent Agenda.

   b. The Consent Agenda shall be considered by Council only after the public has had an opportunity to comment on the items included. Should Council need further discussion to occur on a Consent Agenda Item, he/she may motion for the item to be pulled and discussed separately. Those items pulled will be discussed immediately following the Consent Agenda approval.

   c. The agenda format shall generally be as follows: Call to Order; Invocation; Pledge of Allegiance; Roll Call; Recognition and Proclamations; Public Participation on Consent Agenda Items; Consent Agenda ~~(to include Public Comments on Consent Agenda Items and Agenda Approval)~~; Public Participation (Agenda); Public Participation (Non-Agenda); Council Comments; Additional Items from the City Attorney and the City Manager; Special Reports; Board Appointments, Interviews, and Reports; Tabled Items; Public Hearings (to include second readings of ordinances); Regular Agenda, (to include first readings of ordinances); ~~Additional Items from the City Attorney and the City Manager;~~ and Council Committee reports. The agenda format is subject to change at the discretion of the City Manager or upon consensus of Council.

   d. Any items received during the public participation (non-agenda) portion of the agenda may, at the discretion of the Council, be discussed by the City Council at the time of such presentation, may be directed to the City Manager for action or resolution by the Council or may be added to a subsequent meeting or workshop agenda if a member of the City Council so specifically requests.

   e. Votes taken on ordinances and resolutions shall be by roll call and shall be recorded by the City Clerk. All roll call votes shall be in the order of District with District 1 voting first, District 2 voting second, and so on, with the Vice Mayor always voting fourth and the Mayor voting last.

   f. Once a motion has been made, seconded, and voted upon, it is final, except that the Council may reconsider that matter at the same meeting at which the motion was voted upon or the immediate subsequent meeting. If reconsideration is requested for an immediate subsequent meeting, the Councilmember requesting reconsideration shall notify the City Clerk in advance of the meeting at which the reconsideration will take place and provide the reasons for requesting reconsideration to allow the City Clerk to include the request as part of the meeting agenda and properly notice

the item to be reconsidered. The City Clerk shall consult with the City Attorney's Office to determine the sufficiency of notice to interested parties. To reconsider a final vote of the City Council, a motion to reconsider shall be made by a member of the Council that voted on the prevailing side. The City Council shall establish for the public record the reasons that a reconsideration of the final vote was warranted.

g. A motion made by a Councilmember to approve an item on the agenda or the consent agenda by reference to the agenda item number and/or the title of the agenda item shall automatically incorporate staff's recommended motion (as set forth in the agenda packet) unless a clear indication to the contrary is made on the record.

~~10. The City Council of the City of Port Orange is committed to maintaining civility in public and political discourse and encourages the public to do the same. To promote civil discourse and avoid a confrontational atmosphere, all comments by members of the Council, advisory board members, and/or the public should avoid the use of language that is obscene or is likely to produce imminent lawful action.~~

~~11. Cell phone ringers shall be disabled while a meeting or workshop is in progress.~~

Commented [MJ1]: Addressed in decorum/conduct rules below.

IV. PUBLIC PARTICIPATION.

A. The City of Port Orange recognizes the statutorily created right of the public to be heard on propositions in front of City Council as set forth in Section 286.0114, Florida Statutes, and is committed to democratic, participatory local government. The following rules, guidelines, and procedures are intended to promote orderly conduct and defined methods for participation. The presiding officer shall have the authority to enforce these rules and may request the removal of any individual who has been warned of and persists with prohibited conduct. The regulations set forth herein are content-neutral and apply regardless of the underlying message of the speaker.

~~A.~~

1. General Rule

a. Members of the public shall be given a reasonable opportunity to be heard on a proposition before City Council, subject to the rules, guidelines, and procedures set forth herein. The opportunity to be heard need not occur at the same meeting at which City Council takes official action on the proposition if the opportunity occurs at a meeting that is during the decision-making process and is within reasonable proximity in time before the meeting at which City Council takes the official action.

b. Public participation is not required under the following circumstances:

i. An official act must be taken to deal with an emergency situation affecting the public health, welfare, or safety, and public

participation would cause an unreasonable delay in the ability of the City Council to act;

ii. An official act involving no more than a ministerial act, including, but not limited to, approval of minutes and ceremonial proclamations;

iii. A meeting that is exempt from s. 286.011, Florida Statutes; or

iv. A meeting during which the board or commission is acting in a quasi-judicial capacity, unless otherwise provided by law.

2. Meeting Decorum and Conduct

a. Cell phone ringers shall be disabled while a workshop or meeting is in progress.

~~a.~~b. Individuals may only make comments from the podium, or such other reasonable accommodation, after being recognized by the presiding officer.

~~b.~~c. Prior to commenting, individuals are required to clearly state their name and city of residence for the record in order to preserve an accurate public record reflected in the meeting minutes for future reference.

~~c.~~d. All comments shall be directed to the presiding officer and shall not contain profane, obscene, aggressive or threatening language.

~~d.~~e. Repetitive, redundant, or immaterial presentations or requests may be limited, and shall not resume unless authorized by a majority vote of the City Council.

~~e.~~f. Comments shall be limited to the allotted times set forth herein, but additional comments may be submitted in writing to supplement and fully address any issue. The presiding officer shall have the discretion to provide additional time for a representative who can produce supporting documentation or evidence that he or she is authorized to speak on behalf of a group or faction comprised of five or more members of the public.

g. Individuals attending a City Council meeting may choose to either hold a sign or place a sign along the rear wall of Council Chambers. Signs shall not be placed or held in any manner which obstructs the view of other audience members or obstructs access to or from Council Chambers. Signs shall not be waived or lighted in any manner that causes distraction to the Councilmembers or members of the audience during a City Council meeting or workshop. Signs shall not be affixed to the walls or other surfaces within the meeting room.

~~f.~~h. Individuals attending a City Council meeting shall not engage in disruptive conduct, such as, but not limited to, stomping of feet,

whistling, making noise, using obscene gestures, yelling or similar demonstrations, when that conduct substantially interrupts, delays, or disturbs the peace and good order of the proceedings of City Council.

~~g.~~i. It is unlawful for any individual to willfully and maliciously interrupt or disturb a meeting of City Council. Anyone who causes such a disturbance or interruption, after a warning has been given by the presiding officer, shall be removed from the meeting and may not return during the same meeting.

3. Procedures and Guidelines for Public Participation

a. Public Participation – Non-Agenda

i. The City Council allocates 20 minutes at each regularly scheduled City Council Meeting for members of the public who wish to appear before the City Council to make a request, voice a complaint or concern, express an opinion, or give recognition. Council may extend the allocated time by the majority vote of the Council.

ii. Members of the public who wish to be heard shall complete a public participation form and provide the completed form to the City Clerk prior to the beginning of the meeting. Public participation forms shall be made available outside Council Chambers one hour prior to the meeting and in the City Clerk's Office during regular business hours. The City Clerk shall present all completed forms to the presiding officer prior to the beginning of the meeting.

iii. The presiding officer shall divide the time allocated equally between all who have signed up to speak. Each individual shall be afforded no more than three minutes to speak unless such time is extended by a majority vote of City Council.

iv. If an item brought forward under Public Participation – Non-Agenda requires a longer presentation by the presenter or will require staff research of materials, the item may be scheduled for a future City Council Meeting under Public Participation – Agenda if a member of City Council so specifically requests.

b. Public Participation – Agenda

i. The City Council shall reserve a section of the agenda dedicated to hearing Public Participation items requiring more than three minutes to fully address. Such items are limited to matters of local concern that are within the purview of City Council action to address.

ii. Members of the public who wish to have their discussion item placed on the agenda shall file the request with the City Clerk at least three weeks in advance of the Council Meeting at which

the item is to be heard. The request shall include the nature of the discussion and any supporting information to be considered.

iii. The City Clerk shall forward a copy of the request and supporting information to the appropriate City Department(s) so that research may be conducted, and information may be provided by staff as part of the agenda item ~~to assist City Council in making a decision~~, if needed.

iv. Requests shall be forwarded to the appropriate City Advisory Board or Commission for recommendations to the City Council prior to placement on an agenda, when applicable.

v. Public Participation Agenda Items shall be considered in the following format:

1. Presentation by requestor
2. Questions of the requestor by City Council
3. Presentation by City staff, if necessary
4. Questions of City staff by City Council
5. Public comments, if any action is to be taken by City Council
6. Take action or provide direction, if necessary

vi. The requestor and City staff shall each be given 10 minutes to address the agenda item, unless extended by the majority vote of Council. Presentations shall be clear, concise, and to the point. Presentation materials shall be provided to the City Clerk at least 48 hours prior to the meeting date. The City Clerk will upload the presentation materials to the computer in Council Chambers. If action is to be taken by City Council, the public shall be afforded no more than three minutes each to speak.

c. Public Hearings, Regular Agenda, and Consent Agenda Items

i. Members of the public shall be given an opportunity to be heard on public hearing items and regular agenda items once the applicant has completed his or her presentation, the City Staff has completed its presentation on the issue, and interested parties, if any, have completed their presentation; and before a decision has been made by City Council.

ii. Members of the public who wish to be heard on a particular item listed on the agenda may choose to complete a public participation form and turn-in the completed form to the City Clerk in advance of the meeting or raise a hand and wait to be called-on when the presiding officer opens the floor to comments from the public.

iii. Applicant(s) and City Staff shall have as much time as necessary to make their presentation before the City Council. Each member of the public shall have no more than three minutes to

be heard once recognized by the presiding officer.

d. Submission of Petitions

i. Petitions may be presented to Council during public participation at a meeting or by mailing or hand-delivering to the City Clerk.

ii. If the petition is presented at a meeting, the presenter shall present the petition to the presiding officer through the City Clerk along with a brief overview of the reason for the petition. Such presentation shall be limited to three minutes.

iii. If the petition is sent by mail or hand-delivered to the City Clerk, the petition shall provide the reason for the petition. Upon receipt of the petition, the City Clerk shall place the item on the agenda with a copy of the petition for the next available meeting for discussion.

V. OPENING INVOCATION

A. It shall be the policy of the City Council that the procedures stated in this rule concerning opening invocation shall govern all official meetings of the City Council and that the members of the City Council and City staff shall adhere to these rules. These policies and procedures are not intended, shall not be implemented, and shall not be construed in any way to affiliate the City Council or the City with, nor express a preference for or against any faith, belief, opinion, religion, or denomination. Rather, these policies and procedures are intended to acknowledge and express the City Council respect for the diversity of religious denominations and faiths represented and practiced among the citizens of the City.

1. After the Call to Order of all official meetings of the City Council an Opening Invocation as described herein shall occur. The opening invocation will occur and be completed during the opening, ceremonial portion of the City Council meeting and shall in no event occur, or be construed to occur, during the policymaking or legislative portions of the City Council meeting. If the selected speaker is absent or a selection cannot be made for any reason, the invocation will consist of a brief moment of silence.

2. The opening invocation will be performed by a local volunteer selected in accordance with these rules. The local volunteer selected for leading the opening invocation shall be selected from a wide pool of local clergy as specified below, and he/she shall in no event receive compensation from the City for his/her participation or services. To ensure that such person is selected from among a wide pool of local clergy, on a rotating basis, the invocation speaker shall be selected according to the following procedure:

a. The City Clerk or his/her designee shall compile and maintain a database of the religious congregations with an established presence within the jurisdictional limits of the City of Port Orange and Volusia

County.

b. The Congregation List shall be compiled by referencing the listings for "churches," "congregations," or other similar religious assemblies located within the jurisdictional limits of the City and Volusia County in the annual Yellow Pages telephone book(s) published for the City and Volusia County, research from the Internet, and/or consultation with local chambers of commerce. All religious congregations with an established presence within the jurisdictional limits of the City and Volusia County are eligible to be, and shall be, included in the Congregation List. Any such congregation, entity, organization, or individual within the jurisdictional limits of the City and Volusia County not otherwise identified for participating may request inclusion on the Congregation List by written communication directed to the City Clerk that references the opening invocation. This policy is intended to be and shall be applied in a way that is all-inclusive of every diverse religious congregation within the jurisdictional limits of the City and Volusia County. The Congregation List is compiled and used for purposes of logistics, efficiency, and equal opportunity for all religious leaders within the jurisdictional limits of the City and Volusia County to choose whether to respond to the City Council's Invitation and participate. The City Clerk or his/her designee may not inquire into the faith, denomination, or other religious belief of the congregation before adding it to the Congregation List.

c. The Congregation List shall also include the name and contact information of any religious congregation located outside the City and Volusia County, if such religious congregation is attended by a resident or residents of the City or Volusia County, and such resident requests the inclusion of said religious congregation by specific written communication to the City Clerk.

d. The Congregation List shall also include the name and contact information of any chaplain who may serve one or more of the fire departments or law enforcement agencies of the City and Volusia County.

e. The Congregations List shall be updated, by reasonable efforts of the City Clerk or his/her designee, on or about the month of July of each calendar year.

3. Within thirty (30) days of the effective date of this policy, and on or about May 1 of each calendar year thereafter, the City Clerk or his/her designee shall mail or email an invitation addressed to the religious leader, chaplain, minister, rabbi or similar, or other contact person of each congregation listed on the Congregations List. The invitation will comport with substantially the following form:

Dear Sir or Madam:

The City of Port Orange City Council makes it a policy to invite members of the clergy and other religious leaders having an

established presence within the jurisdictional limits of the City of Port Orange and Volusia County to voluntarily offer an invocation before the beginning of its meetings for the benefit and blessing of the City Council. As the leader of one of the religious congregations with an established presence within the jurisdictional limits of the City and Volusia County, you are invited to offer this important service at an upcoming meeting of the City Council.

If you are willing to assist the City Council in this regard, please send a written reply at your earliest convenience to the City Clerk at the address included on this letterhead or via email at cityclerk@port-orange.org. Invocation speakers are scheduled on a first-come, first-serve basis. The dates of the City Council's scheduled meetings for the upcoming year are included below. If you have a preference among the date, please state that request in your written reply.

This opportunity is voluntary, and you are free to offer the invocation according to the dictates of your own conscience. The invocation should be brief and succinct. To maintain a spirit of respect and ecumenism, the City Council respectfully requests that the invocation opportunity not be exploited as an effort to convert others to the particular faith of the invocation speaker, nor to disparage any faith or belief different than that of the invocation speaker or otherwise threaten damnation or denigrate nonbelievers.

On behalf of the City Council of the City of Port Orange, I thank you in advance for considering this invitation.

Regards,
City Clerk or his/her designee

4. As the invitation letter shall state, the respondents to the invitation shall be scheduled on a first-come, first-serve basis to deliver a brief and succinct invocation. All reasonable efforts shall be made to ensure that a variety of invocation speakers are scheduled for City Council meetings. Notwithstanding the preceding, no invocation speaker shall be scheduled to offer an invocation at consecutive meetings of the City Council, or at more than three (3) City Council meetings in any calendar year.

5. No member of the City Council, City employee or staff shall engage in any prior inquiry, review, or involvement in, the content of any invocation to be offered by an invocation speaker.

6. No member of the City Council, City employee or staff, or any other person in attendance at the meeting shall be required to participate in any opening invocation that is offered. An opportunity to exit the City Council Chambers and return upon completion of the opening invocation is afforded to those who do not wish to participate or witness the opening invocation. Persons in attendance at the City Council meeting are invited

to stand during the opening invocation and Pledge of Allegiance. However, such invitation shall not be construed as a demand, order, or any other type of command. Such invitation constitutes a general invitation that a person in attendance may stand if he/she wishes to do so for such observances.

7. The following statement shall be placed at the bottom of City Council meeting agendas:

> *Any invocation that is offered before the official start of the City Council meeting shall be the voluntary offering of a private person, to and for the benefit of the City Council. The views or beliefs expressed by the invocation speaker have not been previously reviewed or approved by the City Council or the city staff, and the City is not allowed by law to endorse the religious beliefs or views of this, or any other speaker. Persons in attendance at the City Council meeting are invited to stand during the opening invocation and Pledge of Allegiance. However, such invitation shall not be construed as a demand, order, or any other type of command. No person in attendance at the meeting shall be required to participate in any opening invocation that is offered. A person may exit the City Council Chambers and return upon completion of the opening invocation if a person does not wish to participate in or witness the opening invocation.*

VI. CITY BOARD, COMMITTEE, COUNCIL AND AGENDA APPOINTMENTS.

A. All appointments to city boards, commissions, and committees whose members are not subject to appointment by other entities, and in accordance with any applicable restrictions by State Statute, shall be made in accordance with the following procedures:

1. All vacancies subject to appointment to such city boards, commissions, and committees shall be made on a nomination basis by each of the members of the City Council. This nomination shall be construed to be a Motion to Appoint. When more than one nominee has been identified for a single vacancy, voting may be conducted by written ballot which shall include the name of the Councilmember and the name of the nominee. Written ballots shall be read aloud into the record.

2. Roster lists and volunteer applications for City boards, commissions, and committees shall be established and maintained by the City Clerk's office.

3. Appointments for vacancies occurring on a board wherein the particular member has, for whatever reason, not fulfilled their entire term of membership on that particular board, commission, or committee, shall be to complete the unexpired term only, unless the unexpired term is for a period of time less than six (6) months. In that event, the appointed member shall then be allowed to serve the following full regular term without reappointment.

VII. DOCUMENTS

All documents, photographs or other materials submitted to the City Council for their consideration shall be maintained by the City Clerk in accordance with the public records law. Each presenter submitting such materials shall provide copies to each Councilmember, as well as the City Manager, City Attorney, and City Clerk.

VIII. CEREMONIAL GUIDELINES

Certificates of Achievement are ceremonial documents that recognize an individual's service or extraordinary achievement. They do not have any legislative value.

Prepared on appropriate paper that includes a watermark of the City Seal in the background, along with the *who* and *what* (the achievement) as supplied by the requestor and will be signed by the Mayor.

Proclamations are official City related announcements and/or public declarations issued by the Mayor. They are ceremonial in nature and do not have any legislative value. Below are examples of proclamations that have previously been issued upon request annually; however, some may not be requested every year others may be requested through this process, as well.

- Teacher of the Year – Multiple proclamations – January
- Human Trafficking – January
- Freemanville Day – February
- Sunshine Week – March
- Vietnam War Veterans Day – March
- Government Finance Professionals Week – March
- Child Abuse Prevention – April
- Arbor Day – April
- Water Conservation Month – April
- Municipal Clerk's Week - May
- Memorial Day – May
- American Cancer Society's Relay for Life - May
- Women's Lung Health Week – May
- Parks & Recreation Month - July
- Constitution Week – September
- Childhood Cancer Month – September
- Florida Government Week – October
- Domestic Abuse Month – October
- Breast Cancer Awareness Month – October
- Veterans Day – November
- Small Business Saturday – November
- Purple Heart – November

Proclamations are prepared on 8 ½ x 11 paper, be enclosed in a certificate holder, and include the following:

- *Whereas* clauses providing information that basically describe the five W's (who, what, when, where, and why)
- A *Now, Therefore Be It Resolved* clause proclaiming a specific event
- An execution date representing the date the Mayor signed the document or the date of the event
- Signature of the Mayor
- City Seal

Keys to the City are an honor bestowed by the City upon distinguished persons and honored guests of the City of Port Orange. It symbolizes outstanding civic contributions of the recipient and should be given out only in extraordinary circumstances.

The Key to the City is the City's most prestigious award and will only be used to recognize exceptional achievement or to bestow honor upon distinguished persons and honored guests of the City of Port Orange.

These ceremonial declarations are issued for the following reasons:

1. Recognition of action or service above and beyond the call of duty,
2. Recognition of extraordinary achievement,
3. Supporting actions that improve the quality of life of the Port Orange community, or
4. To raise public awareness of issues that directly affect the Port Orange community.

Request Process

An application form, maintained by the City Clerk's Office, for a Proclamation or Certificate of Achievement should be submitted to the City Clerk's Office at least ten (10) business days prior to the event, along with a sample proclamation. Individuals/organizations are encouraged to submit their request as early as possible. Applications received after the deadline will be prepared based upon staff availability. Requestors will be advised when issuance cannot occur by the event date.

The City Clerk, or his/her designee, will initially review all applications and forward to the City Manager for final approval. The City Manager can seek concurrence from the Mayor if there are concerns.

Receipt of Final Document

Individuals/organizations have several options for receiving the finalized document:

1. Proclamation/Certificate can be picked up from the City Clerk's Office/City Hall.
2. Presentation can occur prior to the start of any City Council Meeting/Workshop.
3. Presentation can occur at a regularly scheduled Council Meeting which may require additional information for agenda purposes.
4. Presentation can occur at an event sponsored by the individual/organization subject to the availability of the Mayor or a City Councilmember.

Coordination will be handled by the City Clerk's Office.

Media Coverage

The individual/organization requesting a proclamation or Certificate of Achievement will arrange for any and all media coverage. If media coverage is expected, the individual/organization shall notify the City's Public Information Officer in advance of the meeting.

Contact Information

Mailing Address: City Clerk's Office
City of Port Orange
1000 City Center Circle
Port Orange, FL 32129

Telephone: 386-506-5563
Email: cityclerk@port-orange.org

IX. CITY MANAGER/CITY ATTORNEY ANNUAL REVIEW.

The City Council shall annually conduct a performance evaluation and salary review of the City Manager and City Attorney in accordance with their respective employment agreements.

Approved and adopted by the City Council of the City of Port Orange, Florida, at the Regular City Council Meeting held on the ____ day of January, ~~2024~~2025.

_____
~~Donald O. Burnette~~Scott Stiltner,
Mayor

ATTEST:

_____
Robin L. Fenwick, MMC, City Clerk